

“My Mum was a cop...”: A mixed methods exploration of deceptive performance using the General Expertise Framework.

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Abstract

The General Expertise Framework (GEF) explains the phenomenon that regardless of domain, experts have certain features in common, such as a high volume of accumulated practice, performance consistency across time and situation, accuracy of calibration between perceived and actual performance, and well-developed meta-awareness which facilitates adaptability of performance in response to feedback. Interpersonal Deception Theory (IDT) and Activation-Decision-Construction- Action-Theory (ADCAT) present lying as a cognitively challenging act requiring skill to perform well. So, it makes sense that deception should show the same features as other areas of expertise. However, this has never been systematically tested. This programme of research involved four empirical studies, across a range of channels and contexts including interactive in-person interviews and online written deception, which sought to answer an overarching question. Can deceptive performance be conceptualised as a skill, as defined by the GEF? To obtain an objective measure of deceptive performance uncontaminated by possible receiver biases, a Matrix of measures was constructed which included only the most reliable cues. The results suggest that deception is a particular example of expertise, learned in a wicked environment, poorly practiced by most and situationally contingent. Expert liars show an effect of practice, but a high volume of accumulated practice is not sufficient to confer expertise, rather focused, strategic use of lying is required. Expert liars demonstrate superior calibration of perceived and actual performance even though feedback on lying is almost nonexistent in everyday life. This may be why responsiveness to feedback is the most challenging element of expertise in the domain of deception. The unique insights provided by the mixed-methods approach means future research must continue to explore these techniques.

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1. General Introduction

1.1 Background

Deception is a complex act, drawing on cognitive as well as social and emotional processes. It requires the liar to simultaneously manage negative affect, working memory demands, response inhibition, and attention to their own and their target's verbal and nonverbal behaviour (Vrij, Fisher et al., 2006; Walczyk et al., 2014). The inherent difficulty of such an act means that some will perform it better than others. The GEF suggests that there is a common trajectory from novice to expert via measurable qualitative increments across a wide range of complex, multi-domain skills (Anderson, 1982; Hoffman 1998) and it is reasonable to expect that the same is true of lying. But there is a dearth of supporting empirical evidence for this position. Instead, lying has been viewed as a developmental end state (Talwar & Lee, 2008; Vasek, 1986; De Villiers & De Villiers, 1978; Piaget, 1997; Wimmer & Perner, 1983) or maladaptive trait (Hare & Hart, 1993).

Research in the area has focused almost exclusively on the receiver's role in deception, finding that lie detection performance is consistently only marginally above chance (Bond & Depaulo, 2006; Hartwig & Bond 2011; Vrij, Mann & Fisher, 2006). Attempts to explain such poor performance suggest that accuracy is lowered by the high variability in sender (i.e., liar) demeanour and ability (Bond et al., 1985; Bond & DePaulo, 2008; Levine et al., 2011). If lying success is attributable to factors within the control of the sender rather than receiver, then research which focuses on liars is long overdue (Wright et al., 2013).

Although some studies indicate individual differences in deception ability (Ekman & Friesen, 1974; Wright et al., 2013) there is sparse research into whether deceptive abilities continue to progress from basic aptitude to true mastery in some individuals. If lying ability is normally distributed like lie detection abilities (Bond & DePaulo, 2006) then we should expect that there are some extremely good liars. Alternatively, it has been argued that human performance generally follows a Paretian 'power curve' distribution (O'Boyle & Aguinis, 2012). If true, this would also predict the presence of some very high performing individuals within the population of liars. Given no relationship between IQ and deceptive ability (Wright et al., 2013) the idea

that individual skill may contribute to performance variability in lying is a parsimonious explanation worth pursuing.

1.2 Definitions

1.2.1 Definition of deception

This research adopts the comprehensive definition provided in the Palgrave Handbook of Deceptive Communication which describes deception as: “...*the communication of information that is known by the communicator to be inaccurate and/or misleading. This communication can be verbal or nonverbal, in writing, or in actions. Deception can be enacted through manipulation of words, behaviours, or appearance so that others will form a false impression.*” (Kalbfleisch & Docan-Morgan, 2019, p. 33). Such a definition encompasses the full range of prosocial and antisocial lies including omissions, denials, distortions, half-truths, and fabrications. It is also important to note that deception is not defined by success. Any attempt to deceive is considered deception whether successful or not (Vrij, 2000). This is especially relevant when considering deception as the performance of a skilled activity, as individuals are expected to achieve differing levels of success according to their expertise.

1.2.2 Key terms

The paired terms Sender/Receiver and Liar/Target are both used interchangeably to indicate the relationship between those engaging in deceptive communication. A person is considered to be ‘sending’ their lie to a ‘target’ even when the recipient of the deception might be a group of people, or unknown, as might be the case when producing lies over the internet. In line with this, ‘sender performance’ encompasses all the components of producing and delivering a lie that can be measured and analysed, (e.g., verbal, nonverbal, and paraverbal aspects of communication). While ‘receiver performance’ refers to the extent to which a target can detect lies.

1.2.3 Definition of expertise

The Cambridge Handbook of Expertise and Expert Performance (Ericsson et al., 2008) makes a distinction between expertise “...*the characteristics, skills, and knowledge that distinguish experts from novices and less experienced people*” and expert performance “...*superior*

reproducible performances of representative tasks [which] capture the essence of the respective domains" (p. 3). For the purposes of this research the two are combined so that expertise is defined as: *the characteristics and knowledge that can distinguish experts (who reliably produce performances of the representative tasks that capture the essence of deception) from nonexperts*. Very high levels of performance might occasionally be attained by nonexperts simply by chance, but they will not be consistently reproducible. Precisely which characteristics and knowledge distinguish experts is clarified in chapter 2.

The GEF provides a ready-made framework to determine whether lying shows the features of skill. It sets out certain well-established similarities in the way that expertise is acquired, developed, and maintained regardless of the specific task involved (Anderson, 1982; Dreyfus & Dreyfus, 1986; Ericsson & Smith, 1991; Glaser et al., 1985; Hoffman, 1998). IQ is not reliably related to expert performance even in domains requiring sophisticated cognition (Ceci & Liker, 1986) suggesting that expertise is a unique construct. Experts have certain features in common, such as a high volume of accumulated practice, performance consistency across time and situation, accuracy of calibration between perceived and actual performance, and well-developed meta-awareness which facilitates adaptability of performance in response to feedback.

1.3 Problem Statement

The assumption that lying is a skill underpins many beliefs about deception. Interpersonal Deception Theory (IDT) refers to "skilled" and "unskilled" senders (Buller & Burgoon, 1996). Fiedler and Walka (1993) suggest that most people are so practiced and proficient at lying that they can be called "professional liars". But this assumption of skill (and thus the possibility of expertise) has not been tested. So, it is not clear to what extent deception can be conceptualised as a skill.

Research into deception production has long been the 'poor relation' of deception detection research. This was highlighted in 2010 in two statements by leading deception researchers "Widely ignored is the straightforward and relevant question: What constitutes a good liar?" (Vrij et al., 2010, p. 78) and "...more than 30 years of experimental detection research has

proceeded without much attention to the basic nature of the phenomena itself” (Serota et al., 2010, p. 2). In fact, such research is anything but straightforward, which may account for why there is still such a dearth in this area more than a decade later. Several of the key elements of expertise (e.g., meta-awareness and responsiveness) must be assessed through qualitative methods, something which is severely lacking in deception research. Attempts to establish what characterises 'good' liars exist (Semrad et al., 2019) but have been restricted to specific attributes rather than a holistic view of whether deception is in fact a skill. For example, it has been hypothesised that producing a higher volume of lies may provide the necessary practice to acquire greater expertise in lying (Levine, 2010). However, very few studies have directly addressed the role of practice, and results are not unequivocal (Atkinson, 2019; Debey et al., 2015). The dark triad has long been associated with a proclivity for deception (Hare, 1982; Paulhus & Williams, 2002) but being predisposed to lying does not guarantee a high degree of expertise. Overall, lying is a very low base-rate phenomenon (DePaulo et al., 1996; Serota et al., 2010) making it difficult to assess the degree to which it is skill-like.

The few deception production studies published suffer from their inevitable association with deception detection. If detection accuracy is notoriously poor (Bond & DePaulo, 2006; Hartwig & Bond 2011; Vrij, Mann & Fisher, 2006), then fooling a human lie detector is hardly a test of expertise. Yet the majority of research relies on truth or lie judgements usually provided by third parties. Such measures are contaminated by the (substandard) performance of lie detectors. Given the well-established biases of race, age, attractiveness, and demeanour (Bond & DePaulo, 2006; Lloyd et al., 2017; Masip et al., 2003; Slessor et al., 2014; Vrij & Winkel, 1992a; Vrij & Winkel, 1994) any attempt to measure expertise in this way must be interpreted with caution. Examining lie production ability as separately as possible from lie detection is therefore important, but identifying objective alternatives is not a straightforward matter because of the lack of strong, reliable cues to deception (DePaulo et al., 2003; Luke, 2018). Additional complications are presented by the nature of deception itself. Unlike other areas of expertise (e.g., sport, medicine, music, chess) lying is a morally aversive, high-risk activity making practice unappealing. Further, because of the 'battle of wits' that takes place between a liar and the target of their deception with neither wanting to assist the other, there is a poverty

of feedback. Deception takes place in what (Hogarth, et al., (2015) would term 'a wicked environment', in stark contrast to other skilled activities where there are clear rules and feedback is reliable and provided rapidly. This makes expertise much more challenging to develop, so if experts exist, they are likely to be rare.

1.4 Research Questions

The primary research question explored in this research is: Can deceptive performance be conceptualised as a skill, as defined by the GEF? Because of the cross-domain nature of the framework, if true expert liars exist, they ought to show similarities with highly skilled performers in other areas. So, the initial research question can be further divided into sub-questions based on the elements of the framework itself as follows:

- Is it possible to differentiate potential expert liars when performance is uncontaminated by receiver judgments?
- Is there evidence of a practice effect?
- Is deceptive performance consistent across time?
- Do high performing liars show superior calibration between perceived and actual ability?
- Are high performing liars able to flexibly apply their skills showing adaptability and responsiveness to feedback?

1.5 Significance Statement

By building a clearer understanding of deception, the present research will contribute to the literature of both expertise and deception. The GEF is based on the idea that there are similarities that can be extracted across all skills regardless of domain, thus offering an alternative to domain-specific explanations of performance. As discussed above, deception has many unique features which suggest it may not completely conform to the same pattern as other skills. Applying the framework to deception allows for expansion of the framework itself and provides the opportunity to review the utility of the GEF and consider whether adjustments should be made to it in order to accommodate socially undesirable (but nonetheless necessary) skills such as deception. By responding to the repeated calls from leading researchers to build a better understanding of deception, the current programme of work will enable the development of better theoretical models. Existing theories such as Activation-Decision-

Construction-Action Theory (ADCAT, Walczyk et al., 2014) and IDT (Buller & Burgoon, 1996) attribute expertise to liars without a clear justification for doing so.

Additionally, this research will shed light on poorly understood aspects of deception. For example, it is claimed that most lies are told by a few very prolific liars (Serota et al., 2010) but this population is not well understood. The idea of practicing increasing ability over time is fundamental to theories of skill progression (Anderson, 1982; Charness et al., 1996; Ericsson, 2006) making prolific liars an intuitively appealing candidate population for deceptive experts. However, these prolific liars are few and far-between, alternative approaches to estimating the value of practice in the development of deceptive skill will be adopted during the course of this research, in particular, using Dark Triad traits as a proxy for such practice. The rationale will be discussed below. Systematically examining the relationship between practice and performance in the deception domain will provide greater insight into the applicability of the GEF and whether deception may rightfully be considered a skill.

Gaining an improved understanding of any putative deceptive skill is especially important in applied settings such as law enforcement. The objective of a police interview is not merely to establish guilt. Information obtained from suspect and witness interviews is also used to direct the course of an investigation and prevent additional crime from occurring (College of Policing, 2016). This means that lying costs the criminal justice system time, resources and potentially risks public safety. Many criminal cases, even when investigated by the best qualified police departments, are capable of solution only by means of an admission or confession from the guilty individual or upon the basis of information obtained from the questioning of other criminal suspects. This is particularly true for certain crimes (e.g., rape) which in the UK has a consistently lower conviction rate than other types of crime (Crown Prosecution Service, 2021). All of this makes the existence of expertise in deception crucial to understand for everyday practice and policy making.

Known detection techniques are likely to be less effective with liars at different levels of expertise. If practice does indeed 'make perfect' at lying then repeat offenders, who have an average of 24 previous sanctions (Ministry of Justice, 2016), are at a distinct advantage when interviewed by police and prosecutors (Ekman, 1992). Indeed, the standardised nature of the

nationwide 'PEACE' investigative interview procedure which follows a prescribed format (Clarke & Milne, 2001), may be inadvertently enhancing lying skill amongst persistent criminals by providing task-specific practice. If expert liars are capable of the kind of concurrent monitoring and responsivity proposed by expertise theory then interviewers also need to be aware of their own verbal, nonverbal and paraverbal behaviours.

Although some previous studies on lying have tacitly included individual elements of expertise (Frank & Ekman, 2004), this is the first research to systematically apply the General Expertise Framework to deception. Bringing together the existing literature on deception and expertise combines forensic, social, and cognitive psychology in an original manner. Mixed methods research in which the same sample are measured quantitatively and qualitatively to produce a nuanced understanding of their experience and performance is methodologically unique for this area of psychology and will provide unprecedented insights.

1.6 Methodological Statement

As noted previously, this is a novel application of mixed methods to the examination of deception. Here follows a brief overview of the potential merits of such an approach. To explore whether deception conforms to skill-like features requires the rigorous examination of both internal processes and externally observable performance indicators. For example, the prevailing cognitive model of deception (ADCAT), recognises that metacognition and continued self-assessment are vital elements of lying successfully. Similarly, the GEF describes different mental representations held in the mind of an expert. These internal processes are not readily accessible to quantitative methods, as is evident by the frequent, successful use of qualitative techniques in the expertise literature, such as the Think Aloud method (Ericsson, 1998; Friedlander, & Fine, 2016). But making causal inferences about the role of practice and other individual differences and assessing the relative skill level of different liars requires objective measures of proven diagnostic value. Addressing such questions necessitates the blending of qualitative and quantitative techniques, pragmatically integrating the frameworks of each tradition into a programme of 'multi-strategy' research (Bryman, 2004) and exploiting the benefits of both under the Mixed Methods banner (Creswell & Plano Clark, 2017). By default,

qualitative research is supposed to be constructionist and inductive, whereas quantitative is realist and hypothetico-deductive (Denzin & Lincoln, 1994; Lincoln & Guba, 1985; Silverman, 1993). Following this logic, those who seek to use mixed methods must position themselves and their research somewhere in the space between these incompatible ontological and epistemological extremes. But this is a flawed premise that stems from the so-called 'science wars' of the 1990's (Morgan, 2007), during which there was a deliberate characterisation of qualitative praxis as opposing the then dominant quantitative research tradition. Advocates for each approach emphasised their incommensurability and in doing so created the illusion of two monolithic, internally coherent ideological positions. In practice, there is a large degree of overlap and at least as much internal heterogeneity as external (Bergman, 2008; Levine, 1993; Miles & Huberman, 1994), research is conducted with "a diversity that cannot be reduced to a dichotomy without serious distortion" (Hammersley, 1996, p. 164) and researchers rarely operate from a perspective that is purely qualitative or quantitative.

Still, the process of considering what can be known about the world and how that knowledge is best obtained is important. All scientific research should be conducted with an awareness of epistemology, but it need not be as proscriptive nor prescriptive as some literature has suggested (Bergman, 2008; Tashakkori & Creswell, 2007). This dissertation takes a pragmatic approach (Morgan, 2007; Rossman & Wilson, 1985) which is best described as "...asserting both that there is a single "real world" and that all individuals have their own unique interpretations of that world" (Morgan, 2007, p. 72). This owes much to the idea of Subtle Realism (Hammersley, 1992) in which it is recognised that phenomena in the social and physical world exist independently of our subjective ability to understand them, but that all interpretations of such phenomena are unavoidably constrained by the beliefs and perspectives of those involved – both researcher and research participants.

Deception is perhaps a unique case in that it deals with both the genuine 'real world' experienced by an individual as well as the false belief about that 'real world' they attempt to induce in another person. Therefore, understanding deception from the perspective of the liar requires a detailed understanding of their reality and confidence in their ability to communicate that perspective. To achieve this, the qualitative aspects of this research programme rely on

Hermeneutic Phenomenology – “the philosophical belief that human knowledge and understanding can be gained from analysing the pre-reflective descriptions of people who have lived the experience in question. In other words, the essence of the phenomenon is uncovered by gathering text from those living it and then interpreting this text” (van Manen, 1990, p. 7). This requires a degree of acceptance of the lived experience presented by research participants about their own deception.

When attempting to develop a comprehensive view of something as elusive as deceptive skill, synthesis of multiple evaluations is essential. A mixed approach allows for a single coherent strategy in which each research question and hypothesis is addressed by the method or combination of methods that can provide the most appropriate inference. Such an approach creates inter-dependencies within the data collection and analysis process, certain interpretations (study two) are only possible because other data (study one) exists. This means very deliberate decisions must be made about the order and weighting of different techniques, underpinned by a clear rationale. Many typologies that have been developed to codify combining methods (Bryman, 2008; Creswell, et al., 2003; Greene et al., 1989; Hammersley, 1992; Leech & Onwuegbuzie, 2009; Nastasi et al., 2010; Morse, 1991; Palinkas et al., 2011; Rossman & Wilson, 1985) reflecting the range of disciplines that rely on these techniques. To design an appropriate research strategy, it is first necessary to identify the purpose for including more than one approach which will guide decisions on implementation. Thus, because they form the basis of almost all later iterations, this dissertation uses the original framework of five purposes identified by Greene et al. (1989) outlined below:

- 1) **Triangulation** – using quantitative and qualitative methods to address the same question or phenomenon, seeking corroboration, validation, and convergence of conclusions.
- 2) **Complementarity** – using quantitative and qualitative methods to address related (overlapping) questions, seeking increased interpretability via elaboration, enhancement, and clarification of findings
- 3) **Development** - using the findings from one method to form the content of inquiry for the other, seeking identification and validation

- 4) **Initiation** – using quantitative and qualitative methods to reframe existing questions based on paradoxes or contradictions, seeking divergence and inconsistency of findings
- 5) **Expansion** – using quantitative or qualitative methods to address questions based on their fitness for purpose, seeking to expand the scope of inquiry and breadth of understanding via specialist techniques.

The purpose of using multiple methods in this programme of research is primarily expansion. The question of whether good liars have metacognitive awareness of their own ability like other experts, must be investigated qualitatively. Whereas the role of practice and responsiveness to feedback require quantitative, experimental methods. It is likely that there will be a degree of both complementarity and triangulation conferred by use of multiple methods, but expansion is the principal aim. Having established this purpose, it is a relatively simple matter to determine how to structure the research process. Creswell et al. (2003) specify mixed research designs should be based on; the order of data collection, the priority given to one or other approach, the point at which qualitative and quantitative methods are integrated and the presence or absence of a transformative agenda. Under this system the current research would be described as having a quantitative-dominant sequential explanatory design (Creswell et al., 2003). Quantitative data is collected and analysed first (study one) and used as the basis for sampling and data collection for the qualitative phase (study two). Studies three and four are larger-scale quantitative pieces of research addressing specific hypotheses. Integration is embedded in the programme of research from the beginning. Both qualitative and quantitative research questions have been formulated in connection with, and in response to each other and nested sampling strategies are used. But the main site of integration between methods occurs at interpretation, allowing analysis of each kind of data to be performed absolutely on its own terms.

1.7 Key terms and delimitations

1.7.1 Scope

Given the breadth of the theory and research in both expertise and deception, it is important to delineate the scope of the thesis. It is not the aim of this research to answer the question “what

makes a good liar?” although careful consideration must be given to that question in order to design tests of expertise that distinguish good from bad performers. Rather I seek to address whether lying shows the same features as other skilled activities as specified in the General Expertise Theory. To this end, it is necessary to measure performance and not perception, focusing on those elements of deception that are under the conscious control of the liar. This presents some challenges because lying is a communicative act so the extent to which someone is believed is a crucial part of their demonstration of expertise. Therefore, objective measures of performance are considered alongside subjective measures wherever possible.

1.7.2.1 Impact of Covid-19 pandemic. The “lockdown” restrictions made necessary by the SARS Covid-19 pandemic impacted the scope and direction of this research. The original plan was for study one to comprise a sample of $n = 80$ based on an a priori power calculation. Both study three and study four were planned to incorporate an in-person element. A sub-sample from each study was to be invited to an in-person interview, during which they would be asked about the truthful and deceptive accounts they had provided online. This was designed to test whether participants could replicate their deceptive performance from the written context in a more challenging multi-channel environment. Such a design would allow for a test of context consistency as well as temporal consistency and for responsiveness to feedback to be tested in a naturalistic way by providing nonverbal cues to suspicion. The full Matrix of measures from study one would have been used to assess performance in the in-person interviews for studies two and three and a complete picture of deceptive skill could be presented and compared for each participant. Study two was also initially designed to have a larger sample. Recruitment for this study was always dependent on participation in study one, which results in a limited sampling population. The curtailment of recruitment for study one meant a smaller potential and actual sample for study two.

A ban on in-person testing was instituted by Goldsmiths College from March 2020 until June 2022 necessitating radical changes to the research programme. Data collection for study one was in progress, but all existing appointments had to be cancelled, and no further data could be collected. This resulted in a much smaller sample ($n = 40$) than intended. Studies two and three were radically transformed to take place online only. This allowed for a larger sample to be

recruited as all efforts were focused on this and the restrictions on usual activities may have made potential participants more likely to take part in online research. Study two data collection took place in parallel with study one and so it was still possible to complete five interviews which was sufficient to conduct a full thematic analysis.

1.7.2 Lie Effect as measure of performance.

This programme of research uses a lie effect (truth-lie difference score) to compare participants. The magnitude and not the direction of the lie effect is how skill is demonstrated, so absolute difference scores are used. Specifically, the ability to minimise differences in verbal, nonverbal and paraverbal behaviour when lying and truth telling is how deceptive performance is operationalised. Where smaller difference scores indicate better performance. This is the logical approach to measuring relative performance when group level effect sizes are small (Luke, 2019). Zuckerman et al. (1984) report that liar-specific training in deception only improved accuracy for subsequent lies by the same person but did not generalise to other liars. Demonstrating how idiosyncratic techniques are used to achieve the same goal of telling believable lies. A lie effect can be calculated across a range of variables making it suitable for use throughout all three quantitative studies and it accords with current best practice. Leading deception researchers (Nahari et al., 2019) have called for more within-participants designs incorporating an individual (truthful) baseline to be used. Not only does this improve the internal validity of the design, but it also overcomes the issue of idiosyncratic cues (Vrij, 2016). There are large inter-individual variations in verbal and nonverbal behaviour and physiological responses (DePaulo & Friedman, 1998) making arbitrary 'cut off' points for various cues unhelpful.

1.8 Ethics declaration

The research in this thesis was designed according to the Code of Human Research Ethics of the British Psychological Society (Oates et al., 2021). All studies were approved by the Research Ethics Committee of the Psychology department of Goldsmiths College who ensure compliance with the Universities UK Research Integrity Concordat (Universities UK, 2019).

2. Theoretical Overview

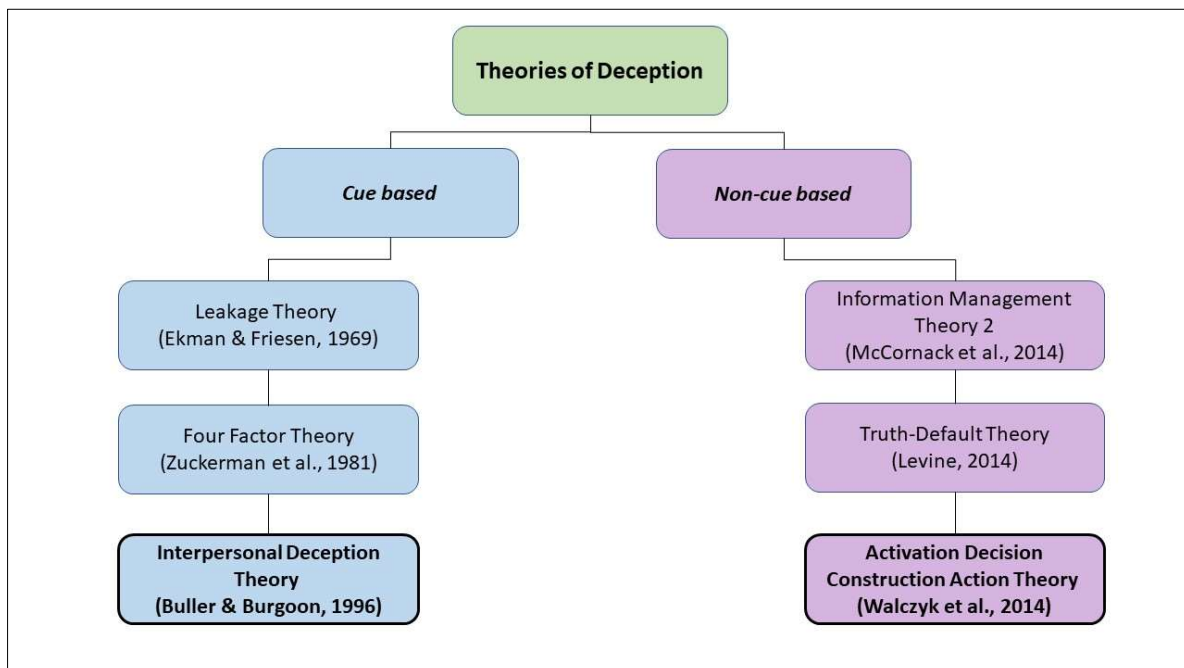
This chapter first provides an overview of the main theoretical approaches to deception with the aim of identifying the most appropriate models to apply to deceptive expertise. Then specific populations of theoretical interest are outlined. General Expertise Theory is explained in detail, and a way of synthesising this with existing deception theory is proposed. Finally, hypotheses are provided based on the synthesis of Interpersonal Deception Theory (IDT), Activation-Decision-Construction-Action Theory (ADCAT), and General Expertise Theory (GEF).

2.1 Deception Theory

Although deception has long been criticised for having limited theory (Happel, 2005; Iacono, 2000; Masip et al., 2016) attempts have been made to provide a framework within which to study lying effectively. Figure 1 outlines the two main approaches taken in recent years.

Figure 1

Visual representation of deception theories



Note: The items bordered in bold form the main theoretical basis for this programme of research

2.1.1 Cue based theories.

Cue based theories rely on the assumption that lying, and truth-telling are fundamentally different experiences that will evoke different responses in the liar (or truth-teller), some of which will be detectable in the form of cues. The focus is thus on individual cues rather than individual liars.

2.1.1.1 Leakage theory. One of the earliest attempts at a formal theory of deception, in this context 'leakage' refers to the unconscious display of deception cues (e.g., incongruous emotion or generalised arousal) through nonverbal behaviour, especially involving the face, hands and feet (Ekman & Friesen, 1969). Because the verbal channel is believed to be the easiest to control (Ekman & Friesen, 1974) the focus of this theory is on nonverbal and paraverbal behaviour. Most of the testing of this theory involved speakers attempting to falsely communicate positive affect. There are links to Ekman's theories of universal human facial expressions of emotion (Ekman & Friesen, 1971), with the suggestion that an expression characteristic of sadness would pass across the face of a patient attempting to conceal their suicidal thoughts no matter how much their words were manipulated to portray a different state of mind (Ekman & Friesen, 1969). The theory is limited by its narrow focus on the affective element of lying, emphasising the emotions evoked by lying itself (e.g., guilt or fear) as well as lies about emotion.

2.1.1.2 Four factor theory. Zuckerman et al. (1981) built on the idea of leakage and extended it to include four psychological processes that occur when lying: generalised arousal, affective response, cognitive load, and attempted control. Each of these processes has behavioural correlates which lead to cues that may be detectable. This theory proposes that heightened arousal may lead to an increased heart rate, higher vocal pitch and pupil dilation. An emotional response is usually negative like guilt or fear but could also be the joy of getting away with lying, so-called "duping delight" (Ekman, 1992). As per the leakage theory, such affect may be shown in facial expressions, or fidgeting. Cognitive load refers to the mental effort required to lie. The strain on memory and processing that happens when inhibiting a truthful response and producing and delivering a plausible lie. This is typically given away in things like speech errors, stumbling, hesitations, repetitions and longer pauses which has been

demonstrated experimentally (Anolli & Ciceri, 1997; DePaulo, et al., 2002; Vrij, 2000; Vrij & Mann, 2001; Mann et al., 2004). Finally, attempted control is the idea that liars are conscious of the fact that they are lying and may betray themselves. This awareness results in an effort to control behavioural cues which leads to overcompensation. Unnatural stillness or maintaining excessive amounts of eye contact would be signs of attempted control providing deceptive cues. By expanding the scope of deception to include factors beyond emotional leakage, this multi-factor approach provided the basis for cognitive load approaches to deception (Vrij et al., 2008). But Four Factor theory does not provide any detail of the cognitive mechanisms of lying.

2.1.1.3 Interpersonal Deception Theory (IDT). In contrast to the preceding two theories, IDT emphasises the interactive nature of deception, describing a dynamic process in which both liar and target are reactive to one another. The processes outlined in Four Factor Theory are retained under IDT, so the liar must still manage behavioural displays of arousal, affect and cognitive load. But they must do so while paying close attention to overt and covert signs of suspicion from their target and reacting accordingly. IDT outlines a three-phase model of deception. The pre-interaction phase involves the setting of expectations for both sender and receiver. Based on existing knowledge and goals, detection apprehension and suspicion respectively are created. In the interaction phase an initial deceptive verbal and nonverbal behaviour by the sender is evaluated by the receiver, who may communicate suspicion. If this happens, the sender must respond by adjusting their verbal, nonverbal and paraverbal behaviour to reduce receiver doubts (Buller & Burgoon, 1996; Burgoon et al., 1995; Burgoon & Levin, 2010; Buller et al., 1991). The post interaction phase is where the sender appraises their performance and evaluates their own deception success, and the receiver assesses the credibility of the sender and decides whether or not they believe the communication presented. The demands of this process are non-existent for truth tellers, who have no detection apprehension, no need to monitor themselves for signs of deception nor their target for signs of suspicion and can instead focus only on delivering their (truthful) message. IDT is a cue-based theory that aims to identify both the initial cues a liar might provide, as well as their responses to signs of suspicion. Responses might include uncertainty and vagueness, non-immediacy (e.g., pausing) and withdrawal through body position or eye contact (Buller &

Burgoon, 1996). This theory describes deception as an effortful process, emphasising the social cognitive processes which make the behaviour of liar and target interdependent.

2.1.2 Non-cue theories

Where cue theories are focused on the behavioural correlates of deception and how these can be used to enable detection, more recent non-cue theories consider the internal strategies and cognitive processes involved in deception. Such a change from the lie detector to the lie producer allows for greater consideration of differences in ability between liars.

2.1.2.1 Information Management Theory 2 (IMT2). IMT2 presents lying as problem solving and encompasses three themes: intentional states, cognitive load, and information manipulation. The intention to deceive is based on what course of action is the most efficient and it can be fluid, with senders “changing course from truth and deception (and back again) while they incrementally construct their turns-at-talk” (McCornack et al., 2014, p. 364). Under this theory both truth tellers and liars are affected by cognitive load when communicating and deception is only chosen when it is the less demanding of the two options. The information manipulation theme which this theory is named for, refers to the ways in which a liar might violate Grice’s maxims of communication based on the Cooperative Principle (1989). Grice maintained that two communicators have implicit expectations of one another in terms of the quality, quantity, relevance and manner of information shared. Liars breach these expectations by knowingly providing false information, or by omission or they may deliberately obfuscate or distract their conversation partner.

As a theory of deception production, IMT2 provides an explanation for not only why a person may choose to deceive but also how, acknowledging that there are multiple ways to achieve the goal of deception besides an outright falsification. Instead of a truth versus lie dichotomy, IMT2 presents a range of communication choices in which deception may be the most efficient way of achieving the sender’s current goal.

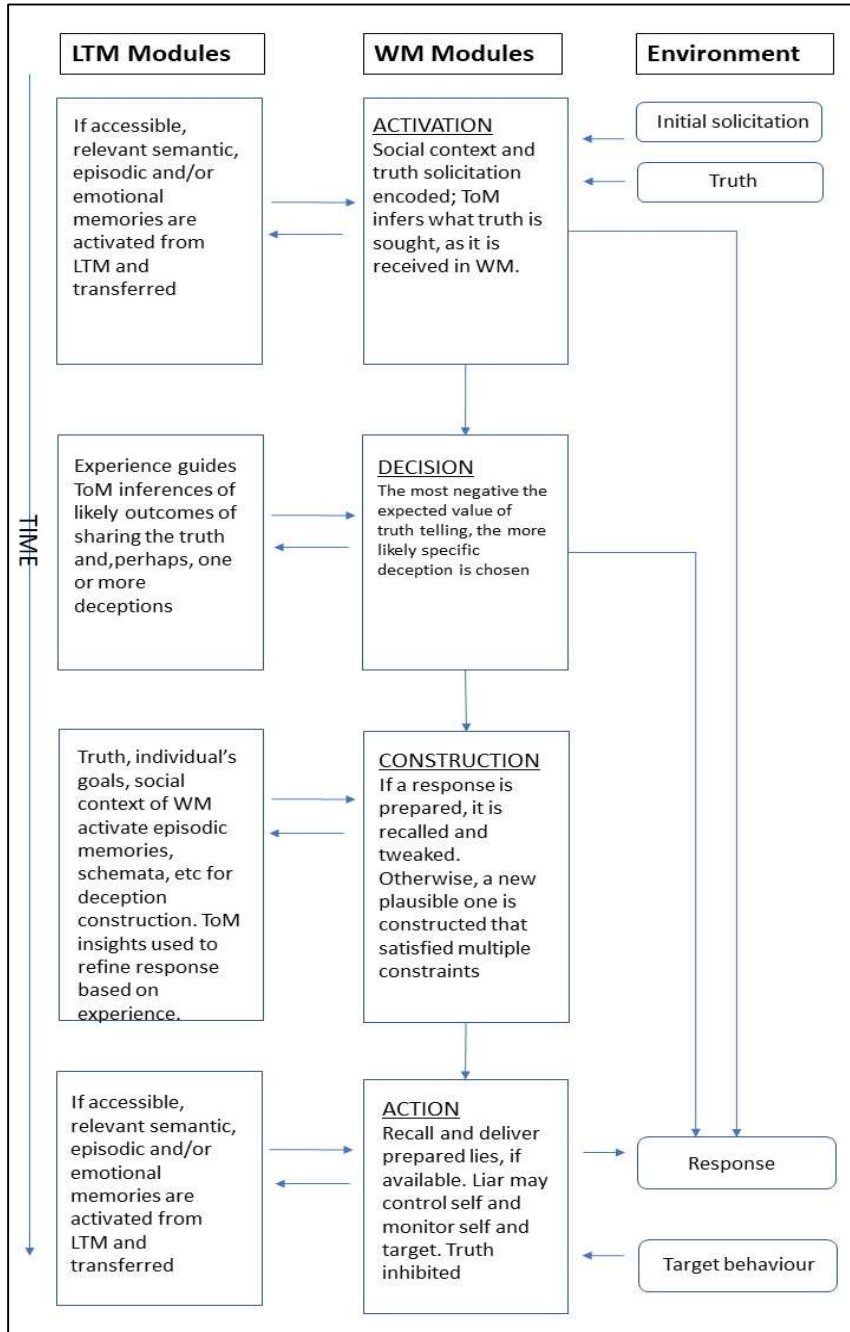
2.1.2.2 Truth Default Theory (TDT). Whereas IMT2 is a theory about deception production, Truth Default Theory focuses on detection. But unlike cue-based theories, TDT rejects the utility of using discrete verbal and nonverbal behavioural cues. Instead suggesting that deception must be viewed within the context it takes place for detection to be effective. As

the name suggests, Truth Default Theory stipulates that receivers tend to default to assuming communication is truthful and because most people are truthful most of the time, this is an adaptive bias (Levine, 2014). Under this model, liars vary in the extent to which they have an 'honest demeanor' (a collection of behaviours and appearance that influence how others judge their credibility despite being uncorrelated with actual honesty). This emphasis on targets and their tendency to assume truthful communication, unless a very high threshold for suspicion is reached, means that TDT implicitly characterises most successful liars as high performers. Levine (2010) contends that the reason for the slightly above chance accuracy of human lie detection is because most people who choose to lie are very good and escape detection, while a few are so poor that they account for the majority of the accurate judgements. Truth Default is notable for its insistence that laboratory-based experiments create an unrealistic test for both liars and lie detectors because of the artificial truth-lie base-rate and lack of choice as to whether to lie or not in said situation. Experimental tests tend to show would-be detectors stimuli with 50/50 lie/truth rate which (Levine argues) does not reflect reality where most senders are honest most of the time.

2.1.3 Activation-Decision-Construction-Action Theory (ADCAT). A revision and extension of an earlier model (Walczyk et al., 2003) in which liars perform a cost-benefit analysis, weighing up the cognitive and social consequences of truth telling and lying in any given situation. A truth solicitation causes involuntary *activation* of the truthful response, this then leads to a *decision* about whether it is better to lie or tell the truth, if deception is selected *construction* of a lie occurs and the *action* component is the process of delivering the lie. This depiction of deception makes demands on theory of mind, working memory, and executive control functions, thereby connecting it with earlier, less specific, cognitive load theories such as the Four Factor Theory.

Figure 2

Simplified interaction of information and socio-cognitive processing within ADCAT



Note: Adapted from “A social-cognitive framework for understanding serious lies: Activation-decision-construction-action theory.”, by J.J. Walczyk, L.L. Harris, T.K. Duck and D Mulay, 2014, *New Ideas in Psychology*, 34, 22–36

(<https://doi.org/10.1016/j.newideapsych.2014.03.001>.) CC BY-NC-ND license

Crucially, lying is not necessarily *more difficult* than truth-telling. Under certain circumstances activation may cause a stored lie rather than truth to be brought to conscious attention. Although the default for most situations is an honest response, deciding to lie in advance and/or anticipating truth-solicitation lowers the intrinsic cognitive load when eventually lying which may actually make it easier. Figure 2 demonstrates the complexity of this comprehensive model but Walczyk et al (2014) point out that “Although components are presented sequentially as distinct processing steps for illustration, they often execute *automatically, unconsciously, seamlessly, and in parallel.*” (p. 25, italics in original). This means that deception can be a relatively effortless process under the right circumstances, or for the right individual. For example, the authors suggest that while the four components occur deliberately in high stakes lies, under lower stakes (the more common type of deception) they execute more automatically (Walczyk & Frageron, 2019).

2.1.3. Theory integration

There is a clear progression over time from relatively simplistic accounts to more complex, fully articulated theories. Thus, IDT is the most complete of the cue-based theories and ADCAT provides the most comprehensive social and cognitive framework. Early cue-based theories reduce the liar to a mere producer of cues not a skilled performer, making them unsuitable for application to this research. In addition to providing less extensive explanations, IMT2 and TDT adopt functional definitions of deception which do not require conscious intent making them incompatible with expertise as defined previously. Despite their differing focus, both IDT and ADCAT emphasise that deception is situationally contingent. A sender’s expectations, goals, prior experience and cognitive functioning may differ, the contexts in which deception takes place also vary which influences the suspicion levels of the receiver as well as cognitive load and thus the way lying is enacted. By combining theories from cue and non-cue-based approaches, it is possible to develop a view of what deceptive performance entails, which can be used to examine the extent to which deception is a domain in which expertise can be demonstrated.

2.2 Deceptive populations

There are several populations of specific theoretical interest based on an inordinately high self-reported frequency of lying, or because they have a dispositional inclination towards lying which makes them plausible candidates for the extremes of deceptive performance i.e., experts.

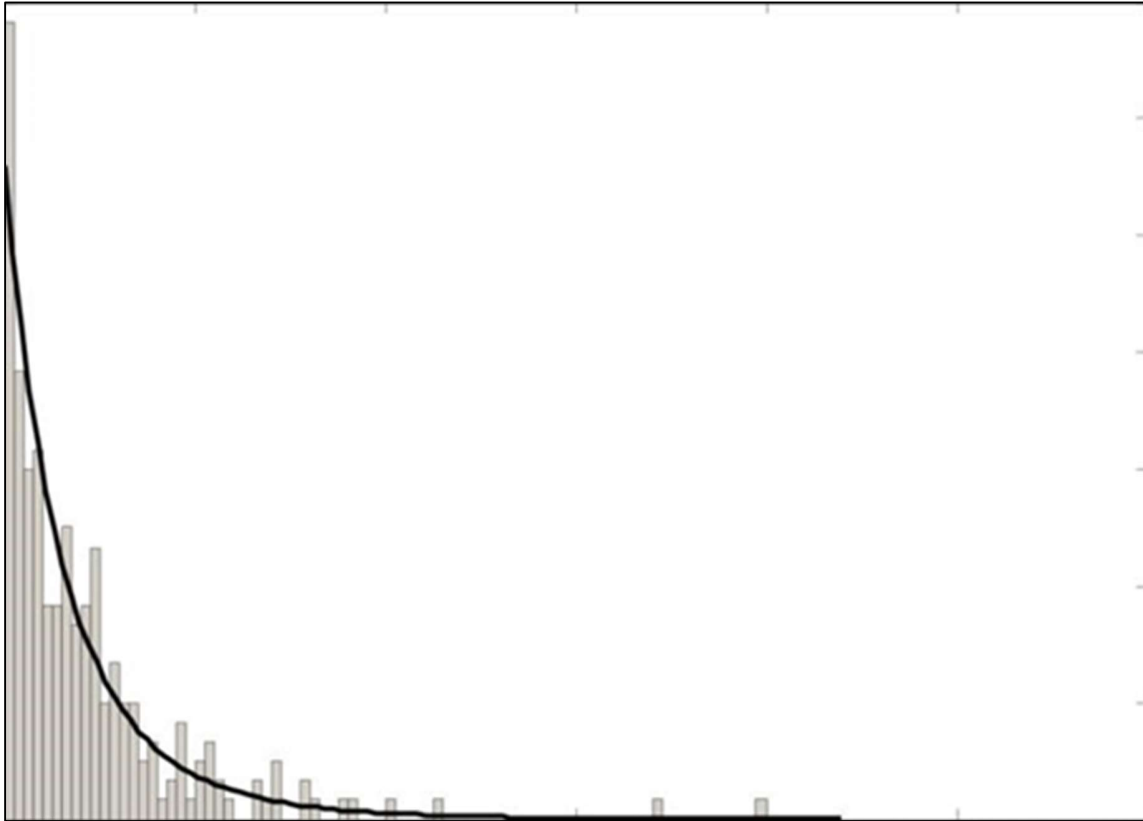
2.2.1 Prolific Liars.

The often-quoted finding that most people tell 1-2 lies per day is an inaccurate reflection of reality. This is based on the mean number of lies told as reported by DePaulo et al (1996; 2004) and assumes a normal distribution where the mean is also likely to be the modal number of lies told. In fact, lying frequency distribution is decidedly non-normal. Multiple large-scale diary studies show that most lies are told by a small number of people, while a high proportion of respondents report telling no lies at all (Daiku et al., 2021; DePaulo et al., 1996; Halevy et al., 2014; Levine, 2020; Park et al., 2021; Serota et al., 2010; Verigin et al., 2019). In one study specifically aimed at locating frequent liars, just 5% of respondents were responsible for more than half of the total reported lies and a very prolific 1% of respondents accounted for 22.7% of all lies told (Serota & Levine, 2014). These individuals also self-report an increasing level of deception frequency across their lifespan (Serota & Levine, 2014) in contrast to the usual peak in adolescence and steady decline thereafter (Debey et al., 2015). Rather than the assumed bell-shaped curve, this more closely resembles a Pareto distribution (see Figure 3).

Lying frequency requires self-report from the liar themselves, and like all self-reported measures of antisocial behaviour may be subject to socially desirable responding and issues of inaccuracy due to lack of insight or memory (Gnambs & Kaspar, 2015; Tourangeau, 1999), though the ubiquity and impact of these presumed issues have been refuted (Chan, 2009). Indeed, self-reported lying frequency has been shown to correlate with actual deceptive behaviour in cheating tasks (Halevy et al., 2014; Markowitz, 2020), demonstrating that liars can and will accurately report their lying prevalence. So, the results showing the existence of prolific liars are likely to show their actual rate of deception rather than reflecting a socially desirable response bias.

Figure 3

A typical Fitted Generalized Pareto Distribution of a rare event such as lying.



Note: From “A Structural Approach to Estimate Market-Assessed Sovereign Credit Risk,” by J. Wang, J. Svec and M. Peat, 2012, *Sovereign Credit Risk* (SSRN Scholarly Paper No. 2132215), p. 24

(<https://doi.org/10.2139/ssrn.2132215>). Copyright 2012 by Elsevier

^aThis figure shows the probability density function of a generalized Pareto distribution fitted to a frequency bar chart of an infrequently occurring event (such as self-reported lying).

2.2.2. Dark Triad.

The dark triad (Paulhus & Williams, 2002) is a constellation of three overlapping, but distinct personality traits - narcissism, psychopathy, and Machiavellianism - which share a core of moral disengagement and socially aversive behaviour (Jones & Paulhus, 2009). Although related to the clinical diagnoses of narcissistic personality disorder and antisocial personality disorder, these descriptors refer to quantitative traits in the non-criminal, sub-clinical population (Furnham et al., 2013). Narcissists typically display a sense of entitlement, grandiose self-importance, and a desire for dominance (Ames, Rose & Anderson, 2006). Machiavellians are

emotionally cold, with a cynical worldview that justifies their use of strategic manipulation (Christie & Geis, 1970). While psychopaths are callous, low in empathy and lacking remorse and high in impulsivity and risk-taking behaviour (Paulhus, Neumann & Hare, 2009). All three are driven to use deception to achieve their anti-social aims (Rogers & Cruise, 2000) and Machiavellianism and psychopathy are both defined in terms of having greater ability to deceive (Christie & Geis, 1970; Paulhus & Williams, 2002).

Research supports the characterisation of the dark triad as habitual liars (Azizli et al., 2016; Jonason et al., 2014; Jones & Paulhus, 2017; Markowitz, 2022). Recent research shows that those high in these traits also report lower cognitive load and less negative affect when lying (Forsyth et al., 2021; Turi et al., 2022). Machiavellians and psychopaths also both showed a drop in cortisol immediately following a deception task indicating that they do not experience lying as stressful (Dane et al., 2018). Such a lack of emotional arousal and cognitive load would reduce many potential cues to deception (Vrij, Fisher et al., 2006).

2.2.3. HEXACO personality model.

The HEXACO personality framework is also of interest for deception. This six-dimension model adds “the H factor” of Honesty-Humility (Lee & Ashton, 2004) to the more traditional Five Factor model (Costa & McCrae, 1992) to create HEXACO – Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness. Although created with the same lexical approach as other trait taxonomies, HEXACO incorporates a wider range of languages making it more generalisable to non-WEIRD samples (Lee & Ashton, 2008).

Those who score low in Honesty-Humility are characterised as “sly, deceitful, greedy, pretentious, hypocritical, boastful, pompous” (Ashton & Lee, 2008 p. 1953, emphasis added) and high scores on the H factor are negatively associated with the dark triad (Muris et al., 2017). The theoretical implications for deception are supported by research evidence. Those high in Honesty-Humility show lower cheating scores (O’Connor et al., 2022) while low Honesty-Humility is associated with deceptive dating strategies (Holden et al., 2015) and deceptive impression management (Roulin & Bourdage, 2017). Although recent research suggests that this group may in fact tell more prosocial lies leading to the conclusion that “Pure lying aversion does not appear to be the core aspect of Honesty-Humility.” (Paul et al., 2022, p. 3).

Nonetheless, both high and low scorers on the H factor are of interest to deception researchers.

Finally, extraverts are also linked with a greater self-reported frequency of lying (Kashy & DePaulo, 1996) and greater actual use of deception in interactive situations (Conrads et al., 2013; Gylfason, 2016; Sarzyńska et al., 2017). In the case of the diary study results, more self-reported lies may simply be a product of having more opportunity to lie because of the tendency of those high in extraversion to seek out interactions (Ashton et al., 2002). Socially motivated extraverts may also choose to tell a greater number of 'white' lies to facilitate interaction with others. Hart et al. (2020) found that extraversion was negatively linked with self-serving lies.

2.3 General Expertise Framework

In an attempt to synthesise a global theory of expertise, cognitive psychologists have examined performance in such diverse groups as chess players, musicians, athletes, radiographers, toxicologists and fighter pilots (Anderson, 1982; Ericsson et al., 1993; Grabner et al., 2007; Macnamara et al., 2014, Schneider, 1985). The similarities observed across these areas suggest that certain generalisable principles of expertise exist regardless of domain. Indeed, expertise has been described as "...a characteristic that persistently distinguishes one individual from another despite variation in the circumstances in which individuals are found" (Horn & Masunaga, 2006, p. 587). Knowledge is organised differently in the expert mind in terms of concept, content, and context; and the application of domain-specific knowledge is more selective and effective (Anderson, 1982). Expertise is a distinct status and not simply an expression of higher intellect. Although intelligence and working memory predict skill in several domains (Grabner et al., 2007; Meinz & Hambrick, 2010; Schmidt & Hunter, 2004), even with equivalent general intellectual functions, an expert can function faster and with less effort than a nonexpert (Ceci & Liker, 1986; Woollett et al., 2009). The features of practice, consistency, meta-awareness, and responsiveness characterise expertise across diverse fields of performance.

2.3.1 Differentiating expert from non-expert

2.3.1.1 Terminology. The process of acquiring expertise is stage-like, with observable qualitative changes occurring on the trajectory from novice to expert. Hoffman (1998) categorises these stages using the language of the craft guilds of the Middle Ages. From a Naivette who is completely ignorant of the domain, through the incremental steps of Novice, Initiate, Apprentice, Journeyman and Expert to the final stage of Master “one of an elite group of experts whose judgments set the regulations, standards, or ideals” (p. 85). This was a first attempt at providing an operational definition of the process of skill development and Hoffman's mapping of the archaic and gendered titles to specific stages of expertise is unsatisfactory. An alternative framework is the five-stage phenomenological model of Dreyfus and Dreyfus (1980; 1995) which accounts for progression between stages with clear differences in understanding, discrimination, and application of abstract rules.

The Dreyfus and Dreyfus stages are as follows:¹

- *Novice* – Faltering performance, can recognise the basic elements of the domain and knows a few abstract (non-contextual) rules. In deception this might be “don’t break eye contact”
- *Competent* - Competent performance, understands how to apply rules in context. Based on experience of patterns can recognise and correct some of their own errors as they happen and has an awareness of feedback
- *Proficient* - Improved performance, begins to use maxims to guide actions. Behaviour is guided by overall strategic goals and recognition of problem is holistic rather than decomposed
- *Expert* – A high level of performance. The repertoire of experienced situations is so vast that new situations prompt an intuitively appropriate action. This intuition is possible because each type of situation now has associated with it a specific response. This happens without consciously applying any rules.

¹ A later version (Dreyfus, 2004) included the intermediate stage of ‘Advanced Beginner’ after Novice. The original stages are adopted for the current research.

- *Mastery* – this stage is like a flow state, an occasional peak performance experience felt by some experts who can let go of all conscious effort and exist in the moment. One cannot *be* a Master, but one can experience moments of mastery which are fleeting and require no mental effort or energy at all.

For Dreyfus and Dreyfus (1980), an expert is a non-analytical, response-based performer whereas a novice mechanically applies rules without consideration. Although experts may experience their decisions as intuitions, in fact they are applying accumulated experience to novel situations. It has been observed that “The most qualitatively distinct difference lies between the competent and proficient level, where the practitioner begins to read the situation. The proficient performer begins to increasingly change his or her perception of the nature of the situation and then deliberates about changing plans or strategies in response to the new understanding of the situation” (Benner, 2004, p. 198).

2.3.1.2 Qualitative differences. Hoffman (1998) makes clear that the demonstrably superior performance of experts is facilitated by different mental composition. Experts and novices reason differently, they apply strategies in a different order, with different emphasis, faster and more flexibly. Expertise is not just *what* is known, but *how* it is known. How knowledge is represented in memory systems and how it is applied based on mental models and schemas is what accounts for the observable differences between novice, intermediate and expert (Chi et al., 1992). This idea is described by Horn and Masunaga (2006) as three interrelated domains: expert knowledge, expert memory and expert reasoning. In the mind of a highly skilled performer, expert knowledge (domain-specific information) is stored and represented within expert memory (superior in capacity to standard working memory) that allows for expert reasoning (rapid, schema-driven, and creative) to be carried out. Through repeated enactment a complex process involving many individual parts is represented as a single cognitive unit, requiring less effort and time, and increasing fluency (Greene, 1984). There is evidence to support the idea of these specialized systems. A clear memory advantage for experts over novices is demonstrated in such disparate populations as ballet dancers (Starkes et al., 1987), chess players (Simon & Chase, 1973), and computer programmers (Adelson 1981; McKeithen et al., 1981) and this effect generalises to chemists, policy makers,

circuit designers, nurses, mathematicians, radiologists, telephone system operators, and musicians (Hoffman, 1992). Importantly, this is not indicative of superior memory in a general sense. Experts' memory is only better than non-experts for representative stimuli from their domain. No effect is seen when using non-domain relevant stimuli or nonsensical arrangement of recognisable stimuli (Starkes, 1987; Starkes & Deakin, 1984). For example, chess masters could not recall randomly placed pieces on a board but had near perfect memory for briefly presented boards showing actual game play (de Groot, 1966; Simon & Chase, 1973). The best explanation for this very specific memory advantage is that domain-relevant knowledge is organised more conceptually, effectively 'chunking' a large number of individual items into conceptual groups that are associated and networked (Ericsson & Kintsch, 1995; Horn & Masunaga, 2006) increasing capacity and retrieval speed.

Differences can also be observed in the way experts apply their knowledge and memory. The eye movements of expert radiologists differ from novices because they are making holistic judgements of a case rather than attending to individual diagnostic features (Hoffman, 1996). They can identify anomalies in x-ray images faster than novices (Lesgold et al., 1988) because they apply case-based reasoning, matching the image in front of them to thousands of previously seen examples (Myles-Worsley et al., 1988). Expert computer programmers not only remember a greater amount of information more accurately, but they also organize it in a domain-relevant way (e.g. by the meaning of words as used in a specific programming language versus the basic orthographic or mnemonic system used by novices). Via the dual processes of generalisation and discrimination, experts increase their ability to apply existing knowledge to novel problems (Anderson, 1982).

Neurophysiological research shows vastly reduced activation in the brains of experts when compared to novices performing the same task and, in some cases, functional re-organisation (Hill & Schneider, 2006). This increased processing efficiency means that experts are able to function with speed and ease compared to non-experts. The reduced activation is localized to a so-called 'control network' in the frontal cortex and, like the previously discussed behavioural measures, this applies across a diverse range of skills (Kelly & Garavan, 2005).

2.3.2 The role of practice

Practice is the foundation upon which expertise is built. Each of the other defining features of skill (consistency, meta-awareness, and responsiveness) require practice to develop. Plotting the logarithm of various indices of performance (e.g., performance speed, error rates, quality of performance) against the logarithm of the trial number yields a straight line (Ward et al., 2004). This has been referred to variously as the Ubiquitous Law of Practice, the Log-Log Linear Learning Law, or the Power Law of Practice (Newell & Rosenbloom, 1981; Ward et al., 2004) and it holds true across domains. Diary study research in multiple areas encompassing sport, music, typing, chess, and more shows that there is a positive relationship between the volume of accumulated practice an individual has and their level of performance (Ericsson, 1996; Ericsson et al., 1993; Ericsson & Lehmann, 1996; Hambrick et al., 2020; Helsen, et al., 2000; Macnamara & Maitra, 2019; Simon & Chase, 1973; Starkes et al., 1996). Horn and Masunaga (2006) define practice as “focused, programmatic, carried out over extended periods of time, guided by conscious performance monitoring, evaluated by analyses of level of expertise reached, identification of errors, and procedures directed at eliminating errors.” (p. 601). This implies a level of dedication to the domain of interest rather than a casual accrual of experience.

While all expertise researchers acknowledge practice as a principal element of expertise, the exact type and volume is the subject of ongoing debate (Ericsson et al., 1993; Ericsson, 2007; Hambrick et al., 2014; Mcnamara & Maitra, 2019). Popular science books quote the ‘ten thousand hours rule’ as the requisite amount of practice for expertise (Gladwell, 2008). This idea began with the observation that chess masters take around 10 years at a rate of around 1000 hours per year, to develop their superior abilities (Chase & Simon, 1973) and this seemed to generalise across different types of skill including sports, arts and cognitive endeavours (Bloom, 1985; Ericsson et al., 1993; Starkes et al., 1996). Even the case of apparent savants or child prodigies like Mozart reveal on closer examination the presence of a large volume of practice (Hayes, 1989).

2.3.2.1 Nuances of Practice. Ericsson makes a clear distinction between mere repetition and deliberate practice. Simply repeating an activity in the absence of conscious effort to

improve will not lead to expertise and in fact could entrench bad habits. Under his Deliberate Practice Framework, practice is an effortful structured activity, involving self-evaluation against templates or exemplars and is conducted “...with the primary purpose of attaining and improving skills...” (Ericsson, et al., 1993, p. 367). Time-use studies looking at the practice diaries of chess players (Charness et al., 1996; De Bruin et al., 2008), violin players (Ericsson et al., 1993), wrestlers and figure skaters (Starkes, et al., 1996) all seem to support this idea, showing that what distinguishes ‘good’ from ‘best’ performers is the amount of time spent in deliberate (often solitary) practice.

But the claim that deliberate practice alone will lead to monotonic improvement in performance has been challenged by more recent research. A re-analysis of existing studies reported that deliberate practice accounted for 34% of the total variance in performance for chess and 30% in music (Hambrick et al., 2014). A meta-analysis of 88 articles (Macnamara et al., 2014) found that the overall percentage of variance explained by deliberate practice across music, games, sports, education, and professions was just 14%. While a replication of the original Ericsson et al (1993) study was not able to repeat the results (McNamara & Maitra, 2014). Although accumulated amounts of deliberate practice did rise with skill level, significant differences were only seen between ‘good’ and ‘less good’ violinists but not between ‘good’ and ‘best’. In fact, by age 18, the majority of the ‘best’ violinists had less cumulative practice than the average amount of the ‘good’ group. The same pattern was observed in chess players, where one third of the masters had less self-reported practice than the mean of the next group down in ability (Hambrick, et al., 2014).

There is no dispute over the role of practice in intra-individual performance. The journey from novice to expert requires many hours of rehearsal. But several researchers argue that the role of deliberate practice has been overstated when considering inter-individual performance (Hambrick et al., 2020). So that it may not be the defining aspect that distinguishes the ‘good’ from the ‘great’. Further, not all highly skilled activities require deliberate practice as defined by Ericsson (Tiselius, 2014) and ‘mastery’ can occur with relatively low levels of deliberate practice (Gobet & Campitelli, 2007) or in its absence (Tiselius, 2014). Barnes (1987) states that in surgical skill development “skill retention correlates with the level of initial proficiency and not with

practice" (p. 423) which is not to negate the role of practice entirely, but rather emphasise that its role is dependent on other factors (Campitelli & Gobet, 2011). Developmental influences such as the age at which the skill is first learned, cognitive ability and even personality can all account for differences in skill level attained (Hambrick 2020).

2.3.3 The importance of consistency

Expertise is not a one-off example of high performance, but must be demonstrated consistently (Bornstein et al, 2017; Glaser, 1976; Lewis, 1956). A novice might show a single instance of high performance, but the hallmark of expertise is consistency. Because of the complexity and multi-faceted nature of most skills, two experts may not display identical presentations of expertise, but both will reliably out-perform non-experts in domain-relevant tasks. Consistency is "the steady state of attained performance" (Ericsson 1996, p. 304) meaning that it is reliable. As discussed above, skill development involves a progression of level-based qualitative increments from a literal understanding of the task to conceptual comprehension (Hoffman, 1998). But whether expertise has been attained can only be determined once ability stabilizes at the end of this process.

2.3.4 Meta-awareness and calibration

The degree to which experts show meta-awareness of their own skill is contested. With one school of thought suggesting that in experts' knowledge is transformed from procedural to declarative (Anderson, 1982; Karmiloff Smith, 1994) and that because of their insight, experts can reliably assess and describe their own performance in whilst in action and retrospectively (Schneider, 1985). Whereas others argue that an expert relies on intuition rather than reasoning, so they cannot explain their own behaviour (Dreyfus & Dreyfus, 1980; Fitts & Posner, 1967). Indeed Hoffman (1998) describes the reasoning processes of experts as so internalised that they manifest as perception, such that highly skilled individuals experience 'seeing' things that others cannot or viewing action in slow-motion. In this framework the shift in knowledge is from declarative to procedural so that judgement becomes intuition, making meta cognition more difficult.

Real world illustrations of both effects abound. Olympian Mark Cavendish, winner of more sprint stages of the Tour De France than any other cyclist in history is renowned for being able

to recount the exact features of any course he has ever raced including every pothole, as well as the precise decisions he made and actions he took in each race and why and how victory or defeat ensued. Something his manager described as “...when you are actually conscious of your subconscious” (Liew, 2013). In contrast, during World War II there was a requirement to train additional ‘plane spotters’ who could identify rapidly and with few visual cues, whether approaching aircraft were enemy or ally. But the nature of the skill held by existing experts was such that they were incapable of training others, unable to put into words what they just ‘knew’ when performing the task (Allan, 1958). Similarly, the case of expert chicken sexers who can classify 1000 day-old chicks in an hour at rates of 98% accuracy yet find the basis on which they perform this task inaccessible to introspection (Horsey, 2002).

An inability to articulate can be explained by the different mental representations being used. A novice accesses information in a simplistic way making it easy to explain, whereas an expert applies a complex schema or network in a way that is rapid and effortless. So that as skill becomes more automatic, it is less accessible to declarative memory (Hoffman, 1996).

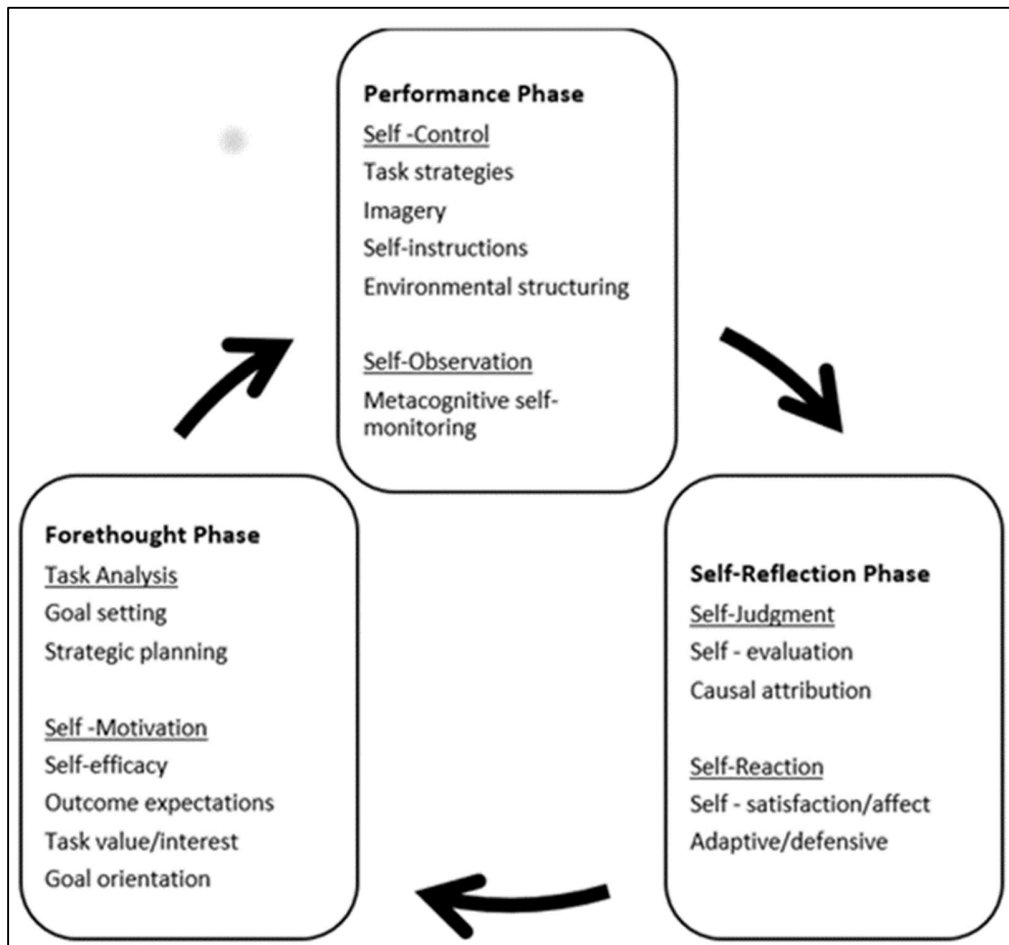
However, Ericsson (2007) argues that true experts resist automaticity, consciously exerting control over their performance until an exceptionally high standard is attained and their mental representations are more complex. They thus find it easier to describe and assess what they are doing. Although some high performing individuals may not be able to elucidate how they perform so much better than others (Hoffman, 1998; Kahneman & Klein, 2009), research suggests they will nonetheless remain aware that they have greater ability and will be able to critique their own performance knowledgeably (Ericsson & Smith, 1991) by comparing mental representations of intended behaviour with actual performance (MacIntyre et al., 2014).

An expert’s ability to use meta-awareness to evaluate their own performance is part of the Self-Regulation Loop described by Zimmerman (2006). As figure 4 shows, meta cognitive self-monitoring occurs during performance enabling self-evaluation after the fact. Experts use these processes selectively, enabling them to recall more extensive and accurate information about completed tasks (Ericsson & Kintsch, 1995). Evidence for this is provided by the fact that expert’s attributions for errors made during performance are more likely to be internal as

opposed to blaming chance or circumstance, and more likely to be accurate (Kitsantas & Zimmerman, 2002).

Figure 4

Phases and subprocesses of self-regulation



Note: Adapted from "Motivating self-regulated problem solvers" (p. 239), by B. J. Zimmerman and M. Campillo, 2003, in J. E. Davidson & R. J. Sternberg (Eds.), *The psychology of problem solving*. Copyright 2003 by Cambridge University Press.

Metacognition in this context is not only knowledge about one's own knowledge, but also knowledge about one's own performance (Flavell, 1979) which should translate to accuracy in perceived and actual performance calibration. Generally, calibration is high for experts and low

for non-experts (Dunning et al., 2004; Dunning, 2011). In fields as diverse as mental health clinicians making diagnoses (Garb, 1989) or chess players predicting performance in a tournament (Park & Santos-Pinto, 2010), those with greater skill are also more accurate judges of performance. But even for experts, calibration is far from perfect. High performing individuals have been shown to often underestimate their own performance relative to others on percentile scales, but when using absolute measures their calibration between perceived and actual performance is high (Ehrlinger et al., 2008). There is also a systematic effect of task difficulty where the best performers are the most accurate on relatively easy tasks, but on difficult tasks, where there is a negative bias, the worst performers are the most accurate (Burson et al., 2006).

2.3.5 Responsiveness to feedback

A high volume of practice facilitates the development of consistently high performance and metacognitive ability to calibrate that performance accurately. Responsiveness refers to the ability to flexibly adapt performance based on feedback. According to Benner (2004) “The expert develops yet another qualitatively distinct way of being in the situation by developing *the capacity to fluidly respond to the situation, even as the situation changes and the relevance of the actions taken change*” (p. 198, emphasis added). While Addis (2018) talks of a “successful intuitive situational response that is the hallmark of expertise” (p. 21). These descriptions both recognise the importance of an adaptable application of skill. Experts are able to respond in the moment and adjust their behaviour accordingly.

Feedback about the quality of performance is an essential part of developing mastery of a skill (Anderson, 1982; Zimmerman, 2006). As seen above, feedback forms part of the wider meta cognitive framework within which a person can form an accurate sense of their own current and goal performance level. What Zimmerman (2006) refers to as “self-regulatory competence” (p. 706) involves the ability to monitor and regulate three interconnected elements: environmental setting, behavioural performance and covert cognitive and affective processes. All of which require attention and responsiveness to feedback of various types. Self-regulation of the environment involves responding to the physical context in which performance takes place (e.g., when a musician accounts for the acoustics of the room they are

in). Behavioural self-regulation requires adjustments to one's own actions in response to ongoing outcomes (e.g., when a boxer switches their tactics to account for an opponent's defence). While covert self-regulation refers to conscious actions taken to alter one's mental state (e.g., calming or visualising techniques). In the domain of social skills, the feedback that behavioural self-regulation relies on comes in the form of response outcomes (Ladd & Mize, 1983). Rather than judging success based on games won or lost, 'outcomes' in the performance of social skills are signals from interactants.

Without receiving, understanding, and acting on information about which aspects of performance need to change and how, an individual cannot progress to higher levels. This requires that the potential expert has a willingness to attend to feedback in whatever form it is available. One example of this is the observation that early on in their training, those who go on to become Olympic wrestlers are already recording significantly more hours of practice than those who remain at club level (Starkes et al, 1996), but there are no differences in cumulative hours of practice, only in sparring. This activity (sparring) is where they receive immediate feedback on the success or failure of their behaviour and can try different responses in the moment. Simon and Chase (1973) discovered that future Chess experts gradually acquired patterns and knowledge about how to react in situations by storing memories of their past actions and the consequences of those action in similar situations.

Feedback can be explicit and intentional, such as the notes given to a student musician by their instructor. But it can also come in more indirect forms, via attending to consequences of one's actions as in the wrestling and chess examples. What is key is the level of responsiveness to the available feedback.

2.4 Theoretical synthesis of a putative deceptive skill/expertise

Having established the theoretical bases for both deception and expertise, the question remains, if there is expertise in the domain of deception how might it be expected to manifest? This section proposes how the two bodies of theoretical literature can be integrated to derive clear hypotheses for expert performance in a deceptive context. Concert pianists, Olympic medalists and con artists may not immediately seem to have a great deal in common, but

psychological research has established a general theory of expertise that can be applied across a range of vastly different cognitive and behavioural skills as outlined above. Regardless of field, there are recognisable similarities in the way that skill is acquired, developed, and maintained. Further, there are commonalities in the way that experts store and manipulate domain-relevant information as well as how they engage in practice, self-monitor, and respond to feedback. If true expert liars exist, they are likely to show similarities with highly skilled performers in other areas.

2.4.1 Differentiation

Based on the theories outlined above, it is plausible that there are no deception experts, only good and bad lying contexts caused by a combination of liar, target, and scenario. Deception success might be entirely dependent on factors not under the conscious control of the liar such as demeanour (Levine et al., 2011) and therefore the General Theory of Expertise will not apply. Alternatively, “There are some domains where nearly everyone becomes an expert, like reading English words” (Posner, 1988, p. xxxi) and Levine (2010) would have it that deception is just such an example where only a few are detectable. To determine whether there is expertise in lying, it is necessary to put individuals along an ability spectrum from bad to good so that other relevant features can be compared between high and low performers. This must be done in an objective way that allows for tests of deceptive performance on all aspects of lying as set out in the two theories selected above.

2.4.2 Practice

With practice, a task loses the quality of being effortful and deliberate and instead becomes automatic and intuitive (Hoffman, 1998). Cognitive theories of skill provide the explanation that if a lie has been rehearsed, familiarity leads to increased fluidity of performance by influencing verbal and non-verbal behaviour and reducing technical errors. Practice at deception is suggested to decrease the cognitive load of an individual, making lying no more mentally taxing than truth-telling which should translate to better performance (Vrij et al., 2010). Under the ADCAT framework, activating a prepared lie rather than constructing one spontaneously while under pressure means less demands on working memory, while inhibiting the corresponding truth is also less demanding when rehearsed which allows for a faster response with more rich

detail (Walczyk et al., 2014). Even before the emergence of supporting empirical evidence, DePaulo et al. (2003) suggested that “Certain deceptive exchanges are so often practiced that they, too, unfold in a way that feels effortless” (p. 78) and speculated that certain lies may be subject to goal-dependent automaticity. Rather than being outside of conscious awareness, this is an automatic process triggered only in response to a specific, intentional processing goal (Bargh, 1992) in this case, the intention to deceive. In this context it is suggestive that criminals consider lying to require less effort than non-criminals (Granhag et al., 2004). One obvious explanation is that some in this population are known to repeat the same single lie for years (Porter & Woodworth, 2007) which provides repeated practice.

Expertise literature makes clear that not all practice is equally valuable and there is an ongoing debate over how deliberate it must be. But the central importance of a high degree of accumulated practice in the development of expertise is widely endorsed (Hambrick et al., 2020). Prolific liars and those with certain personality traits (high on the dark triad and/or Extraversion and low on Honesty-Humility) are logical candidates for those with sufficient practice to become expert liars. Although prolific liars also rate themselves as good liars (Verigin et al., 2019) there is limited empirical evidence that this is the case. Indeed, Serota and Levine (2014) report that prolific liars are more likely to suffer the consequences of being caught out in a lie. They experience a significantly higher rate of losing relationships and jobs as a result of their deception being uncovered. Although practice may not be sufficient to develop expertise it is most certainly necessary and thus it must somehow be a part of deceptive expertise should that exist.

2.4.3 Consistency

The General Theory of Expertise suggests that once mastery of a skill is attained, performance level remains relatively stable (Bornstein et al, 2017; Glaser, 1976). Indeed, consistency of performance is a defining feature of expertise. Ericsson (2006) defines an expert as one who exhibits “objectively superior performance, *in a reproducible manner*” (emphasis added p. 687). This has been demonstrated experimentally across a wide range of expertise literature (Bornstein et al, 2017; Knudson et al, 1990; Neyens and Aldenkamp, 1997; Parker et al, 1993). In contrast, deception theories tend to provide explanations for a single hypothetical instance

of deception rather than the pattern of behaviour across time. Nevertheless, the principles of IDT and ADCAT (outlined above) both suggest that a liar who will display good performance on one occasion is likely to achieve the same level at a different time and under different circumstances.

2.4.4 Meta-awareness/calibration

According to the GEF a clear difference should be expected in the internal processes and metacognition of good and bad liars. Because of their self-monitoring insight, experts can assess their own performance in action and retrospectively (Feltovich, 2006; Zimmerman, 2006). Further theoretical support comes from the deception model ADCAT (Walczyk et al., 2014) in which the application of quasi-rational decision making is central to the process of lying. ADCAT states that a person weighs up the relative costs and benefits of lying and this *decision* to lie or not is at least partly influenced by the respondent's assessment of their own ability and the target's ability to detect them. Having an accurate sense of one's ability to lie would confer a great advantage in this process. So expert liars should be capable of the additional cognitive processes required to assess their own deceptive ability accurately and make the correct calculation of whether and when to lie.

As discussed above, high performing individuals may have the insight and the ability to articulate and self-assess, but they may also have moved into a state of just 'knowing' or just 'being' such that they find it difficult to explain their abilities. So, it is possible that expert liars may not perform well in simple quantitative tests of calibration accuracy between perceived and actual performance. But, given the opportunity to discuss their experience of lying qualitatively, differences between expert and non-expert ought to be evident.

2.4.5 Responsiveness to feedback

The ideas of self-regulation discussed above can easily and intuitively be applied to deception. Environmental regulation would involve a liar making use of the affordances of a particular communication channel such as text messaging versus face-to-face (Toma et al., 2018).

Behavioural self-regulation can be seen when a liar becomes more reticent in response to overt suspicion (Anolli et al., 2003) and covert self-regulation would require a liar to actively attempt to maintain a calm internal state.

Both Interpersonal Deception Theory (IDT, Buller & Burgoon, 1996) and ADCAT lead to the prediction that a good liar is an agile one, capable of adjusting their performance in reaction to suspicion from their target. IDT states that since communication takes place in a constant loop, the behaviours of sender and receiver exert mutual influence. To appear credible, the sender will adapt their verbal, nonverbal and paraverbal behaviour based on overt and covert feedback from the sender (Buller & Burgoon, 1996; Burgoon et al., 1995; Burgoon & Levin, 2010; Buller et al., 1991). The Action component of ADCAT involves not only delivering the lie but also monitoring self and target and making any necessary changes to their delivery based on what is observed (Walczyk et al., 2014). An expert liar must be better than average at this process of constant adjustment.

Considering social skills, Silston et al. (2018) describe the ability most humans have to interpret “signals that are fleeting, subtle, contextual, abstract, and often ambiguous” (p. 413) as ‘social tuning’. This is supported by evidence that a unique neural signature has been identified for receiving and processing feedback on successful vs unsuccessful lies and this is distinct from where activation occurs for feedback on successful truth telling (Cui et al., 2014) suggesting that there may be specific cognitive systems involved.

2.4.6 Summary

The principles of expertise have not previously been systematically applied to the domain of deception. But it is easy to see how a liar would benefit from practice, making them able to consistently display a higher level of performance, and to have greater calibration accuracy. It is not yet clear how deceptive practice might be accrued. But there are several candidate populations for highly practiced liars (e.g., self-reported prolific liars, those with dark triad traits and extraverts) and testing may reveal as yet unknown connections between deceptive practice and performance. Already, research shows that those with more practice believe themselves to be better liars (Verigin et al., 2019) but it remains to be seen if this is supported by objective measures. Existing deception theory (IDT) aligns with the GEF to suggest that expert liars are capable of adjusting their performance in response to feedback.

2.5 Hypotheses

Alongside qualitative differences in the performance of lying itself, The GEF when applied to deception would clearly predict other observable differences between expert and nonexpert liars. The experimental studies that make up this research programme will investigate each of these propositions to establish whether expert liars exist who demonstrate these features in the domain of deception.

H1. Expert liars are expected to possess a greater volume of accumulated practice at deception.

H2. Expert liars will show consistency of performance across repeated measures tests of lying ability.

H3. Expert liars will not only manage the cognitive demands of deception itself, but also be aware of their abilities and limitations and able to accurately calibrate their performance as well as discuss it reflexively.

H4. Expert liars are anticipated to be responsive to feedback and adapt their performance accordingly.

3. Literature Review

The General Theory of Expertise (GEF) sets out a framework that ought to apply across domains. This chapter addresses the extent to which there is evidence for expertise in deception within the available literature. Deception research to date has not generally sought to test skill, therefore an atypical approach to reviewing literature is required to determine what evidence exists for viewing deception within the General Expertise Framework. We must first expand the conceptual understanding of the previous chapter to establish a clear idea of how expertise might manifest in the domain of deception. This chapter then presents a comprehensive review of any research that has directly tested elements of deceptive skill to examine what is known about performance in this area and what remains unknown.

3.1 Attempts to define “good liars”

It has been suggested that a good liar is someone whose deception can only be identified by 30% of judges, versus poor liars who are caught 70% of the time (Caso et al., 2018). However, this definition is almost tautological in the way it continues to rely on the assessments of inaccurate raters and fails to provide any detail on what goes into expert performance. Returning to Ericsson’s (2006) definition, experts “exhibit objectively superior performance, in a reproducible manner, for the representative activities that define the essence of accomplishment in a given domain” (p. 687). This asserts the fundamental importance of consistency of performance, but leaves open the question - what are the representative activities that define success in the domain of lying? The dearth of research into what characterises a good liar has led researchers (Vrij, Granhag & Mann, 2010) to build a speculative list of six key descriptive features. These were based on deception theory and the limited empirical evidence available from deception detection research at the time. As can be seen in the descriptions below, not all are indicative of skill.

1. *Natural behaviour disarms suspicion.* This mainly refers to non-verbal behaviour such as eye contact, smiling, showing engagement by orienting towards the receiver and a lack of vocal hesitation/uncertainty. This apparently ‘natural’ behaviour is connected with

likability and innate charisma and seems at least at first glance to be unconnected to skill.

2. *Do not find it cognitively difficult to lie.* Acknowledging the idea of cognitive load, Vrij and colleagues suggest that planning and rehearsal (both strongly linked with expertise in other areas) may assist in reducing the effort required. Creativity and original thinking are also suggested as key features that facilitate the construction of a convincing lie.
3. *Do not experience emotions such as fear, guilt, or delight when they are lying.* The idea of emotional leakage is nullified if the sender is experiencing neither guilt, fear, nor delight. This idea is discussed mostly in the context of pathological conditions such as Psychopathy or an ability to fantasise so powerfully that one's own lies are believed to the extent that they no longer induce fear or guilt. But again, rehearsal is suggested as a way to reduce emotional responses in those who would otherwise experience them.
4. *Attractiveness may lead to an inference of virtue and honesty.* Although supported by research that illustrates those with more conventionally attractive faces are rated as more trustworthy (Porter et al., 2008; Porter et al., 2010), this accident of birth is not under the conscious control of the sender and therefore not indicative of skill.
5. *Are good actors and who display a seemingly honest demeanour.* In contrast to someone whose natural behaviour disarms suspicion, this refers to those who must actively mask the cognitive and emotional cues to deception they are experiencing. Like the ADCAT framework, this attribute includes the ability to 'decode' the response of the target to allow for rapid adaptation if suspicion occurs.
6. *Are "good psychologists".* Addressing the necessarily interactive nature of deception, this feature calls for emotional intelligence. Knowing what another person may be thinking or feeling and calculating the appropriate response to avoid detection.

This collection of possible attributes was hypothetical and part of a plea for more research, but it forms a useful starting point when trying to establish what distinguishes expert from nonexpert liars. It is clear that verbal, non-verbal, and paraverbal communication channels must be mastered. Putting aside the features which are outside the conscious control of the liar (attractiveness, natural demeanor, and personality traits), we are left with the ideas of

rehearsal/practice and responsiveness which closely align with the literature on general expertise.

3.2 Theoretically derived features of expert performance in deception

3.2.1 ADCAT

ADCAT (Walczyk et al., 2014) contains four processing components, *activation* of the truth, *decision* of whether/how to deceive, *construction* of a deception (or activation of a rehearsed deception), and *action* (lying or truth telling). At each stage of this sequence, it is possible to differentiate good and bad liars based on their performance. Walczyk et al. (2014) specify that *activation* of the truth is an automatic process, but rehearsed or prepared lies may attenuate the prepotency of a truthful response, and practice may make it easier to inhibit the truth in favour of a lie.

A key feature of the *decision* component of ADCAT is the idea that liars calculate the estimated value of lying versus truth-telling as well as their own perceived ability to deceive and the target's ability to detect before deciding how to act. Expert liars displaying a high level of meta-awareness and performance calibration are likely to perform better than others in this area. Not only in choosing when to lie but also how (lies of omission vs half-truths vs full fabrications).

Given that many of the most reliable cues to deception are found in the content of the lie itself in linguistic and verbal channels, the *construction* component also allows for clear separation between good and bad liars. Expert liars should create lies that are inherently more believable based on content, meaning that what they say (or write) when lying will be logical, coherent, compatible with what the target already knows, and relatively free of errors.

Perhaps the ultimate test of deceptive skill is in the *action* of delivering a lie convincingly. In the ADCAT framework, while monitoring and allocating limited mental resources to underlying cognitive processes such as working memory and central executive functions, liars are also constantly inferring the mental states of their targets to ensure deceptive success.

Even in a non-expert, ADCAT's four components are believed to operate "*automatically, unconsciously, seamlessly, and in parallel*" (Walczyk et al., 2014, p. 25; emphasis in original), so

an expert liar (if one existed) would be able to demonstrate the speed and ease characteristic of experts in other areas, consistently delivering convincing lies without showing signs of cognitive load or emotional arousal, and capable of adjusting their performance in response to subtle feedback.

3.2.2 Interpersonal Deception Theory (IDT)

IDT emphasises the dual influence that sender and receiver have on one another during deceptive communication and as such it aligns with the idea of responsiveness being key to expertise. Under this theory, liars and targets are engaged in a strategic contest, and both adjust their behaviour based on the other's reactions. IDT assumes all liars are capable of such in-the-moment adaptability but does state that better liars will be more successful in this metaphorical chess match (Buller et al., 1996).

So, there is theoretical support for the idea that in addition to superior performance, good liars will show some of the features of expertise seen in other domains. Namely, an effect of practice, enhanced calibration accuracy, and responsiveness to their target.

3.3 Evidence from deception detection research

Deception is cognitively demanding. It requires the liar to simultaneously manage negative affect, working memory demands, response inhibition, and attention to their own and their target's verbal and nonverbal behaviour. This level of difficulty should predict a high rate of failure, but in fact human lie detection performance is only marginally above chance (Bond & DePaulo, 2006; Enos et al., 2006; Hartwig & Bond 2011; Vrij, Mann & Fisher, 2006). A reasonable explanation for this paradoxical finding is that detection accuracy is driven by high variability in sender rather than receiver ability (Bond et al., 1985; Bond & DePaulo, 2008; Levine et al., 2011). Meaning that the outcome of any deceptive encounter depends more on the abilities of the liar than the lie detector. This is supported by the findings of Bond and DePaulo (2008) who state that "the mean observed range in truth judgments received was 52.51%... a mean of 22.73% would be expected if senders did not differ in credibility. Senders range more widely in credibility than would be expected by chance" and "measurement-corrected differences in sender credibility are roughly 14 times the size of the corresponding

differences in judge ability (11.58% vs. 0.80%)” (p. 484). This finding suggests that sender performance shows the kind of range expected from a skilled activity but whether it is ‘skill-like’ in other ways remains to be determined.

3.4 Mapping and critiquing evidence of deceptive skill with a Systematic Review

The purpose of this narrative review is to consider how well these studies assess deceptive expertise and the extent to which they include criteria that are representative of skill (e.g., consistency of performance, evidence of practice, responsiveness to feedback and meta-awareness). It also interrogates the operational and measurement issues in the existing research and the influence these have on participants’ ability to display their level of deceptive skill.

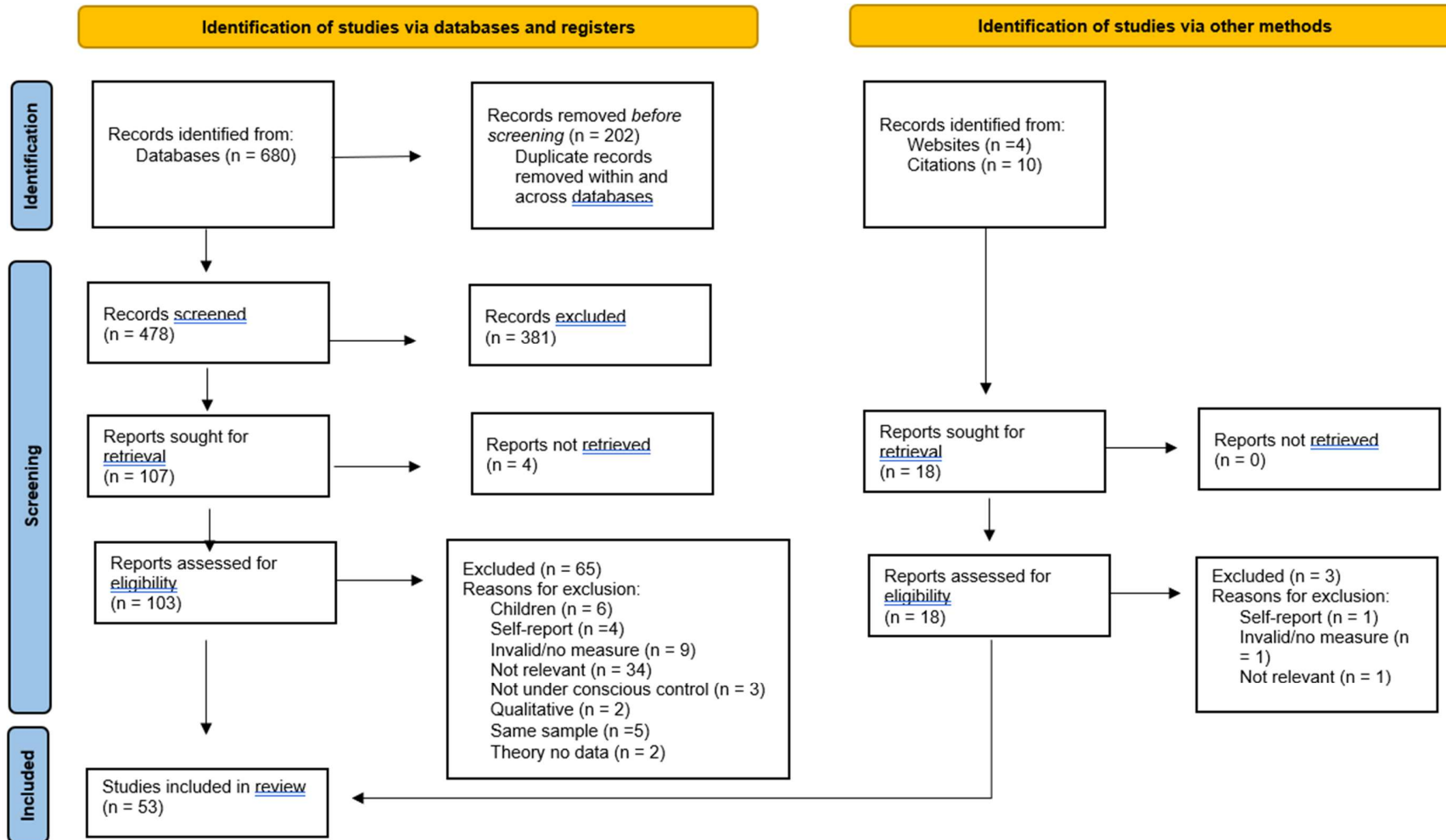
3.4.1 Search parameters

The Bond and DePaulo (2008) meta-analytic results, discussed previously, indicated substantial variance in deceptive ability, but the majority of research still focuses on deception detection rather than production. With the notable exception of recent studies by Semrad (2019; 2020) that explicitly tested the predictions made by Vrij et al (2010) for what makes a good liar. A literature search for studies that specifically measured variation in sender ability was carried out and includes just 53 studies over a span of more than 40 years. All relevant quantitative research studies including peer-reviewed journals and book chapters as well as published theses (both PhD and Masters) and existing systematic reviews and meta-analyses were eligible for inclusion. Figure 5 describes the process followed from initial searching to review (for a list of all included and excluded items see Appendix A).

The online databases Web of Science, PsycInfo, PubMed, ProQuest and ERIC and the specialist thesis site ndltd.org were searched using relevant keywords (e.g., deception, deception ability, deception production, good liar(s), liar, lie, lying ability, lie production, lying proficiency, believability). Also, word-stems together with Boolean operators, ‘(Decept*) AND (skill)’ or ‘(deception) NOT (detection)’ or ‘(decept*) NOT (child*)’. The effectiveness of these search terms and specific search strings was tested by ensuring that they returned certain known relevant articles and would therefore be likely to locate similar unknown research (Reed & Baxter, 2009).

Figure 5

Flow diagram of targeted literature search process



Note. Adapted from “The PRISMA 2020 statement: An updated guideline for reporting systematic reviews,” by M.J. Page et al. 2021, *Systematic Reviews*, 10(1), p. 8 (<https://doi.org/10.1186/s13643-021-01626-4>). Creative Commons CC BY

To account for the differing vocabulary across time (Harden et al., 1999) this was done with two known articles; one from the 1980's (Riggio et al., 1987a) and one from the 2000's (Zhou et al., 2013). Hand searches were conducted in the reference lists of identified articles and via the website *Connected Papers* which indexes cited and related research from any given article. Further searches in Google scholar for author names and keywords obtained during hand searches and review were also carried out. The pool of potential articles was then screened based on title to remove irrelevant items such as literary critiques, non-human research and articles on deceptive body movements in sport.

3.4.2 Inclusion and exclusion criteria

At the point of abstract and methods review, pre-determined criteria were applied to narrow down the candidate items to only those that could reasonably be said to have tested deceptive skill in line with the framework of general expertise described in Chapter 2. This meant that the data collected must be able to differentiate between good and bad liars rather than only comparing truthful with deceptive performance at the group level. No date restrictions were applied, but full-text copies of studies had to be obtainable in English. Samples were limited to adult populations, as including participants at differing rates of maturation in terms of their social and cognitive development may obscure deceptive skill. Studies based solely on self-assessment, with no objective measure of deceptive ability were not eligible. Deceptive success must be under the control of the participant not based on external factors like attractiveness or brain stimulation although these are both associated with facilitating deception (Bond & DePaulo, 2008; Fecteau, et al., 2013).

Where articles were not readily available online or in print after extensive searches, specialist librarians were tasked with sourcing copies and emails were sent to authors (or their dissertation committee in the case of a doctoral thesis). Only four reports were excluded because full-text copies could not be sourced. An oral presentation (New et al., 2011) and a poster (Hoare et al., 2004) where only the conference abstracts are still available, a doctoral dissertation (Leps, 2015) and a historical essay in the *Anthropology journal "Notes and Queries"* (Leeper, 1897). Two qualitative reports (Bowditch, 2014; Mitnick & Simon, 2003) identified by

the search process were ineligible because of the lack of objective measures of skill, but insights gained from both are incorporated in the review of evidence.

3.4.2 Issues with effective measurement.

The reason that chess has been the preferred paradigm for skill research is because it functions like a model organism in biological research (Fields & Johnston, 2005). That is, representative enough that any conclusions drawn can be generalised to other domains successfully, and relatively easy to quantify since there is a single, universal standard for mastery (Ericsson et al., 2006). Certain sports also have readily recognisable peak achievement indicators (e.g., golf masters, tennis grand slams). Measuring expert performance in deception is not as simple. This is because while there is a relatively straight-forward definition of an expert liar - someone who is able to make their lies believable to a target by creating lies indistinguishable from truth – there is no federation of competitive liars, nor an international governing body to certify experts.

If lying is a skill like any other, then success or failure must be primarily due to factors under the sender's conscious control and not simply the by-product of socio-demographic factors that have been shown to influence deception judgements (Bond & DePaulo, 2008; Lloyd et al., 2017; Masip et al., 2003; Porter et al., 2002; Slessor et al., 2014; Vrij & Winkel, 1992a; Vrij & Winkel, 1994). It follows from this that deceptive skill should be measurable, but operationalization and testing are difficult. If human lie detection accuracy is only just above chance, then successful performance when being judged by another may not differentiate deceptive skill in any meaningful way. Indeed, some have suggested that all but the very worst liars escape undetected (Levine, 2010).

A more useful way to discriminate good liars from bad is to move away from human detectors and focus instead on the features that account for the successful production and delivery of deception, i.e., control of the cues that betray a lie as a lie and not truth. Research has established some such cues to deception, but meta-analyses have revealed many of these purported indicators as too weak or inconsistent to be of any diagnostic value (DePaulo, 2003; Sporer & Schwandt, 2006; 2007) and a recent re-analysis of decades of deception literature

suggested the exaggeration of very small effect sizes in underpowered studies has resulted in an illusory impression of how useful these cues are (Luke, 2019).

Because of this, what is chosen as the dependent variable in deception research is a non-trivial consideration. Over one third (33.96%) of the studies in the current review used third-party human raters as the only measure of deceptive skill, while a further 22.64% combined truth/lie ratings from observers with measurement of known deceptive cues. In some cases, receiver judgment comes in the form of success in ultimatum games (Elaad et al, 2020; Zhou et al, 2013) so these are ecologically valid scenarios. But in studies relying solely on human judgements, the performance of lie detectors contaminates the performance of lie producers, reducing the validity of any measure of deceptive skill. One study (Vrij & Winkel, 1992b) based deception ability on whether or not participants confessed to a police officer during interview, but this may reflect a lack of confidence rather than a lack of deceptive skill and gives no indication of whether their performance was convincing up to the point of confession. Some studies using a points allocation game do not seem to involve deception in any meaningful way. Participants are only required to nominate an amount for allocation and then 'win' or 'lose' based on the response of a partner they never interact with. Those reports that measured specific cues to deception tend to focus on only on one communicative channel (e.g., verbal, non-verbal or paraverbal) privileging those liars who are best able to control that channel.

Additionally, the statistical power to detect relevant differences is limited. The 57 samples included in this review come from 53 reports and have an average size of $n = 103$ but removing the two outlier studies with samples over 1000 (Debey et al., 2015; Zhou et al, 2013) reduces the mean sample size to $n = 59$. This appears to reflect changes in research across time. There were 19 studies published between 1979 and 1999 with an average sample size of $n = 45$, compared with 35 studies between 2000 and 2020 with an average of $n = 132$. While sample size (and thus statistical power) increases over time, it is still the case that small samples are unlikely to contain individuals of interest (e.g., expert liars, prolific liars and those with certain deception-relevant personality traits discussed below). This is especially the case because such people are rare in the general population (Kaufman et al., 2019; Serota & Levine, 2014).

3.4.3 Practicing deception.

There is little research examining the effect of long-term, real-life lying practice on deceptive performance. But an effect of practice has been demonstrated experimentally in studies where an advantage is reported in speed of response and reduced deceptive cues for those given a short period of rehearsal (Gawrylowicz et al., 2016, van't Veer et al., 2017; Walczyk et al., 2009; Walczyk et al., 2013). Higher frequency of lying than truth telling in a single session of the Sheffield lie test paradigm increases the dominance of the deceptive response over the truthful one causing faster activation thus making it easier to lie (Van Bockstaele et al., 2012; Van Bockstaele et al., 2015; Verschuere et al., 2011). Additionally, fMRI research supports the idea of a practice effect showing that participants' engagement in self-serving dishonesty increases with repetition of a behavioural task and that decreased amygdala response when lying can predict escalation of lying behaviour (Garrett et al., 2016). It has even been shown that lying about an event can alter the memory of that event (Battista et al., 2021; Gombos et al., 2012; Otgaar & Baker, 2018) which may be another mechanism by which practice facilitates deception.

When theories of general expertise (Hoffman, 1998) are applied to deception, it becomes clear that the effect of practice is not limited to a single lie (e.g., rehearsal). Instead practiced liars – those individuals who can produce and deliver lies with less effort and greater success than others – should be able to apply their deceptive skill flexibly in various contexts. Also, ADCAT would predict that when a liar has more long-term practice inhibiting the truth and evaluating responses from their targets, deception becomes more efficient, less cognitively demanding and therefore more difficult to detect (Walczyk, et al., 2014).

While there is research evidence supporting the facilitative role of practice in deceptive skill, it appears to be sufficient but not always necessary. Verschuere et al. (2009) used the automatic implicit association test (aIAT) as a lie detector, requiring participants to rapidly assign statements to 'true' or 'false' categories including those relating to participation in a mock crime. Prior experience with the same paradigm (i.e., practice) improved scores but was not necessary to successfully fake an innocent test. Mere instruction on how to fake an innocent response was sufficient to produce effective deception. Similarly, a study by Hu et al. (2012)

involved a button press to indicate 'self' or 'other' in response to autobiographical items (name, birthday and hometown) displayed on screen, responding truthfully or deceptively as cued. They reported that both instruction and practice (in a single session) were required to significantly lower the difference between truthful and lying response times.

It is worth noting here that almost none of the studies reviewed incorporated measures of accumulated practice of the kind required under the General Expertise Framework. 70% either did not address prior deceptive practice at all or included only task-specific rehearsal as outlined above (Hu et al., 2012; Verschuere et al., 2009) while a further 20% measured some or all of the dark triad traits because of their relationship to deceptive behaviour. Of the remaining studies, one (Zhou et al., 2013) examined long-term task-specific practice, one (Burgoon et al., 1995) categorised half their participants as 'experts' because of supposed prior experience but did not analyse their data based on this distinction. Just two (Atkinson, 2019; Debey et al., 2015) who collected self-reported lying frequency data, and both found a positive relationship between this type of practice and performance.

Unlike other skills, the high cost of delivering unsuccessful lies (and thus being caught out) may serve to discourage practice of all kinds. The early lies of children are easily detectable (Newton et al., 2000) and consequently punished, and even a single case of failed deception as an adult can result in reputational damage and a subsequent loss of social and romantic connections, employment opportunities, and potentially one's liberty (Dugatkin & Wilson, 1991; Jones & Paulhus, 2009; Wilson, Near & Miller, 1996). It has been suggested that early failed attempts at deception by those individuals with 'a dishonest face' prevents them from ever discovering their potential deceptive ability (Zebrowitz et al., 1996). The strength of the social inhibition against lying can be seen in the finding that self-reported good liars did not lie more often than bad liars when given the choice to deceive in a points allocation ultimatum game (van Swol et al., 2017). Yet a core principle of ADCAT is that "with age deceivers will discover more effective ways to reduce the cognitive load of deception" (Walczyk & Fargerson, 2019, p. 82) implying repeated attempts to deceive, some of which must be unsuccessful. Practicing the skill of lying is dangerous, but at the same time necessary if a liar is to increase their skill level and thus avoid subsequent detection. One population that may shed some light on the role of practice

are the so-called 'prolific liars' who obtain substantially more experience, and thus practice, at deceiving than others.

3.4.3.1 Frequency as a proxy for practice. The motivation for prolific liars' behaviour is not well understood (Halevy et al., 2014) so the extent to which lying frequency can be seen as *deliberate* practice is not clear. But practice may not need to be deliberate, simply having a higher volume of accumulated practice even if only done 'for fun', has been shown to predict better performance in several domains (Hambrick et al., 2020; Macnamara & Maitra, 2019). This means that every day lying frequency can be an appropriate measure for practice in this context, since it accounts for time spent doing the activity of interest.

Those who report telling more lies also rated themselves higher in deceptive ability (Verigin et al., 2019) and Hsu (2018) reports that better liars are more likely to choose the option of lying in an interactive game than poorer liars, but they did not measure general lying propensity outside the experimental paradigm. In fact, very few studies have assessed liars' degree of prior deceptive experience and results are contradictory. Although not based on overall lying frequency, a study by Zhou et al (2013) demonstrates a negative relationship between deceptive experience and deceptive success across multiple sessions of playing an online strategy game. Although Participants appear to show some benefits of practice in that it takes longer for them to be caught out each time.

More in line with theory-driven expectations, those who self-report telling more frequent 'small' lies are harder to detect in an interactive interview setting (Atkinson, 2019) but there is little explanation for why this is not the same for 'major' lies. The very small number of participants reporting a high quantity of major lies may be a contributing factor. Debey et al. (2014) report that lying frequency and lying ability mirror each other and can both be described by an inverted 'U' shape across the lifespan, peaking in adolescence and declining with age thereafter and that there was a small positive correlation between the number of lies reported and performance on the Sheffield lie test. But Serota and Levine (2014) report that prolific liars are more likely to suffer negative consequences after being caught lying. They experience a significantly higher rate of losing relationships and jobs as a result of their deception being uncovered, suggesting they are not always successful liars.

3.4.3.2 The dark triad. In addition to those who report a larger number of lies in diary study paradigms, some personality traits indicate habitual lying and thereby provide meaningful subpopulations in terms of practice. As set out in chapter two, the dark triad are a population to whom the usual social inhibition against lying does not apply and whose lifestyle necessitates frequent deception for example to avoid punishment or allow manipulation of others (Paulhus & Williams, 2002). Empirically, dark triad traits are predictive of a greater propensity to lie across multiple contexts (Markowitz, 2022). More practice at deception should result in a higher level of performance as detailed above, and certainly the dark triad are consistently associated with higher perceived ability to deceive (Atkinson, 2019; Giammarco et al., 2013; Jonason et al., 2014; Wissing & Reinhard, 2019; Zvi & Elaad, 2018).

Research evidence for a link between performance and practice provided by habitual lying is limited and contradictory. In a recent study by Elaad et al. (2020) those with high scores on narcissism performed better in a points allocation deception game conducted online.

Machiavellians showed more skill in lying in high-stakes mock crime and cheating scenarios involving in-person interviews (DePaulo & Rosenthal, 1979, Geis and Moon, 1981). While those high in psychopathy were better at convincing naïve raters of their truthfulness but did not show any differences in their leakage of deceptive cues (illustrators, adaptors, fidgeting, and speech disturbances) as coded by trained researchers (Billings, 2004). But null results are also reported for all three members of the dark triad using a range of measures (Frank & Ekman, 2004; Manstead et al., 1986; Michels et al., 2020; O’Hair et al., 1981; Raskin & Hare, 1978; Semrad et al., 2020; Wright et al., 2015).

Particularly for those high on psychopathy, a greater volume of practice at lying and a lack of remorse does not always seem to translate to better performance. Klaver et al. (2009) found that psychopathic offenders were less successful than non-psychopathic offenders at deceiving naïve student judges, and high scores on a psychopathy were associated with less convincing lies and truths when interviewed as judged by naïve raters (Atkinson, 2019). A lack of concern for the consequences of being caught in a lie may make psychopaths more likely to lie but less likely to invest effort in being successful when doing so. Additionally, the characteristics of high confidence and lack of empathy may mean social cues from others indicating that they are not

credible are ignored or disregarded making practice less useful. It is also possible that the kind of lying practiced by dark triad personality types do not translate well to lab-based experiments.

A recent scoping review (Turi et al., 2022) stated that there is currently “insufficient empirical evidence to conclude” (p. 3) whether high levels of dark triad traits might benefit deceptive performance. But because of their clear links with a greater volume of accumulated lifetime practice, this population remains a viable candidate for those with sufficient practice to become expert liars.

3.4.3.3 HEXACO dimensions There is evidence that Extraverts show better deceptive performance when assessed across a range of techniques such as lying to a conversational partner from behind a curtain (Levitan et al., 2015), video judged by third party raters (Riggio et al., 1987a), controlling deceptive cues such as verbal pace (Siegman & Reynolds, 1983) and whether or not they could maintain their deception in the face of questioning by a police officer (Vrij & Winkel, 1992b).

Honesty-Humility was positively associated with pro-social lying (Paul et al., 2022) leading to the conclusion that “Pure lying aversion does not appear to be the core aspect of Honesty-Humility.” (p. 3). The trait was also associated with higher lie production ability in an interactive deception game (Semrad et al., 2020) which the authors suggested was because the overall sincerity of people high in Honest-Humility serves them well when they do lie.

3.4.4. Consistency of deceptive performance.

Of the studies included in this review only three tested deceptive ability on more than one occasion (Frank & Ekman, 2004; Vendemia et al., 2005; Zhou et al., 2013). However, several studies incorporated multiple trials in a single testing session or required that deception had to be maintained across the duration of an interview (Gozna, 2002) or game (Van Swol & Paik, 2017). The consequence of this type of experiment is that there can be no certainty that participants who performed well on one occasion are truly expert liars. This issue is compounded by the fact that performance in many of the one-off experiments is measured by the ratings of non-expert and often inaccurate third-party judges, adding further uncontrolled variability to the data.

Individual differences are only of interest if they are reproducible. In fact, given the extremely small effect sizes found in most deception research (Luke, 2019), inconsistent individual differences may not be meaningful variation indicative of skill but are more likely to represent statistical 'noise'. The usual group-level measures are of little interest in this context. Stability of performance within a group over time is not same as stability of performance of the individuals within a group. To meet the definition of skill, "temporal consistency" (Bornstein et al, 2017, p. 4) must be demonstrated. Some individuals must display greater skill than others when tested and crucially, continue to do so at later time points. Although rarely seen in deception literature, measuring intra subject variability to establish consistency is common in skill research (Klein et al, 2006; Knudson et al, 1990; Winter, 1984) particularly when examining cognitive skill (Bornstein et al, 2017; Neyens & Aldenkamp, 1997; Parker et al, 1993). A highly complex and cognitively demanding act like deception results in both inter and intra individual variability in performance. But if deception is only tested at one time point, the extent of these two sources of variation cannot be accurately estimated.

Vendemia et al. (2005) used a cued true/false responding paradigm similar to the Sheffield Lie Test using self-referent questions. The study involved a longitudinal design of three testing sessions one week apart. Consistency was not measured on an individual basis, but some inferences can be made from the group-level data which suggests relatively stable performance. Because while reaction times for both truth and lie conditions decreased across the three sessions, the differences between truthful and deceptive response latencies did not change. However, the gap between errors in lying versus truth telling conditions did decrease with practice.

Even where consistency of deceptive skill was explicitly tested by Frank and Ekman (2004) this only required two different interviews on the same day, conducted by the same interviewer, albeit on different topics. One interview required denying participation in a mock crime (theft of money) and the other providing a false opinion counter to a social issue they felt strongly about. Short videos of both interviews were shown to two sets of third-party raters. Frank and Ekman (2004) interpreted the high correlation ($r=.87$) of truthfulness ratings between the 2 interviews as evidence that deceptive ability generalizes across contexts. But an alternative

explanation is that what is really being tested in this study is the consistency with which raters show bias towards certain participants.

An expert liar should be able to perform at a high level consistently, but to date almost no experimental research has been conducted that would allow such skilled individuals to be identified.

3.4.5 Calibration and meta-cognition.

Experts can assess their own performance in action, and retrospectively, better than novices (Schneider, 1985). Although calibration abilities are generally poor (Dunning, 2011; Paulhus, Lysy & Yik, 1998), those with greater skill are more accurate judges of individual instances of performance (Chi, Glaser & Rees, 1981; Dunning et al., 2004; Dunning, 2011) and overall ability when asked about these in absolute terms (Dunning et al., 2003). In fields as diverse as mental health clinicians making diagnoses (Garb, 1989) or chess players predicting performance in a tournament (Park & Santos-Pinto, 2010), those with greater skill are also more accurate judges of performance. This is likely to be because the same cognitive functions required to perform a task at a high level are also needed to recognise when this has been done (Kruger & Dunning, 1999).

When a high level of performance becomes automatic and can be done with ease, some experts may find it difficult to articulate their superior abilities, but this does not mean that they lack meta-awareness or the ability to calibrate accurately. Ericsson (2007) suggests that resistance to the process of automaticity is possible and that true experts retain a conscious sense of their own level of skill in order to continue improving. Similar ideas are embedded in many theories of deception. Leakage-based theories suggest that some liars are more aware than others of their own emitted cues (Ekman & Friesen, 1969). Interpersonal Deception Theory predicts some senders having more acute sensitivity to the effects of their own performance than others (Buller & Burgoon, 1996) and Walczyk et al. (2014) assume a level of metacognition as part of the ADCAT model, with the idea that liars should be expected to assess their own deceptive ability accurately and make the correct calculation of whether and when to lie.

If expert liars show meta-awareness of their own skill, then a clear relationship between self-reported skill level and actual performance should be evident but this is not reliably the case. Frank and Ekman (2004) report that self-rated ability does not significantly correlate with third party ratings and Van Swol et al. (2011) found that self-reported good liars felt less guilt and anxiety than self-reported bad liars, but this did not translate to actually being less detectable by an interaction partner. Atkinson (2019) calibrated confidence accuracy rates for the deceptive performance of participants in an interactive interview, finding that good liars do not appear to know they are good, nor bad liars know they are bad.

In these studies, the issue of inaccurate lie detectors has the potential to invalidate results, but research using more objective measures fails to reach consensus. Elaad et al. (2020) reported a significant correlation $r = .338$ between perceived ability and performance when lying in a points allocation game. Both Debey et al. (2014) and Gozna (2002) report that better self-rated liars find deception less demanding, report little arousal while deceiving, and perform better on a range of objective measures such as reaction time and behavioural displays. But elsewhere, Vrij et al. (1996) found that participants believed they were showing increased movement during a deceptive interview (compared to a truthful interview) when in fact the opposite was true. And there were no differences in the accuracy rates of good and bad liars when estimating how many non-verbal and verbal cues to deception they displayed (Vrij et al., 2001). Both good and bad performers underestimated the extent of their verbal behaviour and overestimated the number of nonverbal cues.

A high degree of meta-awareness of deceptive skill should logically transfer to the detection of deception. Being a good liar requires an awareness of the cues that indicate deception so that these can be controlled. So, it stands to reason that with this heightened awareness, good liars should also be able to recognise such cues when observing others making them also good lie detectors. Something Wright et al. (2013) refer to as a “deception-general ability” (p. 1). But while some studies report those who are better at detecting lies are also better at deceiving others (Levitan et al., 2015; Wright et al., 2012), different research shows no relationship between lying skill and detection skill (Bond et al., 1985; DePaulo & Rosenthal, 1979; Hsu, 2018; Masip et al., 2012; Semrad et al., 2020). One explanation for this is that good liars are very few,

so the majority of tested samples are flooded with poor liars attending to invalid cues both when lying and detecting, thus muddying the possible relationship between the two (Masip et al., 2012). It is also possible that deceptive skill is highly personalised and that what works for one good liar may not be part of the repertoire of another liar, even one similarly highly skilled.

3.4.6 Responsiveness to feedback on deception

In the absence of interaction, a liar's responsiveness to feedback cannot be demonstrated yet just under half (47%) of the studies reviewed provide no interaction opportunities. Even when lie elicitation paradigms are interactive, and involve challenges or probes, there is often no measurement of how well individual liars react to this behaviour from their target (e.g., Cody & O'Hair, 1983; Geis & Moon, 1981). Gozna (2002) measured the persistence of liars (continuing to lie without admitting to deception) in the face of mild or intense suspicion shown by an interviewer, with a dependent variable of how many questions were answered without confession. No individual differences, nor the intensity of the challenge influenced the persistence of lying. But this is also not true responsiveness since there is no sense of how or indeed if liars moderated their verbal, nonverbal and paraverbal behaviour in reaction to the target stating disbelief.

Responsiveness is measured in the challenged and unchallenged lie conditions created by Anolli and Ciceri (1997) during their examination of the ability to control vocal performance when lying. This allowed differentiation between those liars (43% of the sample) who showed no differences in pitch between truth telling and lying even when challenged, versus those (21%) who could only tell lies indistinguishable from truths when unchallenged by their target. Liars used verbosity and ambiguousness with an accepting target, but when questioned "Are you really sure? What can you actually see here?" their answers were more concise and assertive. Good performers demonstrated vocal control by preventing pitch from increasing or decreasing in response to being challenged by their target, either of which may potentially reveal deception. Whereas bad liars lost control in two ways; by betraying their fear and arousal with increased pitch or showing the effects of overcontrol with a lower pitch than baseline. Although not designed to examine differences between good and bad liars, there is evidence of differing levels of responsiveness in a study by di Battista (1997) comparing the behavioural

changes made before and after a challenge when telling familiar and unfamiliar lies. Here it is reported that when a lie is of a familiar type, senders are more able to adjust their behaviour when challenged (e.g., eye gaze, pauses and smiling/laughter) than when it is unfamiliar. Such increased ease with familiar lies may indicate a practice effect. However, di Battista notes that changes on the part of liars were not effective in influencing the truth/lie judgements of external raters, raising questions over whether what was observed is a skilful adjustment of behaviour or simply involuntary reaction.

Feedback can have a direct impact on subsequent lies told in an experimental setting which is a proxy measure of responsiveness. Hu et al. (2012) contrasted feedback alone and feedback coupled with practice. All participants took part in a differentiation of deception paradigm (DDP) which required them to respond “self” or “other” to personal information presented on a screen while being cued to respond truthfully or deceptively. In the feedback condition, participants were shown their own accuracy and reaction time data from a completed baseline task and instructed to speed up their deceptive responses and improve accuracy. Participants in a “training” condition received the same information as those in the feedback condition but also carried out 360 additional deceptive trials to practice the instructions given to speed up and increase accuracy. In a subsequent test, reaction times decreased for deceptive responses in both groups. But for the feedback only group, truths and lies were still significantly different from one another. Whereas those in the training group were able to lower their deceptive reaction times so that they were no longer significantly different from truths. Accuracy rates did not change for either group.

By giving similar but effectively opposite instructions to the previous study, Verschuere et al. (2009) successfully influenced reaction times for participants taking the autobiographical Implicit Association Test (aIAT) after a mock crime. Instead of speeding up deceptive responses, they advised participants to slow down truthful reaction times. The authors reasoned this would achieve the same aim of reducing differences between truthful and deceptive reaction times with less effort. After taking part in a baseline task, ‘faking instructions’ were issued to all participants. The response times of innocent participants did not change significantly from the

baseline, but the aIAT was no longer able to correctly classify guilty and innocent responders due to the changes made by guilty responders.

3.5 Conclusion

This chapter set out to examine existing theory and conduct a comprehensive review of empirical research to establish a clear understanding of how expertise might manifest in the domain of deception, and to determine what is known about potentially expert performance in this area. Very little research has set out to explicitly test deceptive performance. Of the studies that can be considered, few use objective measures. Because research is not targeted at expertise, it is only possible to infer whether the elements of interest (practice, consistency, calibration and responsiveness) are demonstrated. There is some evidence of a practice effect where those with more experience lying perform better (Atkinson, 2019; Billings, 2004; Debey et al., 2014; DePaulo & Rosenthal, 1979, Eiaad et al., 2020; Geis and Moon, 1981; Hu et al., 2012) but this is by no means unequivocal (Klaver et al., 2009; Michels et al., 2020; O’Hair et al., 1981; Raskin & Hare, 1978; Semrad et al., 2020; Wright et al., 2015; Zhou et al., 2013).

Consistency has not been tested sufficiently to determine whether deceptive performance is stable across time. Results concerning calibration and meta-cognitive awareness are conflicting. While some research finds no relationships between perceived and actual performance (Atkinson, 2019; Frank & Ekman, 2004; Van Swol et al., 2011; Vrij et al., 2001) other studies do show self-reported good liars performing better (Eiaad et al., 2020; Debey et al., 2014; Gozna, 2002). Responsiveness is rarely tested and when it is, the measures often don’t allow for any idea of what experts and nonexperts do differently. In the few examples where response to feedback or suspicion have been examined, it appears that adapting deceptive style is possible (Anolli & Ciceri, 1997; Verschuere et al., 2009). Overall, the methods used in deception research do not enable us to see whether the different levels of expertise predicted by the GEF are present in the domain of deception.

4. Methodology

As outlined in the previous chapter, a lack of expertise-specific research in deception means that it has not yet been possible to determine whether practice, consistency, calibration and responsiveness are demonstrated. This chapter sets out some of the unique challenges in testing deceptive performance and proposes an integrated approach in which existing detection techniques can be combined in a matrix of measures to differentiate Liar ability/skill. Finally, a brief preview of the methods common to multiple studies is presented.

4.1 Challenges of deception research

4.1.1 Artificial experimental settings

Based on the deception theories mentioned in Chapter two, the importance of context is clear as is the central role of cognitive processes. Yet these are both often lacking in empirical research. Levine (2018b) points out that “the deception lab typically involves researchers randomly assigning and instructing senders to lie or tell the truth... Outside the lab, deceivers self-select, engage deception as a problem-solving activity, and have greater linguistic freedom to deceive in ways other than telling outright falsehoods.” (p. 45). He goes on to suggest that lying takes place within a range of contexts and it is vital to ensure that lab-based testing includes the key features of the context of interest if we are to build a clear understanding of deception. The current research takes a position that expertise in deception is a domain general phenomenon that applies across multiple contexts. The idea of specialist sub-types of liars is plausible (e.g., operating an online romance scam). But applying the General Expertise Framework suggests that if an expert liar exists, they will be able to transfer their ability across contexts. For this reason, experimental testing should reveal the expected differences in performance provided the setting is sufficiently challenging.

4.1.2 Solicited/sanctioned lies

An additional ongoing criticism of deception research is the fact that lies told in the laboratory context are almost always solicited and thus implicitly sanctioned by a researcher, making them qualitatively different from real-world deception which is by definition unexpected and unwanted (Miller & Stiff, 1993). The fact that experimental participants know that they are

'supposed to' lie and therefore the stakes for being caught are much lower than lies told in everyday life has been suggested to lead to lower levels of guilt and arousal and decreased demands on cognitive functions (Caso et al., 2005). Thus, making such lies easier to produce and harder to detect (Ekman et al., 1999). However, liars themselves report no differences in perceived nervousness or efforts to appear truthful between sanctioned and unsanctioned lies (Feeley, 1996; Feeley & deTurck, 1998). Hartwig and Bond (2014) meta-analysed a corpus of motivated and unmotivated lies told by a range of participants (students and members of the public) about a range of topics (feelings, events and facts) across differing modes (face to face and indirect) and reported no differences in their detectability. Therefore, solicited lies are likely to produce differences in performance between experts and non-expert liars.

4.1.3 Insufficiently challenging paradigms

Participants must be induced to lie in some way for deception research to be possible, and a degree of restriction is necessary for experimental control. But using over-simplified lie elicitation techniques limits the ability of participants to demonstrate their full range of abilities. In their large-scale meta-analysis DePaulo et al. (2003) reported that 20% of the studies reviewed had no interaction between liar and target and only 7% were what they described as "fully interactive" (p. 89). Semrad (2020) noted that participants were lying to only a mirror or video camera in seven of twelve articles. In the selection of studies reviewed in chapter three, 47% involved no interaction at all and several used heavily scripted interviews or other techniques that removed this key element of deception. Mandating simple denial rather than a more elaborate explanation limits the scope for participants to demonstrate their deceptive ability by constraining the type of lie they tell.

Variations on the Sheffield Lie Test paradigm are used frequently (Debey et al., 2015; Hu et al., 2012; Van Bockstaele et al., 2012; Verschuere et al., 2011) because it provides objective and easily comparable data on reaction time and accuracy. In some cases, autobiographical topics are chosen for the question prompts which increases the degree of personal involvement (Van Bockstaele et al., 2015). But although a valid test of response inhibition, the method still imposes constraints on creativity and cognitive load which restricts the possibility of assessing expertise. Using the components of ADCAT (Walczyk et al., 2014) as a framework we

can see that participants do not decide whether, when, or how to lie, do not construct (or retrieve) a lie, nor actively deliver their deception beyond making a single-word counterfactual utterance or pressing a button. It is worth noting that real world deception does sometimes take the form of yes/no answers or the non-verbal click of a mouse while seated at a computer. But when transferred to an experimental setting, these kind of lies rarely provide adequate scope to measure deceptive skill. According to the theory of general expertise, performing with speed and ease are hallmarks of skill and these can be measured effectively by accuracy and reaction time data. But because the other social and cognitive demands normally present in deception are absent in these paradigms, it is much easier for participants to appear fast and efficient, obscuring potential expert/non-expert differences.

The *Activation* of truth is an automatic process (Walczyk et al., 2014) and as such is unlikely to be impacted by sanctioned or instructed lies. Even when requested to lie by experimenters, Participants are still subject to involuntary activation (and subsequent encoding to Working Memory) of the truthful response. Although the demands on working memory are not as high when the truth being activated is a single word. However, the *Decision*, *Construction* and *Action* components are negated by cued truth/lie conditions with prescribed outcomes. For example, Debey et al. (2015) required participants to press 'yes' or 'no' in answer to general knowledge questions such as "is milk is white?" played through headphones. Truthful or deceptive response condition was cued by the colour of a monitor screen. Because of the lack of personal relevance in the questions asked, they are unlikely to evoke any emotional response that would normally be part of the experience of lying and pressing one of two options on a screen requires no real attempt to "...falsify, equivocate, omit, exaggerate, or understate" as specified under ADCAT for the *Construction* component (Walczyk et al., 2014, p. 24). Reaction time tests that use autobiographical information as the source material (Hu et al., 2012) are an improvement on this type of testing, but the removal of an interactive partner means there is no requirement to attempt to be believable on the part of the liar, only the speed of response is important.

4.1.4 "One shot" testing

Other research uses interviews following a mock crime (Walczyk, et al., 2013), or eliciting an account of false experience (Gawrylowicz, et al., 2016) or false opinions (Wright et al., 2013; 2015) or both (Frank & Ekman, 2004). These studies place more realistic demands on liars' decision-making and creativity and the paradigms used could evoke genuine emotional responses and realistic levels of cognitive load. But such intensive methods almost always mean that testing occurs at one time, providing only a snapshot of ability on a single occasion. Albeit in some cases over multiple trials. Participants must be tested more than once to demonstrate consistency of performance.

4.1.5 Differing measures of success

For research to provide evidence of expertise, the methods used must measure performance in a way that is commensurable across studies. The simplest definition of a good liar is someone who has the ability to produce and deliver a lie that their target believes to be true. So, the criterion for measuring good liars should be whether they are believed by their targets. But this is confounded by the finding that human lie detection performance hovers around 54% accuracy (Bond & DePaulo, 2006; Hartwig & Bond 2011; Vrij, Mann, Robbins et al., 2006). Thus, escaping detection by demonstrably poor human detectors is not a reliable indicator of skill. Deceptive performance can also be measured by the suppression of known verbal, non-verbal and para-verbal cues to deception. But this approach must take into account the increasing awareness that deception research has an over reliance on cues which may not be diagnostically valid.

As far back as 2003, the influential meta-analysis by DePaulo et al. characterised most deceptive cues as weak and unreliable, with just 24 out of 159 cues tested showing statistically significant differences between deceptive and truthful accounts. Recent research (Levine, 2018a; Luke, 2019; Nahari et al., 2019) has identified that this area of research may be even more flawed than first feared. Much historical psychology research contains studies with small sample sizes, selective reporting, and very small effect sizes (Button et al., 2013; Camerer et al., 2018). Coupled with the domain-specific issues of poor lie elicitation techniques and a lack of

within subject comparison, this has led to a situation where many apparently well-established cues to deception are in fact untrustworthy.

Furthermore, although certain variables are sometimes considered 'cues to deception' there is limited theoretical support for the mechanisms by which such differences come to light at the individual level. Research literature often suggests conflicting directional predictions for variables when considered across veracity conditions at a group level. For example, DePaulo et al. (2003) recorded increased fidgeting when lying, but Sporer & Schwandt (2007) found decreased hand, foot and leg movements.

4.2 Matrix of measurements for deceptive performance²

Relying on human lie detectors confounds liar performance and target detection performance. The diagnostic value of any cue in isolation is negligible, for the reasons mentioned above and because the cognitive, affective or social pressures supposed to provoke any given cue are not experienced by all liars nor all lie types. Therefore, it is essential to go beyond the presence or absence of individual cues and instead take a broader approach, exploring the various elements of a liar's toolkit to assess skill level in the production and delivery of a lie. The current research programme adopts an approach commonly employed in expertise research but as yet unused by deception researchers – the Expert Performance Approach³ (Baker & Farrow, 2015; Mann et al., 2007; Starkes & Ericsson, 2003; Voss et al., 2010). The Expert Performance Approach studies an expert under skill-specific ecologically valid conditions focusing on variables representative of the typical interaction between the expert and their environment of expertise (Singer, 2000; Voss et al., 2010). For deception this means designing a test that closely resembles 'real world' lying and collecting measures of performance from across the elements representative of skill in deception.

² The Matrix of measurements was initially intended to form the basis of all studies in the current research project. The advent of Covid 19 necessitated a move to online testing which allowed for a more in-depth examination of just one channel (verbal). The process outlined below ensured that the most appropriate cues for this channel were used to measure deceptive performance.

³ Also known as the "familiar tasks" approach (Hoffman, 1987; Hoffman et al., 1995).

Such an approach allows for a detailed, idiographic view of lying ability in each individual. It requires identifying the best subjective and objective measures for each facet of deception across multiple channels and triangulating performance in each of these areas to converge on a multivariate profile of deceptive performance. It makes intuitive sense that an expert liar will be better able to conceal their cues to deception across a range of cues and channels. Thus, those with smaller differences between their truthful and deceptive scores can be deemed the best liars. In repeated studies, combining multiple lie detection methods across modalities results in a higher rate of correct classifications of liars and truth tellers (Abouelenien et al., 2014; Hartwig & Bond, 2014; ten Brinke & Porter, 2012; Vrij et al., 2004) suggesting that using a 'scorecard' type approach will capture the full range of deceptive performance. The within-subjects approach means that idiographic differences can be accounted for by measuring against a truthful baseline.

Selection of measures is difficult, however, when the reliability of individual cues is increasingly in doubt amongst established deception researchers. Levine (2018a) went as far as to suggest that because "...conclusions from meta-analyses do not align with the findings of the primary studies that comprise the meta-analyses. The divergent conclusions from meta-analyses and primary studies challenge both the validity of cue-based lie detection and what counts as the critical unit of scientific evidence in research" (p. 2461). Hartwig and Bond (2011) meta-analysed the relationship between 134 lie and truth cues relied on by human judges and actual veracity, finding that poor lie detection rates were attributable to a lack of strong cues rather than reliance on ones which were nondiagnostic. This means designing a matrix of measures requires first examining the available literature to determine which measures are both reliable and indicative of expertise rather than unrelated factors.

4.2.1 Selection of measures

4.2.1 Conscious control. Only those elements under the conscious control of the liar or likely to be a product of practice can be considered. For example, attractiveness (Aune et al., 1993), determined by features such as symmetry and having a neotenous or 'baby-face' (Bull & Vine, 2003; Maoz, 2012; Porter, Campbell et al., 2002; Rezlescu et al., 2012; Zebrowitz et al., 1996) have associations with perceived credibility. While other socio-demographic factors

including race (Lloyd et al., 2017; Vrij & Winkel, 1992a), gender (Porter et al., 2002), and age (Slessor et al., 2014) have also been shown to influence deception judgements. But such things are not indicative of expertise and are therefore not of interest in this research.

4.2.2 Effect sizes. Effect sizes in deception research are much smaller than those found elsewhere, often failing to meet the criteria for even a ‘small’ effect based on Cohen’s (1977) rule of thumb (DePaulo et al., 2003; Sporer & Schwandt 2006; 2007). Relying on such small effects has been justifiably criticised as poor research practice (Luke, 2019) and a dramatic difference in the average effect size reported between pre-registered and non-pre-registered studies ($r = 0.16$ and $r = 0.36$ respectively) suggests this is a valid concern (Schäfer & Schwarz, 2019). But it is possible that the very nature of deception with its susceptibility to moderators, means that many cues are genuinely subtle and not likely to be universal. So that a small effect size should not necessarily invalidate importance.

A between-subjects design is often necessary in deception studies which tends to have smaller effect sizes than within-subjects (Rubio-Aparicio et al., 2018; Schäfer & Schwarz, 2019). Overall social psychology reports much lower effect sizes than biological and cognitive psychology (Richard et al., 2003; Schäfer & Schwarz, 2019) in part because of the difference in variables and testing paradigms. In fact, it has been suggested that d ’s of 0.15, 0.36, and 0.65 should be interpreted as small, medium, and large effects for studies in social psychology (Lovakov & Agadullina, 2021 which is the approach taken here.

4.2.3 Replicated results. If smaller effects are to be accepted, then sample sizes must be appropriate to ensure statistical power (Funder et al., 2014), something that is often lacking in deception research (Luke, 2019). Therefore, only individual cues shown as statistically significant in meta-analyses that include at least 5 published studies (Marszalek et al., 2011) will be included. This criterion is somewhat arbitrary but is based on the rationale that if effect sizes are likely to be small then sample sizes must be high to achieve appropriate statistical power. In the meta-analysis of DePaulo et al (2003) 34% of samples were less than $n=20$ and 70% were less than $n = 60$. With an effect size of $d = 0.10$ (the median effect size in DePaulo et al., 2003) and power of 0.8 a sample of at least 500 would be required for even the simplest of tests and considerably higher for more complex designs (G*Power – Faul et al., 2009). Many meta-

analyses do not provide n (total pooled sample) but all state k (number of studies) so this must be used as a way of estimating the likely total number of senders considered in analysis.

Although deception research has suffered from small sample sizes in the past (DePaulo et al., 2003; Luke, 2019), Hauch et al. (2015) analysed data from 44 studies and provided both k and n for each cue included and the average sample size was close to 150 Participants. So, it is reasonable to expect that pooled samples across at least 5 studies should reach the goal of $n = 500$ in most cases.

4.2.4 Inclusion and exclusion criteria. To summarise, measures must be both robust and reliable meaning only those with an effect size equivalent to at least Cohen's d of 0.15 and confirmed in at least 5 independent studies. Cues must be controllable by the sender and must also provide coverage of all aspects of deception between them and address the theories discussed in chapter two. This last point may require overriding some of the previous criteria to ensure full coverage. According to Ekman (1969) when deceiving the most important channels of communication are speech (verbal), followed by the face and then the body (nonverbal), and the least is the voice (paraverbal). While this may be the case for naive liars, it is not certain whether this hierarchy would be the same for a practiced, skilled liar. Nevertheless, it is a useful division of the different aspects of deception and one that the review of cues below is based on, along with the addition of two global, subjective, measures.

4.2.2 Verbal channel

Verbal content, meaning the words chosen to communicate has the highest diagnostic utility in detecting deception. Across several meta-analyses on content-based cues (Bond & DePaulo, 2006; DePaulo et al., 2003; Masip et al., 2005; Vrij, 2008) language has been shown to contain some of the strongest and most reliable indicators. Specifically, Statement Validity Assessment (SVA) techniques such as CBCA - Content-Based Criteria Analysis (Steller & Kohnken, 1989) and Reality Monitoring (Johnson & Raye, 1981) as well as natural language processing software including LIWC - Linguistic Inquiry Word Count (Pennebaker et al., 2001) and CohMetrix (Graesser et al., 2004). Though it is important to note there are also verbal lie detection tools such as Scientific Content Analysis (SCAN) that have proved ineffective despite widespread use (Bogaard et al., 2016; Nahari et al., 2012). CBCA and RM capitalise on differences between

genuine memories and fabrications and measure the presence or absence of key features using indicative criteria. While the linguistic tools measure things such as pronoun usage, emotional expression, linguistic fluency and the level and type of detail present as proxies for cognitive load, emotional responses to deception or attempts to control and manage self-presentation. Although not all designed for lie detection, each has been used to discriminate between false and true accounts successfully.

4.2.2.1 Reality Monitoring. Most theoretical positions on the cognitive and verbal elements of deception detection rely on the Reality Monitoring (RM) model of Johnson and Raye (1981). This term refers to the process by which a person monitors the source of their own memory to determine whether it is external (originating in experience and perceptual processes), or internal (generated by cognitive processes such as imagination or reasoning). Initially influential in memory research, the concept is also directly applicable to deception because it suggests that memories for events based on actual experience are qualitatively (and thus measurably) different from those coming from an internally constructed fiction or lie. Reality Monitoring suggests a framework for what elements a 'real' memory contains as compared with a fabrication, and this same process an individual goes through when attempting to attribute a memory to real or imagined events can be applied by a third party as a kind of lie detection tool. This process was operationalised fully by Sporer et al. (1997, 2004) in the Judgment of Memory Characteristics Questionnaire (JMCQ) and refined into a list of eight criteria, seven of which are more likely to be present in genuine memories (clarity and vividness, sensory information, spatial information, temporal information, affective information, reconstructability, and realism) and one (cognitive operations) more often present in fabricated accounts. Although RM has classification accuracy rates of 64% - 86% across several studies (Sporer, 2004; Vrij, 2008) there is no detailed information about how the criteria should be applied. For example, what is the cut off rate for a truth/lie classification? How many criteria must be present? How strongly? Not all studies use the JMCQ and there is wide variation in how RM is interpreted.

A review of RM-based deception research including studies in French, German and Spanish (Masip et al., 2005), suggested that overall, it is a useful tool and can accurately distinguish

truth from lie. But only some criteria (realism, temporal information, contextual information, and visual and auditory details) were reliably able to discriminate. In a more recent meta-analysis (Hauch et al., 2017) sensory-perceptual processes (specifically hearing), quantifiers, motion verbs, cognitive processes and indicators of insight but no other RM criteria were significantly different in truthful and deceptive accounts.

4.2.2.2 Criteria-Based Content-Analysis (CBCA). CBCA (Steller & Kohnken, 1989) is a specialist deception detection tool conceptually similar to RM but derived in a bottom-up rather than top-down manner. Designed specifically to distinguish truthful accounts of child sexual abuse from false memories or coached testimony, CBCA is the most widely used Statement Veracity Assessment technique (Blandón-Gitlin et al., 2009; Masip et al., 2005). It was borne out of German psychologists interviewing child victims of sexual abuse who noted that certain semantic content features were uniquely present in genuine accounts and not false ones and vice versa. There is a very basic underlying theoretical argument in the form of the Undeutsch hypothesis which states that descriptions will differ (in content, quality and expression) between experienced or imagined events (Steller & Köhnken 1989; Undeutsch, 1989). But unlike RM there is no expansion of the theory to explain why this is the case. Using CBCA involves rating a statement against each of the 19 criteria shown in Figure 6, all thought to be more likely to appear in honest accounts. In addition to the ideas found in RM involving qualitative differences in memory, CBCA also assumes that liars will be more concerned with impression management than truth-tellers and therefore more likely to admit lapses in memory or negative behaviour.

The specific and very applied nature of CBCA as a tool for analysing accounts of sexual abuse means that several of the criteria are only applicable to that context (e.g., criteria 10, 11, 13, 18 and 19) and these are usually excluded when general lie detection is required (Sporer et al., 2021), leaving fourteen criteria. In a recent meta-analysis (Oberlader et al., 2021) there was a large effect size for studies using the full 19 criteria while only moderate effect size for 'incomplete' versions of CBCA. However, across 55 studies, CBCA was able to discriminate between truthful and deceptive accounts with an effect size of $d = 1.01$ (Oberlader et al., 2016).

Figure 6

Steller and Köhnken's CBCA criteria

| |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>General</u></p> <ol style="list-style-type: none">1. Logical structure and coherence2. Unstructured production with spontaneous digressions3. Quantity of details <p><u>Specific</u></p> <ol style="list-style-type: none">4. Contextual embedding5. Descriptions of interactions6. Reproductions of speech7. Unexpected complications8. Meaningful unusual details9. Superfluous/peripheral details10. Accurately reported details misunderstood11. Related external associations12. Accounts of subjective mental state13. Attribution of Perpetrator's mental state <p><u>Motivation-related</u></p> <ol style="list-style-type: none">14. Spontaneous corrections15. Admitting lack of memory16. Raising doubts about one's own testimony17. Self-deprecation18. Pardoning the perpetrator <p><u>Offense-specific</u></p> <ol style="list-style-type: none">19. Details characteristic of the offense |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Note: Adapted from "Criteria-Based Content Analysis. Credibility assessment of children's statements in sexual abuse cases." by M. Steller and G. Köhnken, 1989, In D.C. Raskin (Ed.), *Psychological Methods in Criminal Investigation and Evidence*, p. 221. Copyright 1989 by Springer-Verlag.

CBCA is not an infallible tool even for its original intended purpose (Ruby & Brigham, 1997). In a validation exercise using a selection of cases where medical evidence and offender confessions

corroborated testimony, only seven of the nineteen CBCA criteria appeared in all cases (Raskin & Esplin, 1991). Although later research argued that CBCA was fit for purpose despite some criteria having much higher discriminatory power than others (Roma et al., 2011).

Due to its popularity in a legal setting, there has been a great deal of experimental research in the use of CBCA (Masip, 2021). But the results have not been entirely consistent. While the overall classification accuracy rate is close to 70%, results are moderated by the type of research paradigm, rater training and rating scale used (Hauch et al., 2017). When coached on CBCA differences between truthful and deceptive accounts reduced or disappeared (Caso et al., 2006; Vrij et al., 2004; Vrij et al., 2000b). Successive meta-analytic reviews have identified issues such as higher effect sizes in field studies than experimental research, interrater reliability, and differences in criteria base rates, (Amado et al., 2015; Hauch et al., 2017; Vrij, 2005) but all have endorsed CBCA as an effective lie detection tool that performs well above chance level.

Sporer (2004) suggests that CBCA and RM should be seen as complementary approaches and notes that when used together the classification rate is higher, although this may simply be the result of increasing the number of predictors (Sporer et al., 2021) and there is a degree of redundancy in including all the criteria from each approach. Additionally, RM has not been tested as consistently as CBCA. Few studies use Sporer's JMCQ, most develop their own list of cues based on Johnson and Raye's original work. CBCA is the most widely used statement veracity technique (Brennen & Magnussen, 2022). For this reason, only CBCA is used in the matrix although several items based in RM are captured separately as linguistic cues measured by natural language processing software (see below).

4.2.2.3 Linguistic Inquiry Word Count (LIWC). The verbal channel is particularly suitable for computerised analysis, a technique arguably less prone to bias than using human coders. Natural language processing tools can review vast quantities of text to identify deceptive cues and categorise messages based on their presence or absence. LIWC is a natural language processing technology in which each word in a text is compared with a dictionary of approximately 6400 words and categorised into grammatical and psycho-linguistic dimensions and expressed as a percentage of the total words in the analysed text (Pennebaker et al., 2001;

Tausczik & Pennebaker, 2010). Although not the original intent of LIWC, some of these dimensions have been used to distinguish truthful from deceptive accounts.

The current version of the software (LIWC2015) has 92 categories in total encompassing basic linguistic elements such as verbs, nouns and pronouns; psychologically relevant items such as words to do with affect or perceptual and cognitive processes, as well as different temporally focused words, indicators of the theme or content of the words such as biological states or leisure activities and total word count. All words in the text are coded for all relevant categories to which they apply. Tausczik and Pennebaker (2010) make the distinction between content words (what is said) and style or function words (how it is said). Although less than 0.5% of words are function words, they make up 55% of spoken and written language and are more revelatory of the speaker's mental state and personality (Tausczik & Pennebaker, 2010). Because function words are independent of topic, they can be compared across different contexts without potentially confounding results (Ireland et al., 2011). LIWC is a probabilistic system that functions without regard to idiomatic differences in language use, or sarcasm and humour. So, in the sentence "I nearly died laughing", the word 'died' would be coded as a negative word with the topic of death as well as a past-tense-focused verb.

4.2.2.3.1 Selection of LIWC cues. Newman et al. (2003) were the first to attempt using LIWC as a lie detection tool, with source material of true and false written samples and transcribed verbal accounts obtained via multiple lie elicitation techniques (false opinion, false attitudes and a mock crime denial interview). They found LIWC to be 61-67% correct in classifying truths and lies. Specifically on the basis that liars used fewer first-person singular pronouns (I, me, mine), fewer third-person pronouns (he, she, they), more negative emotion words (anger, hate, enemy, sadness) fewer exclusive⁴ words (but, without, except), and more simple motion verbs (walk, ride, throw). The reduction in first-person pronouns is thought to be indicative of defensiveness (Feldman Barret et al, 2002) and psychological distancing when liars avoid taking 'ownership' of their lies to dissociate themselves from the socially unacceptable act of deception. It may also be due to a lack of personal experience with the event or emotion being communicated as outlined in the Reality Monitoring theory (Johnson & Raye, 1981). The

⁴ The category of exclusive words has been replaced with 'differentiation' in LIWC2015

increase in negative emotion words was taken as evidence of subconscious expression of discomfort and guilt about lying. While the reduced linguistic complexity of the last two indicators suggests liars were inadvertently using simple sentence construction to compensate for cognitive resources deployed elsewhere (Newman et al., 2003).

Although some subsequent research using LIWC has achieved similarly high rates of distinguishing between truthful and deceptive accounts, not all use the same features of language identified by Newman et al. (2003). Some studies were able to replicate the results, for example, a rate of 69.7% accuracy for LIWC analysing transcripts of prisoners telling truth and lies about video clips they had watched (Bond & Lee, 2005). But although each of the cues in Bond and Lee's study were in the predicted direction, only third-person pronouns and emotion words were significantly different when comparing truth with lies. Other research (Abouelenien et al., 2014; Almela et al., 2013; Mihalcea & Strapparava, 2009; Fuller et al., 2006) reports only some indicators replicating, or only under certain circumstances. Dzindolet and Pierce (2005) found that liars used fewer emotion words (both positive and negative) and more references to other people when lying about topics important to them but reported no differences in personal pronoun use nor any indicators of the cognitive complexity of the texts. Linguistic cues to deception include those that reflect the unconscious psychological processes experienced by liars, and those that are deliberately used to accomplish deception (Toma & Hancock, 2012). This combination of inadvertent and strategic use of language, reflecting the different deception theories, may contribute to the apparently conflicting evidence in verbal lie detection. Vrij (2000) suggests that deceptive accounts contain fewer references to others (e.g., third person pronouns) but a meta-analysis by DePaulo et al. (2003), found no significant differences between truth and lie conditions on this variable. Similar discrepancies exist when considering the length or size of an account. Perez-Rosas and Mihalcea (2014) found that the average word count for deceptive statements was significantly smaller than truthful statements collected in an experiment with samples in India, USA and Mexico. The same effect is seen in research using the 'real life' data of actual online dating profiles (Toma & Hancock, 2012) and pleas for missing and murdered relatives (ten Brinke & Porter, 2012). But studies by Zhou et al.

(2004) and Hancock et al. (2008) report that liars produce significantly *more* words than truth tellers.

Holtgraves and Jenkins (2020) compared text messages obtained under laboratory conditions and those produced in 'normal life' and shared by participants. Naturally occurring deceptive texts show more negations, negative emotions, pronouns, personal pronouns, function words, adjectives, and auxiliary verbs than nondeceptive texts and significantly more (rather than fewer) first-person pronouns. But there are no differences for word count and third-person references. However, in experimentally created texts, only negations (more in deceptive condition) and word count (higher in truthful condition) were diagnostic cues. Elsewhere, Toma and Hancock (2012) compared claims made in dating profiles with data verified in person and found that liars use less first-person singular pronouns, more negations, and more negative emotion words plus lower word count. But there were no differences in any other marker of cognitive load (e.g., exclusive words, motion words). The asynchronous nature of this kind of communication allows more time to create a lie and may thus reduce demands on the cognitive system.

Including all possible variables in modelling and analysis runs the risk of statistical overfitting and subsequent spurious results. However, relying only on the expected cues may result in missing previously unknown indicators that are reliably discriminatory. Both bottom-up (text mining) and top-down approaches can be combined to derive the most effective set of cues with which to examine potentially deceptive content (Liu et al., 2012). Turning to meta-analysis allows for assessment of the most reliable linguistic cues. Pooling samples from 44 different studies with differing samples, languages, kinds of lies and contexts for eliciting them, Hauch et al. (2015) considered 79 different cues.

Those cues meeting the criteria for inclusion in the matrix of measurements are summarised in Table 1. Effect sizes for the cues found to be significantly different in truthful and deceptive accounts were small, ranging from $g_u = 0.06$ (sensory-perceptual processes) to $g_u = 0.48$ (content word diversity). Pronoun cues, sensory perceptual and cognitive process cues were included despite falling below the threshold of an effect size equivalent to at least Cohen's d of 0.15 because of the strength of the theoretical basis that supports them (Interpersonal

Deception Theory and Reality Monitoring respectively). LIWC deconstructs language into its component parts, and this necessarily involves a loss of context. But the lack of sentence-level meaning is replaced by the ability to analyse language use in a bottom-up manner revealing the sender's state of mind and cognitive processes. By combining this examination of the basic building blocks of communication with other techniques that parse entire sentences and consider their meaning (e.g., CBCA) a global view of the verbal channel of truths and lies is possible.

Table 1

LIWC deceptive cues from Hauch et al. (2015) meta-analysis

| Cue name | LIWC category (label) | k | Effect size g_u | Direction when lying |
|------------------------------|----------------------------------------------------------------------------|----------------|----------------------|-------------------------|
| Total words | Word Count (WC) | 42 | 0.24 | Fewer |
| Number of sentences | Number of words per sentence/Word count | 9 | -0.33 | More |
| Content word diversity | Regular verbs (verb) Adjectives (adj) Common adverbs (adverb) | 7/9 | 0.48 | Fewer |
| Exclusive words | Differentiation (differ) | 18/20 | 0.24 | Fewer |
| Negations | Negations (negate) | 20 | -0.15 | More |
| Negative emotions | Negative emotions (negemo) | 24 | -0.18 | More |
| Anger | Anger (anger) | 12 | -0.27 | More |
| First-person pronouns | 1st pers singular (i) 1st pers plural (we) | 22/23 | 0.14 | Fewer |
| Second/third-person pronouns | 2nd person (you) 3rd pers singular (she/he) & 3rd pers plural (they) | 21/23 26/29 | -0.10 -0.10 | More |
| Sensory and perceptual words | perceptual processes (percept) | 27 | 0.06 | Fewer |
| Hearing | Hearing (hear) | 11 | 0.17 | Fewer |
| Cognitive processes | cognitive processes (cogproc) | 18/19 | 0.09 | Fewer |

4.2.3 Nonverbal channel

The nonverbal channel refers to face and body movements and their suppression. This includes illustrators – hand movements made to illustrate or emphasize what is said, adaptors –

movement of the body or objects to adapt to the environment (e.g., scratching an itch); affect displays – indicating emotional states and usually made with the face (e.g., smiling); and regulators – movements made to regulate conversational interaction (e.g., head nodding or eye contact) (Ekman & Friesen, 1969). Despite evidence that these cues are inferior to verbal ones in deception detection (DePaulo et al., 1985; Hauch et al., 2016; Masip et al., 2005; McQuaid et al., 2015; Vrij, 2008a), they can still be a valid way of determining truth from lie (DePaulo et al., 2003; Vrij, Edward, Roberts et al., 2000) and as such can contribute to the matrix approach. It is striking that the most common and strongly held beliefs about nonverbal cues are in fact, nondiagnostic (Bogaard et al., 2016b; Masip & Herrero, 2015; The Global Deception Research Team, 2006). Yet unlike the verbal channel, there are no widely adopted, standardised measures of non-verbal behaviour. Attempts to establish the Facial Action Coding System (FACS) notwithstanding (Ekman & Friesen, 1982). Nor is there a single theoretical explanation for the physical changes sometimes observed when someone is lying, but the Four Factor Theory (Zuckerman et al., 1981) is often relied on. Some signs (e.g., pupil dilation and blinking) are thought to be indicative of the physiological arousal caused by deception, while others (e.g., gaze aversion, increased limb movement) are attributed to increased cognitive load or emotional involvement, and their absence can be attributed to the liar exerting conscious control over their body to appear credible (Vrij, 1995).

The body of research in this area is vast and seemingly as discrepant as that of verbal lie detection (Vrij et al., 2019). While early forays into the area of nonverbal lie detection seemed promising (De Turck & Miller, 1985; Ekman & Friesen, 1969; Ekman et al., 1991; Mehrabian, 1971) and some findings have been repeatedly reported, such as that liars show fewer illustrators (DePaulo et al., 2003; Ekman, 1969; Vrij, Edward, Roberts et al., 2000). Results are not reliable, with different cues appearing in various studies and contexts. For example, the conclusion that covert facial indicators of disgust and happiness along with failed attempts to simulate sadness are seen more in deceivers than truth-tellers is unlikely to generalise beyond the very specific sample of relatives publicly pleading for the return of missing or murdered family members (ten Brinke & Porter, 2012). Also, cues are seen to vary as a function of the

amount of motivation and preparation, the content of the lie, and even the experimental design used (Sporer & Schwandt, 2007).

Meta-analytic research does not provide a great deal more clarity on which are the most reliable nonverbal indicators of deception. In an exhaustive review DePaulo et al (2003) examined 158 different cues to deception encompassing “all nonverbal, paraverbal, and verbal cues ever studied” (Sporer & Schwandt, 2007, p. 3). This analysis included all but 3 unpublished reports from earlier comprehensive reviews (e.g., Zuckerman & Driver, 1985) and is therefore taken to have superseded previous meta-analyses. DePaulo et al found that only seven nonverbal cues significantly differed between truthful and deceptive accounts (increased fidgeting, pupil dilation, tension/nervousness, chin raises and lip presses and decreased illustrators and facial pleasantness) but results for chin raises, lip presses and pupil dilation were based on just four studies. Later research focusing only on nonverbal cues (Sporer & Schwandt, 2007) did not reach the same conclusions. Instead, hand movements, nodding, and foot/leg movements were all found to be negatively associated with deception.

Table 2

Non-verbal behaviour indicators from meta-analyses

| Cue Name | Description | k | Effect size | Direction when lying |
|----------------|-------------------------------------------------------------------------------------------------|-----------------|-------------------------|----------------------|
| Illustrators | Hand movements that accompany speech and illustrate it | 16 ^a | d = - 0.14 ^a | Decreased |
| Fidgeting | Touching or manipulating objects and/or touching, rubbing, or scratching the body, face or hair | 14 ^a | d = 0.16 ^a | Increased |
| Hand movements | hand movements without the arm being moved | 5 ^b | d = - 0.38 ^b | Decreased |
| Nodding | forward–backward motions of the head suggesting affirmation | 9 ^b | d = - 0.18 ^b | Decreased |

Note: k (number of studies included in meta-analyses) and effect sizes both indicated by a - DePaulo et al. (2003) and b - Sporer & Schwandt (2007).

Applying the criteria set out at the beginning of this chapter means including only those cues which were tested in at least five studies. This gives seven non-verbal behavioural indicators. However, the cues 'facial pleasantness' and 'overall tension or nervousness' are both highly subjective with the following definitions provided: Facial pleasantness - "Face appears pleasant; speakers show more positive facial expressions (such as smiles) than negative expressions (such as frowns or sneers)". Overall tension or nervousness - "Speaker seems nervous, tense; speaker makes body movements that seem nervous" (DePaulo et al., 2003, p. 113-115). Thus, neither is sufficiently well codified to ensure accuracy across different raters and both are subject to contamination based on the subject matter of what is being said. So, both have been removed from the list of nonverbal cues as shown in Table 2. However, there is clear cross over between these deleted cues and items two (Pleasant and friendly interaction) and nine (Appears nervous/tense) on the HDI (see section 4.2.5) so these items will still be captured by the matrix. Illustrators does not quite meet the criterion for effect size of at least 'small' ($d = .015$) but as this is such a replicable finding (in 16 studies) it has been included in the nonverbal cues.

4.2.4 Paraverbal channel

The paraverbal channel refers to *how* something is said, encompassing elements such as pitch, tone, cadence, volume, speed, inflection, and emphasis. Several of these vocal indicators of deception are thought to show the increased cognitive load of lying versus truth-telling. For example, reference errors, misspeaking and stumbling over words are characteristic of deception (Anolli and Ciceri, 1997; Davis et al., 2005; Wright Whelan et al., 2014). The time between the end of a question and the start of the answer is known as response latency and this is often longer in deceptive accounts (Spence et al., 2012; Sporer & Schwandt, 2006; Vrij, Edward, Roberts et al., 2000). But the opposite effect has also been reported (Mapala et al., 2017; O'Hair et al., 1981) and meta-analysis shows that when lies are prepared in advance the latency effect is reduced, sometimes to non-significance (Sporer & Schwandt, 2006). A longer duration of pauses when someone is speaking can also indicate deception (Anolli & Ciceri, 1997; DePaulo, et al., 2002; Vrij, Edward, Roberts et al., 2000; Vrij & Mann, 2001; Mann et al., 2004) With long pauses said to be indicative of a complex task during which the speaker is

continually having to make choices in order to finish their phrase and accomplish their goal (Berger & Jordan, 1992; Rochester, 1973).

Other paraverbal cues such as pitch, are associated with the autonomic responses triggered by affect and arousal and have been associated with human judgements of deception even when not consciously detectable (Ekman et al., 1976). Pitch is the auditory perceptual quality of frequency and is indicated by Fundamental frequency (F0) which is a measure of vocal fold vibration frequency (the number of glottal pulses in a second). Pitch is known to rise in arousing situations (Ekman, 1991) due to increased tension in the vocal tract (Spence et al., 2012) and a similar effect is proposed to account for the finding that people tend to have a significantly higher pitch when lying than not (Anolli & Ciceri, 1997; DePaulo, et al., 2003; Ekman et al., 1976; Ekman, 1985; Streeter et al., 1977; Vrij, Edward, Roberts et al., 2000). But the reverse has also been demonstrated where a drop in pitch occurs in deceptive accounts possibly due to overcontrol (Anolli & Ciceri, 1997) and null results are also reported (Fiedler & Walka, 1993; Spence et al., 2012).

Table 3

Paraverbal behavioural indicators from meta-analyses

| Cue Name | Description | k | Effect size | Direction when lying |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------|----------------------|
| Pitch | The audible pitch of voice measured by F0 – fundamental frequency | 12 ^a | d = 0.21 ^a | Increased (higher) |
| | | 7 ^b | d = -0.18 ^b | |
| Message length/duration | Length measured by how much time is spent speaking | 4 ^a | d = -0.35 ^a | Decreased |
| | | 23 ^b | d = - 0.08 ^b | |
| Latency | Time between the end of a question or turn taking and the beginning of the speaker's answer | 18 ^b | d = 0.21 ^b | Increased |
| Speech errors | False starts, stammering or repeating words or phrases, spoonerisms and filled pauses (um, er, ah and other vocalisations). | 4 ^a | d = 0.21 ^a | Increased |
| | | 15 ^b | d = 0.08 ^b | |

Note: k (number of studies included in meta-analyses) and effect sizes both indicated by a - DePaulo et al. (2003) and b - Sporer & Schwandt (2006).

Table 3 summarises the paraverbal cues included in the Matrix of measurements. As with previous channels, even meta-analytic findings are equivocal. DePaulo et al (2003) report significant differences in lying and truth telling for vocal tension, pitch, word/phrase repetitions and proportion of total time talking but only pitch and tension were examined in at least five studies. Sporer and Schwandt (2006) focused on just nine paraverbal indicators across 41 studies and found that pitch, response latency, speech errors and message duration were related to deception. But once sample sizes were considered and weighted analyses carried out, only the first of these two were significant. It is worth noting that speech errors (albeit specified slightly differently) are significant cues in both meta-analyses. Although DePaulo highlights the lack of research on speech errors and indeed their analysis is based on just four reports, this has been remedied by several studies published after the data collection for their analysis and that of Sporer and Schwandt (research up to 1999 and 2000 respectively). More recently, disfluency and errors in speech were associated with deception in three studies which all examined data from actual criminal investigations (Davis et al., 2005; Wright Whelan et al., 2014; Vrij & Mann, 2001).

4.2.5 Subjective measures

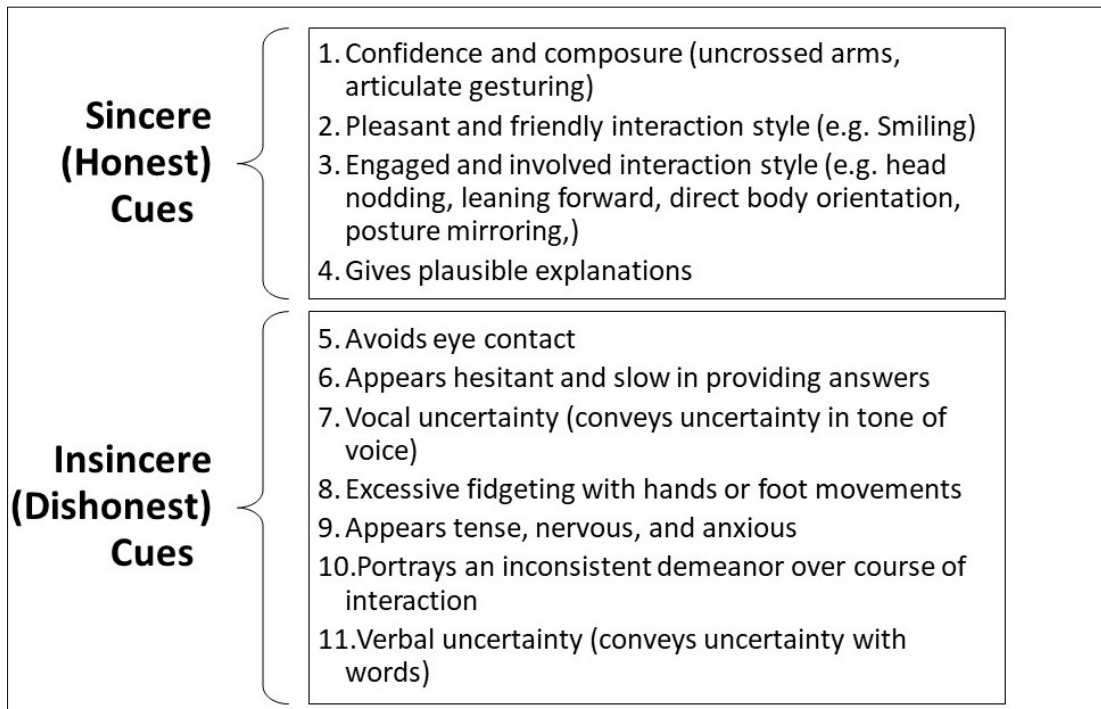
Somewhat counterintuitively, it is also important to include commonly employed but incorrect assumptions of deceptive 'tells' alongside reliable indicators of lying in the matrix of measurements for deceptive performance. Research has struggled to disentangle the ability to lie from the often-unrelated likelihood of being believed. Partly because human lie detectors are swayed by cues based on folk beliefs about deception that do not reliably signal truthfulness or lying (Global Deception Research Team, 2006). But, in order to be a successful liar, a person must still convince targets relying on these non-diagnostic cues. Thus, there is value in assessing how well someone escapes the detection of a subjective third-party even if they are likely to rely on invalid cues.

4.2.7.1 Honest Demeanor Index (HDI). Levine and colleagues (2011) developed the Honest Demeanor Index (HDI), a constellation of behaviours that comprise an honest or dishonest demeanour (see Figure 7). This can be applied to an individual's non-verbal behaviour to assess the *perceived* believability or trustworthiness of the sender irrespective of their actual

veracity. When tested, the HDI index total does not correlate with actual honesty but does correlate with third-party judgments of honesty (Levine et al., 2011).

Figure 7

Visual representation of the Honest Demeanor Index as set out in Levine et al. (2011)



Note: The total index score is calculated by taking the average score on each dimension (1-7 rating) across coders and subtracting the insincere score from sincere score giving possible range of -6 to +6.

4.2.7.2 Third party judgements. The final aspect of the matrix is a measure of how plausible naïve judges find each participant. Whereas the HDI is carried out by trained raters and based on a particular set of cues derived from research, untrained judges more closely align with ‘real world’ deception. There is evidence to suggest that judgements made after viewing so-called ‘thin slices’ or very brief observations of behaviour are as accurate as those based on longer exposure (Ambady & Rosenthal, 1992). Judgements at zero acquaintance have been shown to correctly equate to results from objective psychometric measures in terms of sexual orientation, intelligence, personality traits (Ambady et al., 1999, Borkenau & Liebler

1995; Reynolds & Gifford, 2001), altruism (Brown et al., 2003) and dishonesty (Albrechtsen, et al., 2009; Bond et al., 1994; Vrij et al., 2004).

Ambady et al. (2006) demonstrated that interaction motives can be accurately divined from brief exposure to “any excerpt of dynamic information less than 5 minutes long” (p. 5) and such judgements are not impacted by fatigue or cognitive load. So, relatively short videos can be shown to third-party viewers who are asked to determine whether the subject is lying or telling the truth. Such a measure is commonly used in lie detection research and despite the poor performance of judges, greater success by some senders than others (DePaulo et al, 2003) may be indicative of greater expertise.

4.2.6 Summary of Matrix

Table 4 provides a full list of all included measures with their individual cues. Only those individual cues with an effect size equivalent to at least $d = 0.15$ and tested in at least five independent studies have been included, with the exceptions detailed above where this would have prevented key theoretical features of deception being addressed. By using the inclusion and exclusion criteria defined previously, several commonly used indicators that do not reliably discriminate between truth and lie have been removed. These were likely to add statistical ‘noise’ or give spurious significance values (Luke, 2019) so this process increases the quality of subsequent analysis. However, the items within the Matrix are not all suitable for all types of experimental paradigms as is clear from the methodological previews provided below. Study one uses the full Matrix in an in-person, fully interactive task whereas studies two and three have a narrower focus of the linguistic aspects of deception to enable large-scale online testing and therefore do not include some measures.

Different theories of deception predict different outcome cues, and these are sometimes opposing. For example, under ADCAT a liar might fail to maintain eye contact in an attempt to lower the extraneous load of deception (Walczyk et al., 2014) whereas IDT (Buller & Burgoon, 1996) suggests a liar might strategically control their behaviour to appear more believable by making frequent eye contact. Similarly, as set out in the Four Factor Theory (Zuckerman et al., 1981) effortful control over some cues may come at the expense of others leading to ‘leakage’ elsewhere. So that speakers attempting to control their body language may inadvertently

increase pause length or speech errors. Individuals are likely to have differing natural abilities and it is reasonable to assume that these might manifest themselves as demonstrably greater skill in one channel versus another. Also, different channels provide different affordances for deception as discussed above with text-based asynchronous communication differing from in-person ‘real time’ encounters (Hancock et al., 2004; Ho et al., 2016). Nevertheless, the use of a lie effect as the way of operationalising deceptive skill should allow potential expert liars to show above average performance in all areas by balancing the competing demands across channels.

Table 4

Full Matrix of Measurements for deception

| Channel | Measure | Specific cues or criteria |
|------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Verbal | 14 criteria from CBCA | Logical structure and coherence, Unstructured production with spontaneous digressions, Quantity of details, Contextual embedding, Descriptions of interactions, Reproductions of speech, Unexpected complications, Meaningful unusual details, Superfluous/peripheral details, Accounts of subjective mental state, Spontaneous corrections, Admitting lack of memory, Raising doubts about one’s own testimony, Self-deprecation |
| | 12 variables based on LIWC categories | Total words, Number of sentences, Content word diversity, Exclusive words, Negations, Negative emotions, Anger, First-person pronouns, Second and third-person pronouns, Sensory and perceptual words, Hearing, Cognitive processes |
| Nonverbal | 4 nonverbal cues | Illustrators, Fidgeting, Hand movements, Nodding |
| Paraverbal | 4 paraverbal cues | Pitch, Message length/duration, Latency, Speech errors |
| Subjective | Honest Demeanor Index | Confidence and composure, Pleasant and friendly, Engaged and involved, Gives plausible explanations versus Avoids eye contact, Appears hesitant and slow, Vocal uncertainty, Excessive fidgeting, Appears tense, nervous, and anxious, Portrays an inconsistent demeanor, Verbal uncertainty |
| | Third party ratings | Criteria entirely at the discretion of naïve raters – no instructions given. |

4.3 Methodological features common to all studies in the programme

This section outlines methods which were used across multiple studies, methods unique to each study are presented in the relevant experimental chapters.

4.3.1 Self-report of deception battery

A comprehensive measure of self-reported lying frequency and self-assessed generalised deceptive ability was created by combining questions relevant to deceptive skill from the 'Lying in everyday life' questionnaire (Gozna et al., 2001) with the Lying Prevalence measure from the Science Museum study (Serota & Levine, 2014) into a single questionnaire (see Appendix B). Following the procedure of (DePaulo, 1996; Serota & Levine, 2014), participants were provided with a non-pejorative definition of each type of lie to assist them (see below).

"When we say White Lies, we mean the kind of small, everyday things you might be dishonest about to save someone's feelings e.g., pretending you were too busy to take a call when you didn't want to talk to someone; telling someone they look good when they don't, saying 'traffic was bad' when late. Whereas Major Lies are things you really would not want to be caught out over, e.g., whether or not you love someone; avoiding responsibility for a serious failing at your work; criminal activity."

4.3.1.1 Frequency measure. Answers to frequency questions were on a 7-point scale beginning at 0 and going up in increments of 5 to the highest point of 25+, while answers to ability questions were on a 7-point Likert type scale. For each question participants were asked to answer once for white lies and once for major lies as above.

Best practice in eliciting sensitive self-report data such as lying frequency suggests specifying a precise and recent time period for reporting the activity of interest (Bolger et al., 2003) and ensuring conditions of anonymity, preferably by collecting data online rather than face-to-face (Tourangeau & Yan, 2007). These conditions are both met in the current research. A specific time period (the previous 24 hours) was used to capture lying frequency. As per the Science Museum study protocol, a mnemonic device using a form of contextual reinstatement (Fisher & Geiselman, 1992) was provided as below

"Think about where you were and what you were doing over the past 24 hours, from this time yesterday to right now. Think about all the kinds of people you might have lied to (e.g. Family

members, friends or other people you know socially, people you work/study with or know as contacts, people you do not know but might see occasionally like a shop assistant, and total strangers) and how you might have talked to them, either face to face or some other way, such as in writing, by phone, or over the internet. On average, how many times in the last 24 hours did you tell a white/major lie?"

This memory-supportive approach should further increase the likelihood of accurate responses rather than broad estimates (Memon et al., 2010). Care was taken to reinforce anonymity in the initial information sheet, and this was reiterated throughout the stimuli when potentially sensitive data were requested.

4.3.1.1 Calibration measure. Self-assessment of deceptive performance was measured by responses to three questions from the self-report battery described above.

- "How easy do you think it is for another person to detect the lies you tell?"
- "How much mental effort do you consider it takes to tell a lie?"
- "Generally speaking, do you consider yourself good at telling lies?"

Answers to each of these were on a Likert type scale from 1-7 and the second question was reversed so that for all questions, higher scores indicated higher skill. Each question was asked once for white lies and once for major lies. Likert scales are commonly used in expertise research to measure self-perceptions of performance (Caputo & Dunning, 2005; Kruger & Dunning, 1999). A quantitative measure was needed to compare with data on actual performance and these three questions capture both the internal experience of lying (cognitive effort expended) as well as giving a sense of a participant's perceived success when they lie. But the three questions all refer to the concept of lying in a general sense. To capture the nuances of self-perception more fully, each study includes an additional measure. Study one asks participants to estimate the percentage of their lies that remain undetected (which can be compared with the actual percent undetected by third party raters). In study two calibration was measured by requiring participants to critique a specific instance of their own deceptive performance. Studies three and four ask for a rating of the lies told within the experiment itself.

4.3.3 Life Experience Inventory.

The lie elicitation component of studies three and four uses a process developed in false memory literature (Garry et al., 1996) in which a participant is first asked to view a list of childhood events and rate how certain they are of having experienced each one, before undergoing various methods to induce false memories. This task has been successfully adapted for deception research (Barnier et al., 2005) so that after reviewing a list of items, participants both recount a genuine memory (truth) and knowingly falsify an experience that they are certain did not occur (lie). In terms of ADCAT (Walczyk et al., 2014), providing a range of possible prompts including events the participant has experienced guarantees *activation* of the truth and requires a *decision* of how to lie (the choice of whether to lie is necessarily absent). Participants must then *construct* their deception and carry out the *action* of delivering it in a written format. Sporer and Kuepper (1995) suggest that this format of using invented versus self-experienced events does produce realistic and discriminable lies and truths.

Existing stimuli were not suitable for reuse in this research. Those originally created twenty years earlier (Garry, 1996; Paddock et al., 1999) contained items unlikely to be recognized by participants today. Others were based entirely on negative events or childhood (Barnier et al., 2005) thus biasing the content of responses which may impact the usefulness of the dependent variable where this is LIWC indicators of deception including negative emotional language (Newman et al., 2003). Therefore, a new Life Events Inventory was created and validated specifically for use in this study (see Appendix C)

Candidate items for the Inventory were collected from the existing schedules and inventories mentioned above, from online sources such as the website for the game ‘Never Have I Ever’ (Callender, 2018), and in the case of travel-based items, included the four least and four most visited countries on each of four continents according to the United Nations World Tourism Organization (2018). A pool of candidate items was then refined by the author and two research assistants using the criteria below:

- **Valence** – Items of negative, neutral, and positive emotional content to be included.
- **Content** – Sufficient richness of experience that a brief written account might naturally contain varied information about time, space, other people, and sensory elements.

- **Diversity** – To ensure each Participant could find items they had and had not experienced regardless of their own range of life experiences the Inventory must contain a wide range of different types of activity and interaction (e.g., experiences from childhood, travel, the workplace, sports, academic pursuits and commonplace life events).
- **Specificity** – For the more mundane experiences likely to have happened repeatedly, the item description must particularise the event to elicit one unique example (e.g., winning or losing a sporting competition not just being a member of the team).
- **Non-invasive** – For ethical reasons the Inventory should contain no items that could elicit disclosure of illegal or socially unacceptable acts nor items likely to trigger distress when recounting.

On this basis 240 potential items were reduced to 137, agreement between the three judges at this stage was 100%. This list of items was then rated for frequency and emotional valence. For each item, 57 naïve raters (Mean age = 29.40, *SD* = 11.15, 14% male, 2% non-binary) were asked to specify whether they had experienced the event not at all, once, more than once. They were further asked to rate the emotional content of each experience on a 7-point Likert scale from very positive to very negative, estimating how they thought they would have felt for items not experienced. After this process 12 items⁵ were removed because of a high rate of repeated occurrence suggesting they were not unique enough to generate an account of a specific experience rather than a generic recollection. Items were then grouped by frequency ratings and emotional valence, and 4 sub-lists were created to be presented at different time points in the study. Each sub-list contained 15 - 20 items that were balanced across frequency of occurrence, and emotional valence. A range of types of experiences were included from across the life span such as travel to different named countries (e.g., visited Afghanistan), physical acts (e.g., catching a fish), and social/interpersonal experiences (e.g., getting married). Items of both positive (e.g., won the lottery) and negative (e.g., had a broken jaw) emotional valence were

⁵ Been ice skating, Been camping in a tent, Accidentally sent a text or email to the wrong person, Been to a music festival, Smuggled food or sweets into a cinema, Found your way somewhere using a paper map, Met someone famous, Been to a wedding, Cried watching a movie, Made a snowman, Built a sandcastle, Been to a fancy-dress party.

included and both mundane (e.g., ridden a horse) and extraordinary (e.g., been hit by lightning) events

4.4 Methods summary

This chapter has explained how the current programme of research will respond to the challenges of testing deceptive performance. A comprehensive Matrix of measures has been designed which can be applied across multiple channels (verbal, nonverbal, paraverbal and gestalt subjective measures) or used selectively within just one channel. This multi-faceted tool combines the most reliable cues from existing deception detection literature to allow for different expressions of expertise to be demonstrated. Self-report measures of frequency and perceived ability are standardised across all quantitative studies as set out above. A further cross-study tool is the Life Experiences Inventory designed to elicit lies in a written format for studies two and three. Further details of study-specific methods are detailed in the relevant chapters.

5. Analytic approaches

This chapter summarises the analytic processes that were common to all studies as well as providing an overview of Response Surface Analysis as it is uncommon for this technique to be used in deception research and thus it requires more explanation than space allows within an experimental chapter.

5.1 Frequency grouping

Lie frequency is reported as a ratio-scaled measure, although questionnaire responses were limited to the categorical options of 0, 1-4, 5-9, 10-14, 15 - 19, 20 - 25, and 25+ for each question. Following Serota and Levine (2014), results are treated as approximating the true underlying ratio scale based on the assumption that errors in reporting were normally distributed. A conservative approach was taken so that the lowest number for each category was recorded as the reported figure for each participant (e.g., those reporting 5-9 lies were recorded as five lies).

Data from the lying frequency questionnaires provides a self-reported estimate of how many 'white' lies and 'major' lies Participants have told in the previous 24 hours. This information is used to classify them into lying frequency groups via the index of dispersion (D. Markowitz, personal communication, June 15, 2021; Serota & Levine, 2015). A variance to mean ratio $D = \sigma^2/\mu$ is calculated for successive iterations of the sample, removing the highest number of lies from the distribution each time until D approximates 1. Based on the assumption that a sample of typical liars should fit a Poisson distribution, this process establishes the 'break point' at which abnormally prolific liars have been removed from the sample, leaving only the typical liars. A value of D greater than 1 indicates over-dispersed data, where the value of D is less than 1 data are likely to be normally distributed and when $D \approx 1$ the data are considered to fit a Poisson distribution (Cox & Lewis, 1966; Serota & Levine, 2010).

Those participants excluded from the sample at the point where $D \approx 1$ are the prolific liars. Those remaining are typical liars and non-liars (who reported telling no lies during the previous 24 hours). Treating the first and last of these groups as distinct from the everyday or typical liars is important, as their differing lying frequency profiles are likely to be underpinned by

meaningful differences in other areas. Serota and Levine (2010) suggest two populations that 'behave differently' (p. 13) when discussing prolific liars and all other types. This may be true statistically speaking but in fact there are three divergent groups when considered behaviourally. Although DePaulo et al., (1996) reported just under 5% of their Participants reported no lies at all over a week-long diary study, the percentage of non-liars in diary studies is generally much higher, ranging between 25% to 60% in studies capturing lies across various timespans (Markowitz & Hancock, 2018; Serota et al., 2010; Serota & Levine, 2014). A recent study covering 91 days found that while only two Participants reported never lying at all, on any given day 36% of the sample reported telling no lies (Serota et al., 2021).

Non-liars may have a moral or religious objection to lying, or they may have learned through experience that they are not good liars and therefore make a strategic choice to tell the truth and avoid the negative consequences of being caught out. Similarly prolific liars may have intrinsic or extrinsic motivation for their lying behaviour. They may choose to lie regardless of the penalties, or they may have discovered that they can get away with deception and can therefore use it with impunity. For this reason, when categorical groups are used, the current research programme allows for a three-way division into non-liars, typical liars and prolific liars. Because the aim of the frequency measure is to account for total lying practice, a combined measure of all lies told (both white lies and major lies) is also included alongside separate measures for white and major lies in each study. The non-normal distribution means there are large differences in group sizes making between-groups comparisons difficult. Where possible, lying frequency is entered into analysis as a continuous variable and corrections are applied where necessary.

5.2 Weighted Self-assessment of deceptive performance

This measure comprised a combined score based on responses to three questions about self-assessed deception ability from the self-report of deception battery outlined in Chapter Four. Each question, answered on a scale of 1-7, was asked once for white lies and once for major lies. It is advisable to combine individual Likert type responses to create a true scale which can reasonably be considered interval level data (Carifio & Perla, 2007). Because these questions all

target the same underlying construct of self-perceived lying ability, simple summing of answers to the questions to create a composite variables would be justified (Song et al., 2013). But this would not consider the clear differences in scores for white lies and major lies that can be seen in Table 5. Which suggests that the two types of lying are perceived differently by participants and combining scores therefore requires careful consideration to avoid obscuring the different attitudes to white and major lies.

Table 5

Comparison of self-reported perceptions of white lies versus major lies

| Study | Cronbach's α for all six items | Mean score (SD) white lies | Mean score (SD) major lies | Difference |
|-------|---------------------------------------|----------------------------|----------------------------|----------------------------|
| One | $\alpha = .785$ | 14.05 (3.53) | 10.68 (4.07) | $t(39) = 6.97, p < .001$ |
| Two | $\alpha = .68$ | 15.25 (3.12) | 12.40 (4.31) | $t(228) = 10.98, p < .001$ |
| Three | $\alpha = .75$ | 14.99 (3.16) | 10.88 (3.87) | $t(162) = 14.59, p < .001$ |

To create a combined measure of self-assessed ability that accurately represented the relative contribution of participants judgments of their performance when telling white lies and major lies, a weighting procedure was used. Weights were derived from the ratio of white lies to major lies reported in the previous 24 hours by each sample (see Table 6).

Table 6

Weights of white lies and major lies derived from self-reported frequency

| Study | Weighting –White lies | Weighting – Major lies |
|-------|-----------------------|------------------------|
| One | 0.79 | 0.21 |
| Two | 0.86 | 0.14 |
| Three | 0.90 | 0.10 |

This a fair weighting, as major lies are both less prevalent, and less relevant to the task at hand, meaning that the minimal weighting of the more 'exotic' major lie may account for some aspect of performance, but doesn't overburden the more accessible response to white lies. After the weighting process, answers for white lies and major lies were combined for a single score of 'perceived ability to lie'.

5.3 Standardisation

Measuring deception across a range of channels, and incorporating so many individual LIWC variables, results in dependent variable measures on multiple different scales. The most common method of standardisation, using z scores, is not recommended for difference scores where zero is already a meaningful value (Little, 2013). Nor for longitudinal data or studies where analyses of subgroups will take place (Moeller, 2015). This makes it completely unsuitable for the current research programme which involves all of those factors. Further, z scores can be misleading when distributions are highly skewed (Cohen et al., 1999) which might be expected with measures of expertise.

Instead, standardisation was carried out using the Percentage of Maximum Possible (POMP) method (Cohen et al., 1999) in which the highest and lowest possible scores for each measure are expressed as 100 and 0 respectively. This is calculated for each case as follows:

$$\text{POMP} = [(\text{observed score} - \text{minimum}) / (\text{maximum} - \text{minimum})] \times 100$$

Where 'minimum' is the minimum possible score of the relevant scale, and 'maximum' is the maximum possible score. This linear transformation results in a measure ranging from 0 to 100 for all variables, allowing comparison across alternative scoring methods and instruments while maintaining important characteristics of the underlying distribution and reflecting individual level variability. The process of standardisation means that individual measures within separate channels (as in study one) or variables (studies three and four) can be more accurately resolved into an overall performance index.

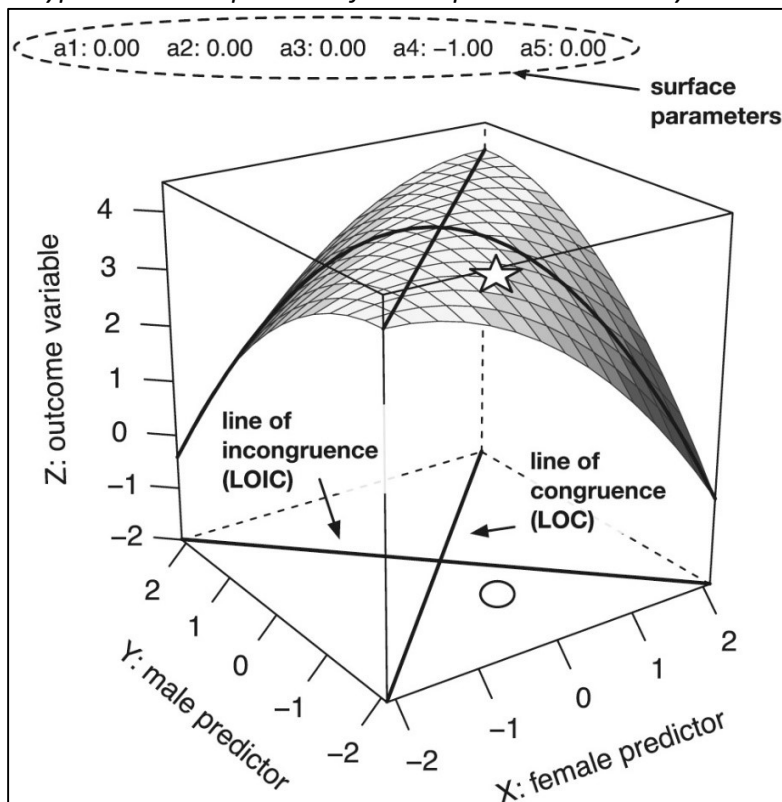
5.4 Response Surface Analysis.

This analysis is used in study three to test the extent to which better liars are more consistent in their deceptive skill. The outcome variable in this case is a single measure of intrasubject variability – a Coefficient of Variation - for each participant. But the predictor comes in the form of two scores, for each LIWC variable there is a corresponding score for a participant's truthful and deceptive account. It is the degree to which these two scores match that indicates skill, because skilful deception is the masking of differences (in this case linguistic) between truthful and deceptive performance.

To analyse the effect of both predictors and their agreement on the outcome variable, Response Surface Analysis (Box & Draper 1987) is used. This technique models (in three-dimensional space) how all possible combinations of two predictors are associated with a single outcome and provides a test of a congruence hypothesis.

Figure 8

A hypothetical response surface map labelled with key elements labelled



Note: This map shows a hypothetical relationship of congruence between X and Y. Adapted from “Testing similarity effects with dyadic response surface analysis,” by F.D. Schönbrodt, S. Humberg and S Nestler, 2018, *European Journal of Personality*, 32(6), p. 629 (<https://doi.org/10.1002/per.2169>). CC-BY4.0 licence

^aThe position of the star on the curved surface represents the value on the outcome variable which corresponds to the circle beneath shown in relation to the two predictor variables.

RSA has more explanatory power than using difference scores or a moderated regression analysis (Shanock et al., 2010) because tests of the response surface slope can compare the

relative effect of matches (e.g., congruence between truth and lie score) and various types of mismatches (e.g., truth higher than lie or lie higher than truth) on the outcome variable.

The equation for the polynomial regression model is as follows:

$$Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$$

So, the dependent variable (Z) is regressed against two predictors (X and Y) and their squared terms and their interaction (XY). The outcome of the regression is used to map the response surface which can be used as a visual guide to interpret the estimated regression coefficients (Humberg et al., 2019).

Figure 8 shows a hypothetical response surface with key features labelled. The first principal axis is the Line of Congruence (LOC) which represents an exact match between the values of X and Y and the Line of Incongruence (LOIC) in which values for X and Y are exact opposites. The slope and curve of both these lines combine to create the response surface which may form the shape of a dome, bowl, saddle (Schönbrodt et al., 2018) or plane when the quadratic and interaction terms in the equation above are zero (Humberg et al., 2019).

There are four tests of surface parameters a_1 to a_4 which indicate relationships between the three variables and equate to different response surface shapes. While a_1 and a_2 both relate to the relationship between the outcome variable and the Line of Congruence. a_3 and a_4 measure relationships between Z and the Line of Incongruence.

- a_1 tests for a linear relationship across the LOC with regard to the outcome variable. If a_1 is positive, Z increases as X and Y increase. If a_1 is negative, Z decreases as X and Y increase.
- a_2 tests how sharply the outcome increases or decreases as the predictors increase or decrease. A positive a_2 means matches between X and Y at the ends of each scale predict higher scores on the response outcome Z than those in the centre. Whereas, if a_2 is negative, the outcome is greater when X and Y 'agree' at medium levels more than either end of their respective scales.
- a_3 tests whether the direction of incongruence or 'mismatching' is related to the score on outcome variable. If a_3 is positive, Z is greater when Y is greater than X and if a_3 is negative, scores for Z are higher when X is greater than Y.

- a_4 tests for a relationship between the LOIC and the outcome variable. If a_4 is negative, Z decreases as incongruence between X and Y increases. If a_4 is positive, Z increases as incongruence between X and Y increases.

R code for replicating this analysis (including creating the response surface maps) are available in Appendix D.

5.5 Summary of analytic approach

This chapter has explained the processes underpinning the measurement of lying frequency across the programme of research and laid out how dependent variables are standardised across all quantitative studies. Standardisation is essential to allow for comparison within and channels and to facilitate the creation of combined/overall measures of skill. Also outlined is the careful weighting process applied to self-report measures of frequency and perceived ability to reflect the relative impact of participants experience with white lies and major lies. Because of the novelty of Response Surface Analysis in deception research it is likely that the reader may be unfamiliar with this analysis and so a brief overview is provided here to make the results of study three more readily interpretable.

6. Study one - Deceptive performance in a challenging interactive task

6.1 Abstract

To test the effect of practice on performance and calibration accuracy, deception in a face-to-face investigative interview following a mock crime task was compared across participants with differing amounts of practice. Practice was operationalised using self-reported lying frequency in the previous 24-hours and measuring habitual lying behaviour via the dark triad of personality traits. Self-ratings of ability were compared with actual performance. Deceptive performance was measured by a lie effect across a Matrix of measures. That is, difference scores based on truth condition minus lie condition across verbal, nonverbal and paraverbal channels plus holistic measures of credibility (Honest Demeanor Index) and lie success (third party judgments). The Matrix differentiated truth from lie in almost all channels and identified a small number of high performing individuals using a combined metric across all measures. Contrary to hypotheses, neither measure of lying practice predicted deceptive performance at a channel or overall level, nor did practice predict calibration accuracy. Better liars were more accurate judges of their own ability, but deceptive performance was not associated with self-reported lying frequency or habitual lying behaviour. These data challenge assumptions held by researchers, practitioners, and public alike, and provide only partial support for elements of the General Expertise Framework (GEF) being displayed in the domain of deception.

That some liars are more skilled than others makes intuitive sense and has been assumed by many researchers (Ekman, 1992; Hoare et al., 2004) but seldom tested (Vrij et al., 2010). Yet it is of vital importance that both sender and receiver performance are understood (Levine, 2010; Wright et al., 2012) as they are unavoidably linked (Buller & Burgoon, 1996). As explored in depth in chapter two, cognitive psychology provides a rich literature on the topic of general expertise, such that key attributes of expertise have been identified and can be applied to the liar. The aim of this study is to examine sender variability in deceptive performance and assess whether it shows the relationships with practice and calibration accuracy predicted by a General Expertise Framework (GEF).

Activation-Decision-Construction-Action Theory (ADCAT, Walczyk et al., 2014) presents deception as the (possible) outcome of four processing components. A truth solicitation causes involuntary *activation* of the truthful response, this then leads to a *decision* about whether it is better to lie or tell the truth, if deception is selected *construction* of a lie occurs and the *action* component is the process of delivering the lie. Enacting these 'extra' cognitive processes during the course of lying makes deception more cognitively demanding than truth telling, but this is not always necessarily the case. For example, delivering a previously rehearsed lie can lower demands on working memory and possibly reduce the difficulty of inhibiting a truthful response (Walczyk et al., 2014). The authors also suggest that while the four components occur deliberately in high stakes lies, under lower stakes (the more common type of deception) they execute more automatically possibly as a result of experience (Walczyk & Frageron, 2019). This echoes the way that experts in other fields demonstrate greater cognitive capacity and retrieval speed and find complex tasks within their area of expertise less effortful than novices (Ericsson & Kintsch, 1995; Greene, 1984; Horn & Masunaga, 2007). ADCAT and its authors clearly allow for the possible differences between novice and expert liars in the cognitive domain and they directly and indirectly associate these differences with practice.

Additionally, ADCAT specifies that liars must explicitly estimate the likelihood of being believed (or not) by their target in order to calculate the potential cost of deception if found out. This requires knowledge of one's own ability to lie and an estimation of the target's ability to detect lies. Like in other domains, expert liars should show greater accuracy in calibrating perceived

and actual performance of themselves and others. This would lead to more accurate decisions of when (and when not) to lie, and thus ultimately greater lying success on a case-by-case basis and thereby more holistically building a trustworthy reputation.

By aligning the GEF and ADCAT, the prevailing theoretical model of the cognition of deception, we see nothing to suggest that the features of expertise seen in other domains ought not to be seen in the specific case of deception. Indeed, this approach potentially offers a clear explanatory mechanism for how highly skilled liars will have fundamental features in common with highly skilled musicians, dancers, athletes and scientists (Hoffman, 1998). Repeated practice may lessen the cognitive load of lying by allowing certain processes to be performed automatically, freeing up mental resources for dealing with the unique features of a single deceptive encounter (e.g., the target's response).

6.2.1 Practice

From the original idea of 10,000 hours of dedicated practice (Chase & Simon, 1978) to more nuanced conceptions that include recreational and other experience (Baker et al., 2003; Hambrick et al. (2020), practice in this context refers to years of accumulated hours spent perfecting the task of interest (Ericsson, et al., 1993). While there is no research on the influence of accumulated practice on deception, there are several known populations with vastly more practice than usual (as outlined in chapter two). The existence of self-reported prolific liars and those whose personalities make them prone to lying allows for the prospect of testing whether practice leads to expertise in lying the same way it does in other domains.

6.2.1.1 Self-reported prolific liars.

Atkinson (2019) reported that those with a higher self-reported frequency of 'small' lies were less discriminable to naïve third-party judges when lying in interview. But this advantage did not generalise to 'big' lies in the same sample. This is an under-studied area and there is reason to predict that a higher rate of practice is likely to result in superior performance in deception as it does in other domains. But the extent to which a single self-report measure can be an adequate proxy for lying practice is unclear. Therefore, additional measures that reflect lying tendencies rather than a single 'snapshot' are required.

6.2.1.2 Habitual liars – the dark triad.

All three members of the dark triad are driven to use deception to achieve their aims in social interactions (Rogers & Cruise, 2000) and Machiavellianism and psychopathy are both defined in terms of having greater ability to deceive (Christie & Geis, 1970; Paulhus & Williams, 2002). More practice at deception should result in a higher level of performance. So, it follows logically that those high in dark triad traits, with a natural predisposition to lie more frequently, should also show greater ability. The lack of guilt and empathy shown by those high in dark triad traits means they are not subject to negative affect or arousal when lying which should convey an advantage over those low in such traits. However, as chapter three made clear, the results in this area are conflicting. In a recent study by Elaad et al. (2020) those with high scores on narcissism performed better in a points allocation deception game. Machiavellianism has been associated with more skill in lying in high-stakes mock crime and cheating scenarios (DePaulo and Rosenthal, 1979, Geis and Moon, 1981) but also with null results (O’Hair et al., 1981).

6.2.2 Calibration

More practice should not only lead to better performance but also expert-level calibration. So, we would expect to see better calibration for more frequent liars both by self-report measures and lifestyle factors (e.g., dark triad driven proclivity to lie). Although prolific liars also rate themselves as good liars (Verigin et al., 2019) there is limited empirical evidence that this is the case. Given that the defining feature of narcissism is a belief in one’s own superiority (Raskin & Terry, 1988) it is unsurprising that they show a tendency to judge their ability to lie as higher than others (Elaad et al., 2020). In the general population people tend to rate their own deceptive abilities as lower than the average person (Ekman & O’Sullivan, 1991; Elaad, 2003; Vrij, 2008). The strategic use of deception to achieve overarching goals is associated with Machiavellianism and to a lesser extent psychopathy (Paulhus & Williams, 2002). Frequent lying of any kind requires the ability to judge when a lie is likely to be successful or not and that suggests calibration accuracy.

Beyond highly practiced populations, research comparing participants’ self-ratings with external measures such as leakage of nonverbal cues (Vrij, Semin & Bull, 1996; Vrij, Edward & Bull, 2001) or third-party judgements of deception (Frank & Ekman, 2004) has shown poor calibration

between perceived and actual performance. When comparing calibration accuracy between liars of different levels of ability, results are mixed. Van Swol and Paik (2017) found that self-rated 'bad' liars were no more detectable than self-rated 'good' liars nor did they show more deceptive demeanor, but 'good' liars were more often rated as truthful when telling the truth. Whereas Atkinson (2019) reports better liars (those less detectable by naïve third-party raters) had better confidence accuracy calibration for their lying performance. By applying objective criteria to deceptive performance, the current study aims to determine whether calibration is possible in lying and if so, whether more practiced and better liars are more accurate.

6.2.3 The current study

A skilled liar has the ability to produce and deliver a lie that their target believes to be true, making deception a communicative act that is necessarily interpersonal (Zuckerman, DePaulo and Rosenthal, 1981). It involves controlling various elements of one's message – the verbal, non-verbal, and para-verbal content. But accurately measuring ability across the range of subcomponents of putative 'deceptive skill' presents a unique challenge, illustrated by how rarely it is attempted (Fenn et al., 2015; Miller et al., 1983; Riggio, Tucker & Widaman, 1987). Previous studies on deceptive skill have tended to examine one element in isolation, or relied solely on third-party ratings of truth/lie which are manifestly biased (Bailey & Insch, 2014; Lloyd et al., 2017; Masip et al., 2003; Mann, Vrij, & Bull, 2004; Slessor et al., 2014; Vrij & Winkel, 1992a; Vrij & Winkel, 1994) and may say more about rater than sender performance. By employing the Matrix of measures described in chapter four, including measures of nonverbal, paraverbal and verbal cues, as well as content, demeanor and third-party judgements of deception, the current study will provide a detailed, idiographic view of lying ability in each individual. Deceptive performance is assessed in terms of the 'lie effect' meaning the extent to which lies differ from a truthful baseline. The nearer one can resemble one's own truth telling when lying, the harder a lie will be to detect especially if differences can be minimised across multiple channels.

A perennial challenge for deception research is operationalisation - how to recreate in a controlled environment, the social complexity, emotional arousal, and cognitive load faced by liars in 'real life'. Only 9% of studies in the meta-analysis by DePaulo and colleagues (2003)

featured genuine interaction between liars and targets. As seen in the more current review of studies in Chapter three, this percentage has not improved substantially in the intervening 15 years. In laboratory studies, requirements for experimental control (specifically ground truth) reduce ecological validity by prescribing the actions that can be taken (Vrij, Leal, Mann & Granhag, 2011). In addition, the need for experimental control often leads to tightly standardised formats. This constrains the possible type of lie that can be told, because all participants are lying or truth telling about the same real or imagined event (Vrij et al., 2002). In some studies, even the words that can be spoken when lying are prescribed for participants (Anolli & Ciceri, 1997). Such standardisation may inadvertently be adding both floor and ceiling effects to the data. Poor performers are helped by the limited range of options and good performers are hindered.

To address the challenges outlined above, this study employs a highly interactive format in which experimental participants perform a mock-crime and independently chosen cover story activity. Then liars and targets engage in a face-to-face best practice investigative interview which produces data that can be analysed across verbal, paraverbal and nonverbal channels. The use of a mock crime task increases guilt and anxiety (DePaulo et al, 2003) and the transgressive nature is reinforced by instructions such as 'you may be under surveillance during this task and it is critical that you are not detected' and 'if caught you must not disclose any details about how, where or from whom you obtained the package'. Additionally, the use of two different experimenters only one of whom has sanctioned the deception, functions to increase participants' sense of wrongdoing. Ground truth, and thus experimental control is established using a body-worn camera for the duration of the mock crime and cover story task. By allowing participants freedom in their choice of activity and how they lie (e.g., fabrication, omission, embedded lie), ecological validity remains high. The within-participants design allows for lying accounts to be compared with the same participant's own truthful baseline as urged by leading deception researchers (Meijer et al., 2016; Nahari et al., 2019; Vrij, 2016; Vrij, 2008). Taken together, such a design allows examination of individual differences in deceptive performance so that the following hypotheses can be tested;

*H*₁ People who lie more frequently (based on dark triad measures and self-report) have better deceptive performance

H₂ People who lie more frequently (based on dark triad measures and self-report) are more accurate judges of their own ability

H₃ Better liars are more accurate judges of their own ability regardless of their level of practice

Unlike detection-focused research, the current study is designed to test participants' deceptive performance. An interactive mock crime paradigm allows measures to be taken from across verbal, nonverbal, paraverbal channels and subjective ratings, combined with targeted self-report measures assessing lying frequency and perceived ability. This holistic evaluation of deceptive performance allows us to quantify deceptive performance across two key initial dimensions of the GEF (practice and calibration) and to address the question of whether self-reported frequency and/or deception-relevant personality traits are appropriate measures of practice.

6.3 Method

6.3.1 Design

A mixed design where independent variables of lying frequency, perceived lying ability and individual difference measures (dark triad) were compared between-participants, while truth/lie valence is manipulated within-participant. The dependent variable is deceptive performance which is measured by the lie-effect (ability to mask hypothesized differences between truth and lie across verbal, nonverbal and linguistic channels) and third-party veracity judgments.

6.3.2 Participants

An a priori sample size calculation carried out in G*Power (Faul et al., 2009) for a regression analysis with 5 predictors and a small (0.15) effect size (as used to test H2 and H3), resulted in a requirement for 77 participants for 80% power. On this basis the study aimed for 80 participants, when data collection was suspended, $n=40$ had been completed. Recruitment was via a university research participation scheme and on-campus advertising. Compensation for their time was provided by course credits and motivation was increased by entry into a prize draw for a £50 voucher. All the sample identified as either Male (20%) or Female (80%) with a mean age of 22 years (Range= 18-46; $SD = 5.74$). The ethnicity breakdown was as follows: Asian

– 17.5%, Black – 10%, Mixed race – 5%, Other specified ethnicities (e.g., Greek, Arab, Latin, African) – 5% and White – 62.5% which is representative of the London region from which the sample was taken (ONS, 2019).

6.3.3 Materials

6.3.3.1 Task stimuli

A video briefing was created in which an actor addressed the participant in their role as an ‘agent’ and assigned them their ‘mission’ which was to retrieve and destroy an item from a location on campus and get through an interrogation undetected. To supplement this, a written summary of the instructions was also provided to each participant which they took with them for the duration of the mock crime and cover story tasks (see Appendix E).

6.3.3.2 Self-report battery

As described in chapter four, a single questionnaire combined nine questions from the ‘Lying in everyday life’ questionnaire by Gozna et al. (2001) with a self-estimate of lying frequency from the Science Museum study (Serota & Levine, 2014) for a combined measure assessing lying frequency and self-perceived ability (see Appendix B).

6.3.3.3 Dark triad

Machiavellianism was assessed using the Mach-IV (Christie & Geis, 1970; See Appendix F) which asks participants to use a Likert-type scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*) to rate their agreement with 20 statements such as “The best way to handle people is to tell them what they want to hear”. The overall score is a sum of the choices made (accounting for reverse scored items).

Psychopathy was measured with the SRP(SF) - Self-Report Psychopathy Scale 4 - Short Form (Paulhus, Neumann & Hare, 2016; see Appendix G). This is a reduced version of the original Self-Report Psychopathy Scale and involves participants responding to 29 statements indicating anti-social behavior and attitudes “Sometimes you have to pretend you like people to get something out of them” using a Likert-type scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The overall score is a sum of the choices made (accounting for one reverse scored item).

Narcissism was measured with the NPI-16 Narcissistic Personality Inventory - Short form (Ames et al., 2006; see Appendix H) in which participants are presented with sixteen pairs of statements and asked to choose the one that comes closest to describing themselves. In each case, one statement describes a narcissistic attitude “I am an extraordinary person” whereas the other does not “I am much like everybody else”. Participants score 1 for selecting the narcissistic option and 0 for the other statement for a total sum score which is then divided by 16.

Reliability was acceptable for all three measures: NPI-16 (Cronbach’s $\alpha = .701$), SRP-SF (Cronbach’s $\alpha = .905$), Mach-IV (Cronbach’s $\alpha = .786$). Single sample t tests compared means for this sample with available norms⁶. Narcissism scores were significantly lower in this sample $t(39) = -3.17, p < .001$ while psychopathy scores were significantly higher $t(39) = 3.00, p < .001$ (full results in Appendix K).

6.3.3.4 Matrix of measures for deceptive performance

Deceptive performance was measured as outlined in chapter four, by using the best available measure available for each communicative channel. Interview transcripts were processed using Linguistic Inquiry Word Count (LIWC - Pennebaker et al., 2001) and Content-Based Criteria Analysis (CBCA – Steller & Kohnken, 1989) to allow analysis of linguistic and content cues. Trained research assistants coded video footage for nonverbal (DePaulo et al., 2003; Sporer & Schwandt, 2007) and paraverbal (DePaulo et al., 2003; Sporer & Schwandt, 2006) cues. The Honest Demeanor Index (HDI – Levine et al., 2011) was used with permission from the author alongside third-party ratings to measure subjective credibility.

Third party ratings were made from snippets of video footage based on the idea of ‘thin slices’ of behaviour (Ambady et al., 2006) as explained in chapter four. 15-second snippets were chosen as this was the ideal length to allow for uninterrupted speech from the participant in both truth and lie conditions. Several studies have used this duration and shorter of thin slice stimuli successfully (Ambady & Rosenthal, 1993; Levine & Feldman, 1997; Tickle-Degnen, 1998;

⁶ Norm data was taken from the following sources:

Mach IV – Open Psychometrics data from UK respondents (n = 5486) <https://openpsychometrics.org>

NPI16 - Ames et al., (2006)

SRP(SF) – Multiple large-scale studies (Foulkes, et al., 2014; Gordts et al., 2017; Neumann, Hare & Pardini 2014).

Tickle-Degnen & Puccinelli, 1999; Tskhay et al., 2017). Snippets were subtitled to standardise raters' understanding of the verbal content across different accents and participant speaking volume in the interviews.

Judgments were collected online from 121 raters (Mean age = 25, SD = 7.47; 53% female, 42% male, 5% nonbinary; 6% Asian, 12% Black, 3% not provided, 27% other ethnicities and 51% White) via the paid research platform *Prolific™*. Raters were presented with 15-second snippets of truthful and lying videos from each participant and asked to rate each as either telling the truth, lying or "can't tell". To reduce the possibility of truth bias (Levine, 2014) participants were told that they were being shown randomised clips from a selection of many from each participant, so each person was equally likely to be lying or telling the truth. The snippets were chosen randomly from the truthful and deceptive sections of the original interview video with the constraint that the participant must be speaking during the 15 seconds rather than the interviewer.

6.3.4 Procedure

The short battery of questionnaires was completed online via the Qualtrics™ testing platform either before or after the in-person task described below. This study incorporated a mock crime activity and interactive interview (partial replication of Vrij et al., 2011), designed to counteract many of the issues above and introduced in chapter four. A pre-recorded video briefing instructed participants that they had 30 minutes to complete the two tasks below (order counterbalanced across trials) spending 15 minutes on each. Both tasks to be carried out while wearing a Go-Pro body-worn camera.

1. Commit a mock crime without being detected. Participants had to remove an envelope addressed to someone other than themselves from a specified location and transport it elsewhere on campus where they were instructed to destroy it.
2. Create and enact a plausible cover (ground truth) to account for their time and presence on campus when questioned about involvement in the mock crime. Participants were advised to aim to generate verifiable evidence (e.g., food outlet receipts, time-stamped smart phone images).

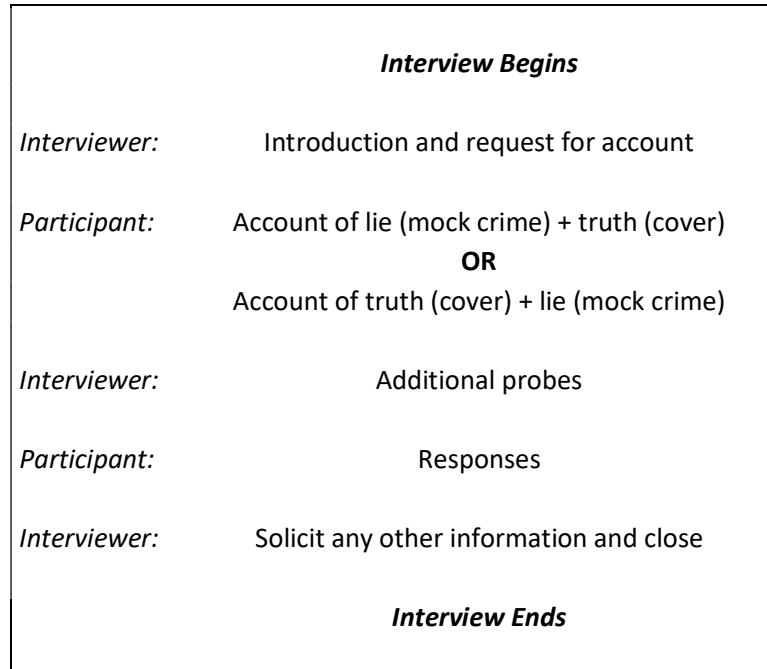
The video briefing included full details of where, when, and how to carry out the tasks. It also told participants what to do when 'caught' including the process surrounding the ensuing investigative interview (i.e., to provide truthful information about what they had done during their self-generated cover activity and deceptive information about all aspects of the mock crime). A research assistant was present before and after the video briefing to answer any questions and a written summary of instructions was also provided (see Appendix E). Unlike Vrij et al (2011) participants were not given a prescribed route between locations. Requiring them to make their own choices in both crime and cover story conditions contributed to a more realistic experience and the freedom to choose their actions allowed them greater creative potential when making true and false accounts in interview.

Participants were intercepted immediately after the tasks and took part in a short investigative interview using the Structured Interview Protocol (SIP; Gabbert et al., 2016). The interviewer for all participants was the researcher who was not the same person who had delivered the pre-task briefing. Interviews were recorded under conditions compliant with UK law including the Police and Criminal Evidence Act (PACE, 1984), in a custom-designed interview suite with one-way glass and video and audio recording equipment.

The SIP incorporates elements of the 'PEACE' format (Clarke & Milne, 2001) but is specifically designed for short interviews and has been endorsed by law enforcement for initial account retrieval (College of Policing, 2020). After a short welcome and explanation of the process (see Appendix I for full interview schedule) participants were asked to give an account of their activities for the whole 30-minute period in chronological order "In your own words, tell me where you've been and what you've been doing since <current time less 30 minutes> today". Following the account, specific probes were used to clarify/challenge and seek additional information where details were lacking (e.g., "So, you said you were in XXX location... what can you tell me about who else was there?", or "describe for me how you got to XXXX"). Because participants had completed the two tasks described above in different, counterbalanced orders, eliciting an account of the previous 30 minutes could produce two different presentations as depicted in Figure 9.

Figure 9

Study one interview structure



6.3.4.1 Pre-analysis data processing

6.3.4.1.1 Transcribing. Transcripts for all interviews were created manually by the author and a research assistant using a system based on the Baylor University Institute for Oral History transcription guide (2018). All were then checked against the original video recordings by a different research assistant. Transcripts were further edited following the requirements for oral records set out in the LIWC User Manual (Pennebaker et al., 2015).

6.3.4.1.2 Ground truth verification. Before videos or transcripts could be coded, they had to be categorised into truthful and deceptive accounts. Participants were prompted to describe their whereabouts and actions in chronological order. Because of counterbalancing, some had carried out the mock crime task first and others the cover story creation which should have resulted in either lie then truth or vice versa in their verbal account of the previous half an hour. However, the naturalistic nature of the task and free recall interview structure resulted in an equally ecologically valid presentation of information. Participants moved in and

out of truthful and deceptive content as they spoke and returned to previously mentioned content in response to question probes.

This meant that truthful and deceptive accounts were interwoven, and a complex process of ground truth verification was required. For this, three research assistants viewed the Go-Pro footage for each participant and used this to code the transcripts for truthful and deceptive content. This was then used to determine the exact time stamps within each interview video when the participant was categorically speaking honestly or lying. A minimum of two research assistants carried out this process for each interview/participant and all were further checked by the author. To facilitate unbiased coding (see below), truth and lie were then indicated on each transcript and video using neutral colours and symbols (e.g., blue and yellow rather than red and green and hearts and stars instead of ticks and crosses).

6.3.4.1.3 Coding. To ensure single-blind conditions, different research assistants coded the data. Initial training sessions introduced these assistants to each coding system and its theoretical background (a minimum of one hour training per coding type). They were then given practice materials and written guidance and met again one week later to assess their understanding and ability. Only those deemed competent by two experienced researchers continued on to code the data. Each new type of coding was trained sequentially after the previous type had been completed to avoid confusion. Inter-rater reliability scores are reported in Appendix J. Because all of these agreement measures were ‘excellent’ (Cicchetti, 1994) mean scores were calculated across the coders for each participant. A minimum of two and a maximum of three research assistants carried out the coding for each interview/participant.

6.3.4.1.4 Third party ratings. All non-lying ratings (i.e., “telling the truth” and “can’t tell”) were totalled and expressed as percentage for each veracity condition (lie or truth). Overall, there was a truth bias from third party raters with 53% of all video clips rated truthful, 36% lying and 11% unable to tell. In the truthful condition 57% were rated truthful versus 49% in the lying condition and there was a significant difference in truthful ratings between conditions $t(119) = -12.20, p < .001, 95\% \text{ CI } [-6.635, -4.782]$.

6.3.4.1.5 Self-assessed deceptive performance. There were two measures of self-assessed deceptive performance. First a single question specific to detection rates “What

percentage of your lies do you think remain undetected?” with answers from 0% to 100%. This question allowed for direct comparison with actual detection rate in this study by third-party raters and follows the procedure used in expertise research (Simons, 2013) to compare perceived and actual performance on a specific occasion.

The second measure comprised a combined score based on responses to three questions about self-assessed deception ability “How easy do you think it is for another person to detect the lies you tell?”, “How much mental effort do you consider it takes to tell a lie?” and “Generally speaking, do you consider yourself good at telling lies?”. As described in the methods chapter, these individual scores were weighted and combined. Based on the ratio of white lies to major lies self-reported, white lies were weighted 0.79, while responses about major lies had a weight of 0.21. After the weighting process answers for white lies and major lies were combined for a single score of perceived ability to lie and a single score for percentage of lies predicted to be undetected.

6.3.4.1.6 Coding and scoring of indicators⁷. Nonverbal indicators were all coded as number of occurrences and then calculated as a percentage of total interview time per condition to account for the disparity between truthful and deceptive responding. To aid interpretability, the scores for fidgeting were reversed. This is because while illustrators, hand movements and nodding are all predicted to decrease when lying, fidgeting increases (DePaulo et al., 2003; Sporer & Schwandt, 2007). Scores for fidgeting were therefore given their inverse by making scores negative. A combined mean score for all four cues was then calculated. This can be thought of as a single score which will reflect the combined change in behaviour attributable to deception in the hypothesized direction based on the extensive literature. For the paraverbal channel, duration, latency and speech errors were coded by research assistants while pitch was measured in fundamental frequency (F0) and calculated using Praat software (Boersma, 2001). Duration was measured as time for truthful and deceptive accounts as a percentage of total interview to control for natural variation in interview length. Speech

⁷ Calculating cues as a percentage of total interview time is a standard approach to coding such behaviour (Sporer & Schwandt 2006 & 2007). However, the novelty of the use of a range of cues via the Matrix of measures necessitated new techniques. The approach taken here of reversing certain scores was unique and made interpretation and comparison across channels more efficient.

errors were counted and expressed as a percentage of total interview time per condition. Latency was measured as mean latency for all questions answered in each condition, this was then POMP standardized as per procedure above. Audio files were extracted from the 15-second truthful and deceptive video clips shown to third-party raters. Pitch profiles were created for each condition and used to calculate mean F0 in truth and lie valence aggregated from across the shorter clips.

Similar to the nonverbal channel, reversal was required for some paraverbal cues so that all metrics are easily interpreted. Pitch, latency and speech errors are all predicted to increase when lying (i.e., a positive lie effect) but duration is thought to decrease (i.e., a negative lie effect (DePaulo et al., 2003; Sporer & Schwandt, 2006)). Therefore, POMP scores for pitch, latency and speech errors were made negative so that all metrics correspond to the hypothesised direction of a lie effect based on the literature. A combined mean score for all four cues was then calculated for the channel.

Finally, the three LIWC categories that were predicted to increase (rather than decrease) when lying (*LIWC_{Negations}*, *LIWC_{Negemo}*, and *LIWC_{ThirdPerson}*) were reverse coded as described for nonverbal and paraverbal cues. Again, this allows for a consistent predicted direction of change associated with lying, based on the empirical literature.

6.3.4.1.7 Linguistic analysis. As outlined in Chapter four, 12 variables were created based on LIWC categories that were most likely to reliably distinguish between truth. *LIWC_{Sentences}* was not included as this is a product of transcribers' interpretation and doesn't reflect participant behaviour. *LIWC_{Anger}* was removed as it occurred in less than 0.2% of the texts (Newman & Pennebaker, 2003). LIWC categories are already expressed as a percentage, but three variables (*LIWC_{Contentwords}*, *LIWC_{FirstPerson}* and *LIWC_{ThirdPerson}*) were created by combining individual categories so these were POMP standardised to allow seamless combination with other measures.

Standardisation was carried out as per the POMP procedure described in the methods chapter and a lie effect (truth-lie difference score) was then calculated for each variable. Because the magnitude and not the direction of the lie effect is how deceptive skill is demonstrated, absolute difference scores were used. Specifically, the ability to minimise differences in verbal,

nonverbal and paraverbal behaviour when lying and truth telling is how deceptive performance was operationalised. With smaller difference scores indicating better performance.

6.4 Results & Discussion

6.4.1 Missing data

Due to the Qualtrics survey not being optimized for completion on a smart phone, some participants ($n = 3$) missed answers to some questions. The missingness was completely at random. This related to a series of questions that required two sets of responses to the same question, once for white lies and once for major lies. Participants who used a smart phone to complete the online component of the study could miss the second set of questions as it was not visible without lateral scrolling. These three participants accounted for a total of 13 missing responses across 6 questions which were imputed using stochastic regression (Little & Rubin, 2002) based on responses to the remaining questionnaire items, age, and personality variables.

6.4.2 Frequency groupings

Participants were grouped by self-reported lying frequency over the previous 24-hour period as detailed in the Methods chapter. Using the Index of Dispersion (Serota & Levine, 2015), for this sample the break point of combined major and white lies was five lies in the previous 24 hours. Prolific liars ($n=11$) were those whose self-reported number of lies was at or above this number. Nonliars ($n=12$) were those who reported no lies during the previous 24 hours. While typical liars ($n=17$) made up the rest of the sample, having told more than zero but less than five. This is comparable to other studies where the cut-off points for prolific liars ranged between 5 and 6 lies (Daiku et al., 2021; Serota & Levine, 2014).

6.4.3 Descriptive statistics

Scores for truth and lie conditions in each channel are shown in Table 7 along with absolute and mean difference scores. The overall performance score is the mean of all individual channel absolute difference scores (nonverbal, paraverbal, verbal and subjective) but does not include the potentially biased third party rating score. Scores for all channels apart from nonverbal differed significantly between truth and lie (see Appendix L). Scores for LIWC were positively correlated with nonverbal scores $r(38) = .330, p = .037$. But no other dependent variables were

significantly correlated, which demonstrates the need for a multi-faceted approach like the Matrix of measurements.

Table 7

POMP-standardised truth versus lie comparison for all study one dependent variables

| Measure | Truth | | Lie | | Abs Diff | | Mean Diff |
|----------------------|--------|-------|--------|-------|----------|-------|-----------|
| | M | SD | M | SD | M | SD | Cohen's d |
| Nonverbal | 5.31 | 1.87 | 5.89 | 3.30 | 2.07 | 1.92 | -.21 |
| Paraverbal* | -10.17 | 6.22 | -14.39 | 8.99 | 7.51 | 6.06 | .48 |
| Verbal | | | | | | | |
| <i>CBCA*</i> | 23.24 | 10.02 | 16.94 | 6.97 | 9.32 | 8.82 | .56 |
| <i>LIWC*</i> | 4.64 | 2.10 | 6.46 | 2.48 | 2.52 | 2.05 | -.67 |
| Subjective | | | | | | | |
| <i>Ratings*</i> | 67.31 | 13.35 | 60.45 | 15.23 | 13.34 | 10.07 | .44 |
| <i>HDI*</i> | 71.10 | 14.22 | 57.70 | 10.52 | 14.78 | 10.03 | 1.13 |
| Overall performance* | 26.91 | 4.65 | 22.18 | 5.06 | 8.26 | 3.47 | .98 |

*Denotes significant difference between truth and lie conditions

Note: Abs Diff scores are mean (SD) of absolute differences for each channel and therefore do not correspond to simple arithmetic difference between mean truth and lie scores

Difference scores for each participant for all six variables are presented graphically in Figure 10. Each channel is represented by a different symbol and scores closest to zero indicate smaller differences between truthful and deceptive accounts. Participants are positioned from best to worst performer horizontally from left to right with difference scores for the best performers clustered close to zero and wider dispersal of scores for the poorer performers. This graph illustrates that only very few participants were able to maintain small difference scores across verbal, nonverbal, paraverbal and subjective measures. It appears that there are some potential 'expert' liars with difference scores close to zero for all measures, but there are very few of them.

Figure 10

Funnel-ordered scatterplot of performance

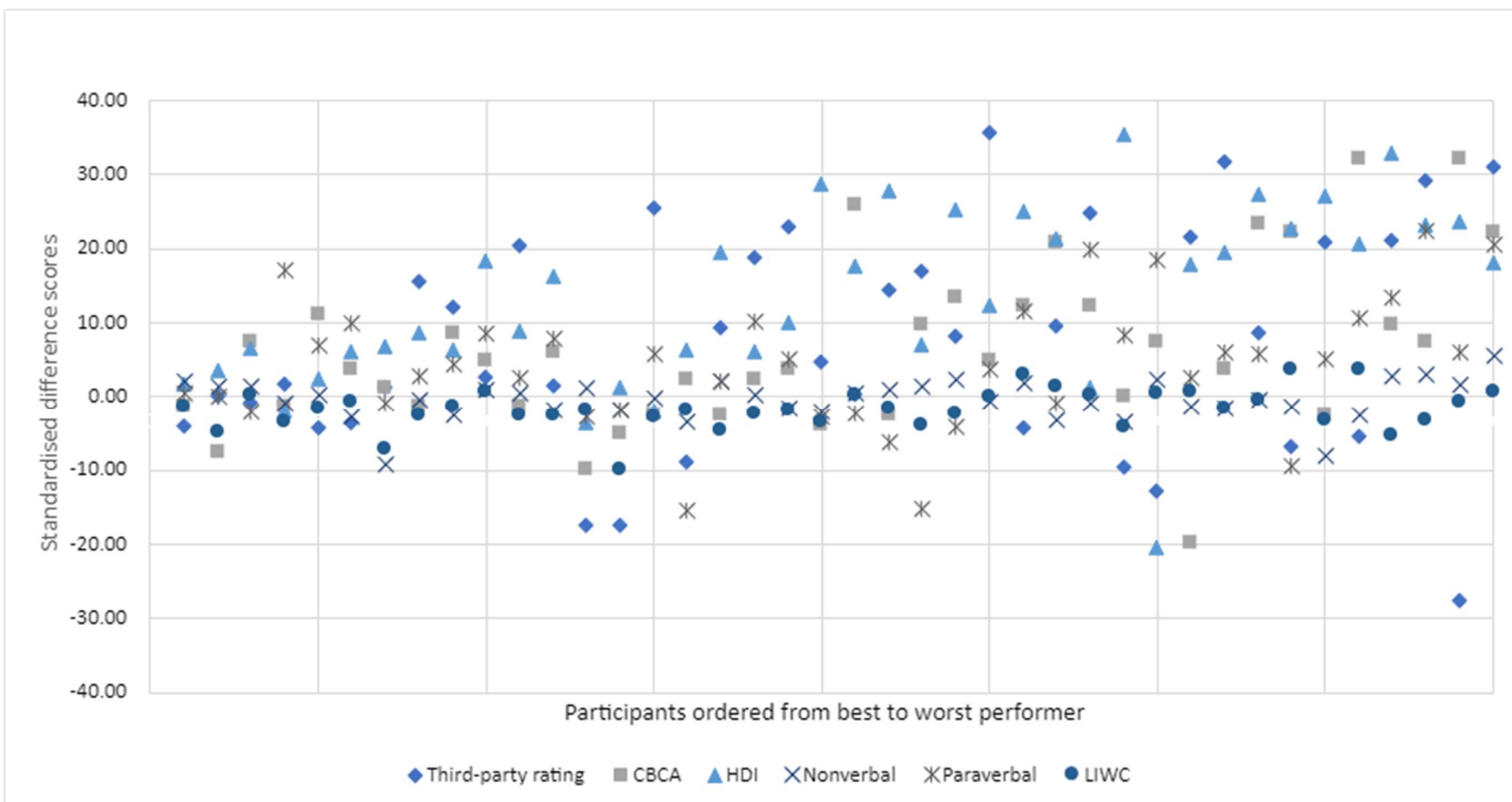


Figure 11 shows the comparison of calibration between frequency groups based on predicted and actual percentage of lies undetected by a third party. Nonliars and typical liars tended to underestimate their performance and prolific liars overestimated. The group mean predicted score for typical liars appears closest to their group mean actual performance.

Figure 11

Calibration of perceived and actual performance by frequency group

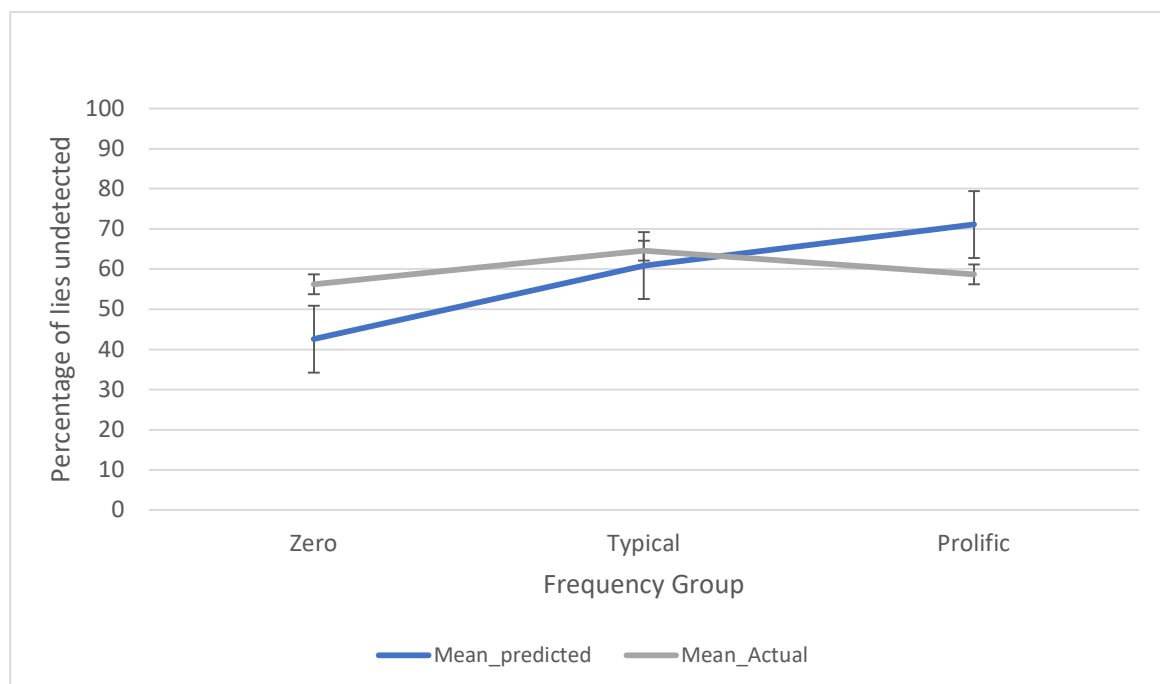
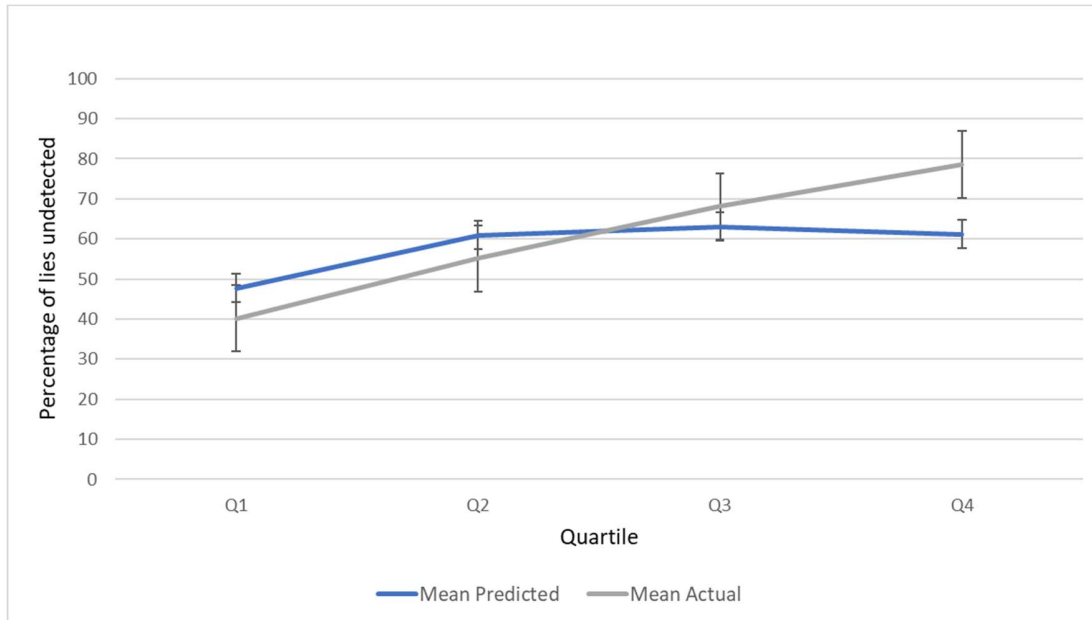


Figure 12 shows the calibration of perceived and actual performance across quartiles. Those rated most believable by external judges are in the top quartile descending in performance to those rated least believable in the bottom quartile. The pattern of calibration here resembles classic graphs presented by Kruger and Dunning (1999) with low performers overestimating and high performers underestimating their own performance. But in this sample the highest performers have the largest gap between perceived and actual performance, thus showing worst calibration accuracy. Albeit in a way that aligns with expertise literature.

Figure 12

Calibration of perceived and actual performance by performance quartile



6.4.4 Inferential statistics

H_1 People who lie more frequently (based on dark triad measures and self-report) have better deceptive performance.

Pearson's correlations as shown in Table 8 showed no significant relationship between self-reported lying frequency in the previous 24 hours (white lies, major lies and combined) and the overall performance score. Nor did any of the three dark triad scores indicative of habitual lying correlate significantly with overall performance score. There were no significant correlations between lying frequency or dark triad traits and the individual channel scores of CBCA, LIWC, HDI, Nonverbal, Paraverbal, and Third-party ratings (see Appendix M). These results indicate that lying practice did not confer an advantage in performance.

Table 8*Descriptive Statistics and Correlations for Lying frequency and overall performance*

| Variable | <i>n</i> | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------|----------|----------|-----------|--------------|--------------|-------------|--------------|--------------|-----|---|
| 1. Frequency – Total | 40 | 2.45 | 3.23 | — | | | | | | |
| 2. Frequency – White | 40 | 1.92 | 2.37 | .97** | — | | | | | |
| 3. Frequency – Major | 40 | 0.53 | 1.13 | .84** | .67** | — | | | | |
| 4. Machiavellianism | 40 | 57.33 | 9.94 | .14 | .20 | -.03 | — | | | |
| 5. Narcissism | 40 | 0.27 | 0.19 | .44* | .42** | .39* | .43* | — | | |
| 6. Psychopathy | 40 | 60.60 | 17.16 | .50** | .50** | .39* | .60** | .55** | — | |
| 7. Overall performance | 40 | 8.25 | 3.47 | -.07 | -.04 | -.12 | -.09 | -.04 | .08 | — |

p* < .05. *p* < .01.

Contrary to predictions based in the GEF, neither those who self-reported lying more frequently, nor those with a dispositional tendency to lie had significantly better deceptive performance. Overall, even though the current study assessed performance across a full range of communicative channels including objective measures unbiased by human raters, the idea that self-reported lying frequency and/or deception-related personality traits may be reliable proxies for ‘practice’ as specified in models of general expertise was not supported.

A few existing studies have shown a relationship between lying frequency and third-party ratings of honesty when lying (Atkinson, 2019). But this was not seen in the current study, with results showing no advantage across any channel for more frequent liars whether self-reported or trait-based measures are used. It is highly unlikely that deception should be a unique case where the Power Law of Practice (Newell and Rosenbloom 1981) does not apply such that practice plays no role in improving performance. ADCAT (Walczyk et al., 2014) describes lying as requiring complex cognitive processing of exactly the kind that would become more fluid and less effortful with practice. Additionally, cognitive load theories suggest that practice will

alleviate some of the mental burden of lying, leading to better performance (Vrij et al., 2010; Vrij, Granhag et al., 2011; Walczyk & Fargerson, 2019).

It is possible that the 'snapshot' approach of asking for lies told in the past 24 hours did not lead to frequency reporting that was representative of participants' usual behaviour. Self-report of lying frequency is the standard measure in this type of research and is generally considered an acceptable measure of general tendency to lie (Halevy et al., 2014; Levine et al., 2013; Park et al., 2021). However, recent research that tracked daily lying frequency over a 3-month period found that while 58% of the variance in lies reported was attributable to individual differences, the remaining 42% was driven by within-person variability on any given day (Serota et al., 2021). A scenario can easily be imagined where a habitually honest person had reason to lie more than usual in the 24 hours prior to completing this study, for example a high number of altruistic lies may have been necessary due to contact with a friend in need of reassurance. Conversely, a prolific liar may have the propensity to lie but can only do so if the opportunity is available. The current study was necessarily small due to the interactive nature of the task and so a few discrepant cases could have a major effect on underlying patterns.

Also, the nature of practice required for expertise development is a source of ongoing debate. Mere accumulation of hours has been dismissed as insufficient, with Bereiter and Scardamalia (1993) stating that "experience distinguishes old-timers from beginners but does not distinguish experts from experienced nonexperts" (p. 81). Instead, deliberate, intentional practice is apparently required for expert performance (Ericsson, et al., 1993). Applying this perspective, those who report a high volume of lies on a single day may lack the kind of practice needed. In contrast, members of the dark triad are ideal candidates for liars with deliberate practice. A high rate of deception features in the definitions of all three of the dark triad traits alongside extreme, often anti-social self-interest (Paulhus & Williams, 2002). Those high in these traits are likely to be highly motivated to succeed when lying and therefore consciously seek to improve their abilities with applied practice. In this sample, all three dark triad traits were positively correlated with self-assessed ability ratings. But, in line with existing research (Atkinson, 2019; Klaver et al., 2009; Michels et al., 2020; O'Hair, Cody and McLaughlin, 1981; Raskin & Hare, 1978), none were associated with better lying performance.

Taken together this gives an impression of a group of personalities willing and motivated to deceive but apparently unable to benefit from the increased practice this affords them and unaware of the fact that they are not successful liars. Although extreme examples, the dark triad may provide a model for how more ordinary personalities navigate lying. Practice may be necessary but not sufficient for the development of expertise. In the absence of clear and timely feedback, an illusory sense of one's own abilities can form.

H₂ People who lie more frequently (based on dark triad measures and self-report) are more accurate judges of their own ability

AND

H₃ Better liars are more accurate judges of their own ability regardless of their level of practice. Responses to the question "What percentage of your lies do you think remain undetected?" were used to measure participants' predicted performance. As the question was asked once for white lies and once for major lies the responses were weighted as described in chapter 5. A calibration score for each participant was calculated by subtracting the actual percentage of lies undetected (i.e., were rated as truthful or the rater could not tell) from the predicted percentage of lies undetected. Absolute calibration scores were used for analysis as the magnitude of distance between perceived and actual performance is of interest, not the direction.

Calibration score was entered as the outcome variable in a regression model with self-reported frequency (combined total reported lies), lying-relevant dark triad personality traits and actual performance (total mean difference score and actual percentage of lies undetected) as predictors. The model was significant $F(6, 33) = 2.99, p = .019$ and explained 23.5% of the variance in calibration scores $R^2_{Adj} = .235$. Variance Inflation Factor (VIF) values were all below 2.5 indicating multicollinearity was at an acceptable level (Belsley et al., 1980; O'Brien, 2007). As seen in Table 9, Machiavellianism and actual percentage of lies undetected were significant individual predictors of calibration accuracy. Higher scores on the Mach – IV questionnaire predicted higher calibration scores and therefore worse calibration accuracy between perceived and actual performance. Whereas the negative coefficient for actual performance

demonstrates that better liars were more able to calibrate their predicted and actual percentage of lies undetected than poor liars.

Table 9

Regression of calibration score on practice and ability measures

| Variables | B | β | SE | 95% CI | | <i>p</i> |
|----------------------------------|-------|---------|-------|--------|-------|----------|
| | | | | LL | UL | |
| Intercept | 3.84 | | 18.22 | -33.22 | 40.90 | .834 |
| Total lies ^a | .643 | .107 | 1.07 | -1.53 | 2.82 | .552 |
| Machiavellianism ^b | 1.02 | .522 | .400 | .208 | 1.84 | .015 |
| Narcissism ^c | 11.59 | .112 | 18.25 | -25.55 | 48.72 | .530 |
| Psychopathy ^d | -.362 | -.319 | .248 | -.866 | .143 | .155 |
| Overall performance ^e | .358 | .064 | .846 | -1.36 | 2.08 | .674 |
| Percentage undetected | -.405 | -.629 | .107 | -.623 | -.186 | <.001 |

Note. *N* = 40. CI = confidence interval; LL = lower limit; UL = upper limit.

^a Combined self-report of white and major lies. ^b MACH-IV score. ^c NPI-16 score. ^d SRP-SF score.

^e Absolute overall difference score.

p* < .05. *p* < .01.

Frequency of lying and dark triad traits were also not associated with being more accurate judges of ability. In fact, higher scores for Machiavellianism significantly predicted worse calibration accuracy between perceived and actual performance. The pattern of results from the foundational research by Kruger and Dunning (1999) was replicated. Better performance predicted more accurate calibration with higher performers underestimating and lower performers overestimating their abilities.

Across domains, calibration between perceived and actual performance is generally poor (Dunning, 2011; Paulhus, Lysy & Yik, 1998). But high performers are usually more accurate than low performers in both specific instances and in terms of overall ability (Chi et al., 1981;

Dunning et al., 2003). In the field of deception, several studies demonstrate that liars struggle to accurately estimate their own performance level (Frank & Ekman, 2004; Van Swol & Paik, 2017; Vrij, Semin & Bull, 1996; Vrij, Edward & Bull, 2001). But accurate calibration is not impossible. In an interactive interview task similar to the methodology employed here, Atkinson (2019) found that those who were less detectable by third party raters also had better confidence accuracy calibration for their own performance.

In the current study, actual performance predicted calibration accuracy. But this was not driven by the top quartile of undetectable liars who quite markedly underestimated their own abilities. Instead, the second and third quartiles had the closest predicted and actual performance. The overall trend was driven by this in combination with very poor calibration in the lowest quartile. Deception takes place in a 'wicked environment' (Hogarth, et al., 2015) often devoid of feedback on performance. So, it is possible that judgements of success are being made based on the amount of effort exerted. This may explain why good liars (who are likely to be applying more cognitive effort) underestimate their performance. Poorer liars might assume because they find lying 'easy' that they are doing it well. It is also interesting that those who lied least underestimated their abilities and those who lied most overestimated. Although frequency was not a significant predictor of calibration accuracy, this pattern suggests that the 'sweet spot' for trying to judge one's own deceptive performance is neither minimal practice nor a prolific amount.

6.4.5 General Discussion

The fact that all channels but nonverbal were significantly different in truthful and deceptive conditions suggests that the demands of the task were sufficient to test deceptive skill in a way that could differentiate good from bad performers. However, the range of skill demonstrated may be restricted. Figure 9 makes it clear that only a very small number of participants performed well across all channels in the way that would be expected of proficient or expert performers. This raises the potential consideration that the top quartile may have been made up of liars who were only 'good performers' in comparison with the rest of the sample and therefore not truly reflective of experts in deception. Or that expertise is perhaps not universally demonstrated across all channels but concentrated in one or two specialist areas.

It is a strength of the study that the procedure was extensively piloted with feedback provided by investigative interviewing and memory experts. This resulted in the use of a written summary of instructions given to participants following the video briefing. Careful consideration was given to creating as naturalistic setting as possible for both the behavioural task and the interview phase of the study which resulted in a realistic test of deception. The use of a mock crime paradigm results in stronger emotions and DePaulo et al. (2003) found cues to deception tended to be stronger when lies were about transgressions rather than about feelings or opinions. Although still sanctioned, the deception in a mock crime scenario is much more analogous to genuine deception than other laboratory-based tests and has a higher chance of producing authentic deceptive performance.

6.4.6 Limitations

There are also limitations which may have impacted the results of this study. The nature of the design as a complex, in-person, interactive behavioural test resulted in a necessarily small sample size. Although comparable with studies with similar paradigms that also measured multiple aspects of lying (Geis & Moon, 1981; Gozna, 2002; Siegman & Reynolds, 1983; Vrij & Winkel, 1992b; Vrij et al., 2004), this was still a concern for multiple reasons. First and most importantly the study may be considered underpowered⁸. Cues to deception result in small effect sizes (see Chapter four) and this requires much larger samples to avoid a type two error. The small size of the total sample also limited the possibility to perform between-group comparisons on sub-samples of interest (e.g., prolific liars vs nonliars).

A further consequence of a small sample is the decreased likelihood of it containing individuals from the populations of interest i.e., expert liars and/or prolific liars. As both of these are likely to be rare, a large sample is needed to ensure they exist within it to a measurable degree. Prolific liars are usually around 5% of the surveyed population (Serota & Levine, 2014) which would predict just 2 in a sample of 40. However, using the usual method of an Index of Dispersion, eleven prolific liars were identified. This may be because of the age of the sample ($M = 22$ years, $SD = 5.74$). Prior research suggests that lying frequency peaks in adolescence and

⁸ Restrictions as a result of the Covid-19 pandemic meant that all in-person testing had to be paused for a period of more than a year which meant this study could not be completed as planned.

early adulthood (Debey et al, 2015; Levine et al., 2013) making this age range potentially more likely to report a higher rate of lying frequency. The rate of high performing liars in the general population is not known but based on research which suggests that human skill performance follows a Paretian 'power curve' distribution (O'Boyle et al., 2013) the percentage is likely to be small. A sample that does not include genuine expert performers somewhat reduces the ability to draw conclusions about expertise, but not entirely. Variation in ability was observed at every level of measurement. It may be that we did not have access to the highest ends of the performance or frequency spectra, however a relationship could still be inferred within a narrower band of performance.

The fact that neither self-reported frequency nor traits associated with habitual lying showed the predicted relationship with performance could suggest that there is a mismatch between the type of practice being measured and the requirements of the experimental task. Although mock crime tasks replicate the demands of lie-telling, they do not represent the type of everyday deception that most liars are producing (Levine et al., 2016). So, even a well-practiced liar may find the demands of an investigative interview too challenging to display their ability. Additionally, it may be that our conceptualisations of what constitutes 'practice' are faulty. As discussed above, frequent liars are likely made up of several different types, with differing motivations, of which highly practiced experts are only one. Including habitual liars from the dark triad is one way to encompass more ecologically valid forms of practice, but not all well-practiced liars are 'dark'. Future studies must include measurement of liars whose practice comes in the form of telling a high volume of pro-social lies.

Rather than creating wholesale fabrications, participants in the current study almost all engaged in embedded lies. Either they elided the timelines of what they did during the day the experiment took place or used episodic memories of previous experiences on campus. This approach is predicted by the plausibility principle of ADCAT "...in crafting Target's Views, especially for false narratives, respondents will intuitively tend to (a) first try to alter the truth or a related episodic memory of an event personally or vicariously experienced or other personally experienced sources of vivid, authentic detail." (Walczyk et al., 2014, p. 30). Empirical research demonstrates this tendency is common (Leins et al., 2013; Strömwall &

Willén, 2011; Verigin et al., 2020). When liars report a previously experienced event, this means that cues to deception via techniques like CBCA are reduced as liars have genuinely (and recently) experienced the events they are describing (Nahari et al., 2019).

A final limitation is that as a one-off test, there is no way to know whether each participant was showing representative behaviour at point of testing, an enduring issue around measurement validity (Tourangeau, 1999). Just as the frequency measure which captured only one 24-hour window, it is possible that any individual could have been caught on an uncharacteristically good or bad occasion of deception when they took part in the behavioural task. Or that the task itself did not elicit typical behaviour. Again, with a larger sample such fluctuations from usual performance would not present a major issue but atypical behaviour could skew results. It was not the intention of this study to test for consistency of performance over time, that will be taken up in further studies in this research programme, but it is nonetheless a limitation to consider both for this study and in the literature in general.

6.4.7 Conclusion

This initial study presented a set of novel hypotheses, exploring important aspects of deceptive performance through the lens of the General Expertise Framework. To test the idea that practice may be a route to putative deceptive skill, two potential ways to capture real-life practice were used, yielding overlapping but distinguishable groups of potentially 'practiced' liars. Dark Triad individuals are a group of individuals likely to have long-term practice relating to many aspects of deception. Individuals who self-report high frequency deception in the 24 hours prior to the task are another potential candidate group, as frequency on any given day is likely to be representative of normal behaviour (Robinson & Godbey, 2010). Using these two conceptualisations of 'practice', we estimated relationships that the GEF would predict to be true. Specifically, that 'practiced liars' have insight into their own behaviour and ability and that their practice also translates into performance improvements. We also explored the GEF proposition, that skilled performers are preferentially more attuned to their performance by examining those who performed particularly well in our task for indications of calibration accuracy.

This immersive, interactive test of deception appears to have allowed us to see a range of performance levels as measured by a comprehensive suite of gold-standard metrics across available information channels. Despite this comprehensive approach, there is not yet a clear answer to the research questions. As expected, and in line with prior research, all three dark triad traits correlated positively with lying frequency and amongst them, Narcissism and Machiavellianism were associated with higher self-assessed ability, but not measured performance. In short, the link between 'practice' and performance, as specified by GEF, appears unsupported in the present study. More frequent liars were not better performers and were not more accurate at calibrating perceived and actual performance. A pessimistic induction at this point may suggest that deception does not conform to a skill in the way that GEF might propose. Or alternatively, because of their rarity, not enough prolific liars, dark triad habitual liars, or potential expert liars could be recruited to see whether those groups meaningfully overlap and predict one another as GEF suggests. In response to this, the following studies will recruit a larger sample and narrow the focus of performance to the linguistic/verbal channel to examine deception across multiple time points. This will allow for the immediate effect of task-specific practice to be tested alongside more global measures of habitual lying behaviour. Consistency and time-by-time calibration can also be explored.

7. Study two - “My Mum was a Cop” a qualitative exploration of deceptive performance⁹

7.1 Abstract

In a novel mixed methods approach, three-phase qualitative interviews were carried out with a sub-sample of the participants from study one. Deceptive performance characteristics were known for each individual, meaning their individual, subjective experiences of lying expressed in these interviews could be examined through the lens of General Expertise Theory.

Participants provided free recall and retrospective think aloud data and took part in video-stimulated reflexive interview with the interviewer. Seven themes revealed that practice increases confidence for all liars but must be aligned with the right disposition to improve performance. Cognitive load when lying is so high that the additional demands of self-monitoring and regulation are beyond all but the best liars. Calibration is based on not being challenged rather than having good deceptive performance, this flawed metric helps account for poor calibration. Finally, responsiveness to signs of suspicion from a target involves too much mental effort and too great a risk to the ongoing relationship to be worth attempting for most liars most of the time. The value and importance of these findings are discussed.

⁹ Note that minor inconsistencies with previous experimental chapters are because this chapter is largely formatted as per the Journal Article Reporting Standards for Qualitative Research (JARS–Qual) from the APA (Levitt, 2020).

Qualitative methods have been used extensively within expertise literature (Albl-Mikasa, 2013; Boot et al., 2017; Campbell et al., 1991; MacIntyre et al., 2007; Tiselius, 2013) where they have offered fundamental insights. The comparison of expert versus non-expert is a particularly fruitful approach. For example, experts experience performance in their domain differently from non-experts across a range of domains (e.g., the phenomenological, the moral, the metacognitive). Leading deception researchers have suggested that there is an “untapped source of insight” in the minds of liars themselves (Nahari et al., 2019, p. 11), yet to date there has been very limited use of qualitative or mixed research methods in the field of deception and none with a focus on deceptive skill. Some have used qualitative methods to probe the process of lie detection (Bond, 2008; Johnson et al., 2001; O’Sullivan & Ekman, 2004) and liars have been the focus of healthcare research but only in the context of the moral dilemma of lying to dementia patients (Hodgson & Balmer, 2022; Tuckett, 2011). One notable and noteworthy exception is a thematic analysis by Arcimowicz et al. (2015) in which participants were first grouped into high and low frequency liars based on a week-long diary study and then interviewed about their motivations for lying and its consequences.

The potential for qualitative methods to open up the ‘black box’ of the human mind is self-evident. But uncovering the lived experience of participants is particularly important when researching deceptive expertise. Quantitative data can only point to performance outcomes (e.g., the degree of eye contact maintained, or pronouns used), it cannot reveal the conscious intent of the liar or if indeed any intent was present. In attempting to determine whether deceptive performance can be conceptualised as expertise, it is essential to know more about the internal processes of liars.

Study one utilised a Matrix of measures to provide a comprehensive appraisal of deceptive performance in the lab. To reiterate, deceptive skill was operationalised as the ability to minimise lie effect, in other words, to produce lies that more closely aligned with the truthful baseline ‘fingerprint’ of each participant. Having thus differentiated performance, the current study qualitatively explores the experiences and perceptions of a small group of individuals to investigate whether these differ across the performance spectrum as predicted by the General Expertise Framework (GEF). This study addresses the main research question of the entire

thesis Can deceptive performance be conceptualised as a skill? By considering three theory-driven sub questions relating to practice, calibration and responsiveness outlined below.

Research question one: What role does practice have on differing levels of performance?

"Only with experience can you visualize how a course of events is likely to unfold, so that you can see the expected outcomes even in the beginning. Only with experience can you form expectancies. Only with experience can you notice when the expectancies are violated, when something that was supposed to happen did not. And only with experience can you acquire the perceptual skills to make fine discriminations." (Klein & Hoffman, 1992, p. 204)

As discussed extensively in previous chapters, practice is a core component of the GEF with a vast body of literature supporting the relationship between practice and performance.

(Ericsson, 1996; Ericsson & Lehmann, 1996; Hambrick et al., 2020; Helsen, et al., 2000; Simon & Chase, 1973; Starkes et al., 1996). In deception, this has been tested using proxy measures of self-reported lying frequency, traits indicative of habitual lying and at the task specific level (Atkinson, 2019; Billings, 2004; Debey et al., 2015; Hu et al., 2012; Verschuere et al., 2009).

Results, including those within the current research programme, have been conflicting with no clear connection between lying practice and lying performance. One reason for this may be the relatively crude measures of practice involved. As the quote above explains, the advantages conferred by practice are complex and may differ between individuals. Using qualitative interviews will allow for a much more nuanced understanding of participants' lying experience and how this has (or has not) influenced their performance.

Research question two: How do liars of different skill levels engage in meta-cognition and self-regulation?

"experts must have previously acquired and refined mental representations that allow them to imagine the desired performance and to monitor and criticize their concurrent performance." (Ericsson, 1998, p. 92)

Traditional deception research only measures the final output of a complex socio-cognitive process which provides an incomplete view of the metacognitive aspects of deceptive performance. If expert liars possess the self-regulatory superiority that theory would suggest, then they will also demonstrate strengths in forethought, performance and evaluation of their

own deception (Zimmerman, 2006). Experts set clear and specific goals, use self-observation and control to monitor their performance and once the outcome of that performance is known, they reflect afterwards aiming to make adjustments for future attempts.

When the question of calibration is addressed elsewhere in this research programme the question has been necessarily simple. Do good performers know they are good and bad performers know they are bad? But this is overly simplistic. The Self-Regulation Loop (Zimmerman, 2006) relies on integrating accurate feedback into one's mental representations. The domain of deception is a particularly harsh environment for such practices, as feedback is sparse, general (i.e., non-nuanced), delayed, and often inaccurate, if obtained at all. By interviewing participants about the entire process of taking part in study one including all pertinent cognitive and meta-cognitive phases/procedures, the entire Self-Regulation Loop can be examined in detail. In contrast to the quantitative self-assessments of performance already considered, this type of enquiry allows for the behavioural, environmental and covert aspects of self-regulation (Zimmerman, 2006) discussed in chapter two to be elaborated on.

Research question three: Are liars responsive to feedback from the target of their deception?

“More skilful senders [liars] should be more successful at adapting to feedback from receivers and convincing them that the deceptive message is truthful, whereas less skilled senders should be relatively unsuccessful.” (Buller et al., 1996, p. 596)

According to the GEF, experts can flexibly apply their skill, adapting to circumstances to ensure the best outcome (Anderson, 1982; Zimmerman, 2006). Both Interpersonal Deception Theory (IDT, Buller & Burgoon, 1996) and ADCAT (Walczyk et al., 2014) lead to the prediction that a good liar is an agile one, capable of adjusting their performance in reaction to suspicion from their target. Outside the foundational work of IDT, there is surprisingly little empirical research into how liars adapt their performance to the complex, dynamic interplay of communication that deception involves, and none examining different levels of lying ability. Study four tested the ability of participants to adjust their linguistic performance in response to specific feedback and found largely null results. However, responsiveness was constrained to whether participants did or did not adjust their linguistic behaviour. The current study will question liars about their awareness of the target's suspicion and their reactions to it while lying during study

one. This will allow for a range of responses (and nonresponses) to be considered including those not captured by existing research or theory.

7.2.1 Approach to inquiry

This study aims to capture both the reality of each participant as well as the second order sensemaking they undertake with the author through the process of discussing their lived experience of lying, both generally and in the specific instance of participation in study one. A pragmatic subtle realist approach is taken. Meaning that we accept that it is possible for each participant to capture their experience in words that can be understood by the researcher, but also acknowledge that the process of translation is socially constructed and will be influenced by multiple unobservable factors. The meaning extracted from the transcripts will be one of many possible perspectives and there is no claim to absolute 'truth'.

Reflexive thematic analysis is used deductively in the sense that existing research and theory are used to analyse and interpret data and one phase of coding relies on pre-determined codes (Braun & Clarke, 2021a). But because of the absolute uniqueness of this approach to the topic area, an inductive coding phase is also included and here the author retains the freedom to explore the data for unanticipated, novel insights. Throughout, the researcher's subjectivity is viewed as an asset and a resource not a potential risk to be mitigated (Braun & Clarke, 2019 & 2021b). This approach has been selected to achieve the goals of expansion, complementarity and triangulation which were the central reasons for conducting a mixed methods research programme (see Methods chapter). Undertaking detailed qualitative interviews with a subset of participants from study one will allow for further explanation of the data from that study as well as offering unrivalled insights into the internal cognitive processes of liars in a way that the previous quantitative studies could not.

7.3 Methods

7.3.1 Design

This study is related to study one in a Quantitative-Dominant Sequential Explanatory design (Creswell et al, 2003), the defining characteristic of this approach to understanding and

exploring behaviour is that it connects the phases of study and makes clear the order and precedence of data collection and analysis. In this case, recruitment and design of the current study is dependent on study one. The structure of the current study involves a three-phase, co-constructive interview design where a short free recall is followed by a cued retrospective think aloud - type protocol and a reflexive video-stimulated element. By reviewing the available video footage of both the behavioural task (Go-Pro) and the investigative interview from study one (comprising extended phases of honesty and deception), the entire process of planning, producing and delivering a specific lie can be explored with participants.

This innovative design was decided upon after careful consideration of a range of qualitative methods and reflects an awareness of the need for data triangulation as well as the demands of this style of data collection on participants. The phases of the interview increase in cognitive demands as well as becoming more collaborative and interpretive. This allows the participants to build confidence and develop the necessary rapport with the interviewer, so they can gradually and comfortably build towards a full engagement with the dialogical double hermeneutic required in the final phase (Eatough & Smith, 2008).

7.3.2 Researcher description

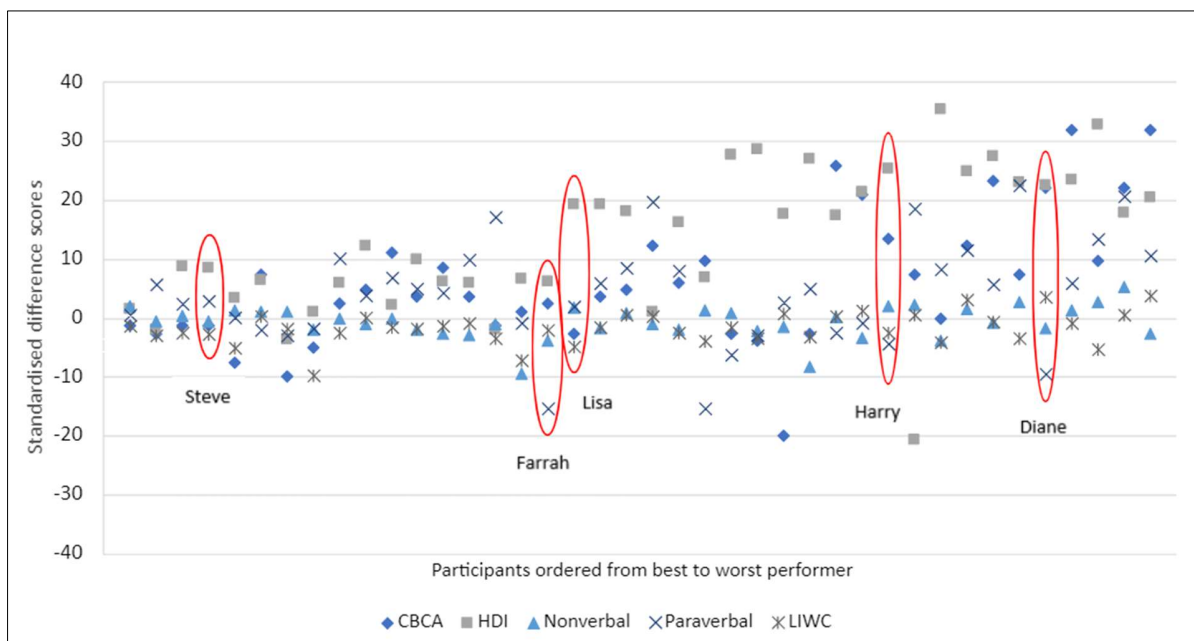
There is a single researcher for this entire research project, meaning she (the author of this PhD) was both the original interviewer in study one as well as the interviewer and sole analyst for this study. In line with the ideas of reflexive thematic analysis (Braun & Clarke, 2021a), this should not be viewed as a limitation but a strength. Prior experience carrying out and teaching qualitative research methods meant that the epistemological position and reflexivity required were familiar to her and thus confidently adopted. Deception is an unavoidably interactive act and by being the target of the original lie, the researcher was in a unique position to meaningfully, unguardedly and intimately discuss its unfolding over time and success with each participant and explore aspects of the deceptive interaction otherwise impenetrable when using traditional, quantitative research techniques.

7.3.3 Participants

There were five participants in this sample each given pseudonyms to maintain anonymity: Lisa a 20-year-old White British woman, Farrah a 19-year-old British Asian woman, Diane a 46-year-old White British woman, Harry an 18-year-old White British man and Steve a 29-year-old White British man. All were students at Goldsmiths College, and all had participated in study one previously. The recruitment process involved emailing eligible candidates and inviting them to participate in a qualitative interview about their experience of taking part in study one for which the compensation would be £15 for an hour of their time¹⁰.

Figure 13

Funnel ordered scatterplot highlighting participants' relative performance in study one



Note: Standardised truth - lie difference scores for each variable are shown for all participants. Scores close to zero indicate minimal difference between the two conditions and therefore better deceptive performance.

¹⁰ This amount was substantially more than the university's standard £5 per hour and had to be authorised by the Head of Department. It was important to the researcher that the amount was as close as possible to the London Living Wage (<https://www.livingwage.org.uk/file/historical-rates-tables-2018-19png-0>) in reflection of the mental labour required.

The aim was to recruit a Maximum Variation sample based on deceptive performance, self-reported lying frequency and ability, with the shared lived experience of having participated in study one. An a priori decision was made that a sample of 4-6 participants would be both manageable and sufficient to achieve this aim. This follows the guidance of Robinson (2013) that ideographic research should aim to choose a sample size within which individuals' identities are not "subsumed into an anonymous part of a larger whole" (p. 29). Figure 13 shows the positions of each participant on a funnel-ordered scatterplot of performance from study one. Further details of the sample including their self-reported lying frequency and self-assessed ability were considered so that this carefully selected sample represents a wide range of important features of deceptive behaviour.

7.3.4 Researcher–participant relationship

The researcher was known to the participants from previously taking part in study one and while this facilitated rapport, it also set up a power dynamic that needed to be re-set for the current study. With the help of a research assistant, study one was set up so that participants did not encounter the researcher until the investigative interview which closely resembled a police interview (see Chapter six). There are power relations inherent in any research, but this is particularly important to be aware of in a qualitative setting which calls for more vulnerability on the part of both researcher and participant (Carroll, 2009). Payment was made in full before the interview took place to ensure that this did not add to a sense of obligation or power imbalance. The preliminary verbal briefing given to each participant emphasised the importance of their insider knowledge and the gratitude the researcher had for them agreeing to take part. Also, she explained the limits of her own ability to interpret their internal mental representations and the crucial role that they would play in co-constructing meaning with her. The researcher is 'in' the data as both an interactant in the original investigative interview and as the instrument of data collection in the subsequent qualitative interview and was therefore able to share participants potential self-consciousness at viewing and hearing video and audio recordings of themselves.

7.3.5 Data collection procedures

Because of the novelty of applying qualitative research methods to the production of deception, there is very little precedent for how this should be done. After pilot testing the combination of techniques required, a three-phased interview process was selected. This was expected to take approximately one hour for each participant (see Table 10 for schedule outline).

Table 10

Qualitative interview schedule

| Phase | Brief description | Proposed Duration |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Introduction | Consent reconfirmed, explanation of the process and researcher/participant roles. | 5 minutes |
| Semi-structured free recall | Reinstatement of context, open ended questions on memories of the experience of study one with follow up prompts if needed. | 10-15 minutes |
| Retrospective think aloud | Think aloud- type task supported by Go-Pro footage. Focused on participant experience of the mock crime and cover story aspect of study one. | 10 – 15 minutes |
| Video-stimulated interview | Investigative interview footage from study one is played and interpreted by both researcher and participant. | 10 – 15 minutes |
| Conclusion | Opportunity for participant to make any other comments. Thanks, verbal and written debrief and contact information given. | 5-10 minutes |

This was a flexible guide rather than rigid prescription and the actual time spent on each phase varied between participant as did the total time for each interview. Final timings were as follows: Farrah - 26 minutes, Lisa - 40 minutes, Steve - 47 minutes, Harry - 59 minutes, and Diane - 65 minutes. As the data collection process went on, the schedule adapted to include an additional phase of questions about participants' experiences of lying more generally as

opposed to specifically within the format of study one. This was mainly in response to candid insights shared during the first interview that were directly relevant to the broader research questions of this project. Based on this, additional questions were added for subsequent interviewees during the conclusion stage of the schedule.

7.3.5.1 Semi-structured free recall

Open and closed question prompts (see Appendix Y) were used to obtain a free recall account of participants' memories and impressions of taking part in study one. This included questions on their feelings before, during and after the task and investigative interview; "Thinking back to the time when you did the study, I'm really interested in what it was like and how you experienced it. How do you remember it? What do you remember most?" and "During the interview – what was that like? how did you feel? what were you focused on?" as well as a judgement of how well they thought they had done "Afterwards – how did you feel? what did you think? did you wish you'd done anything differently?". The purpose of this phase was three-fold; to provide a record of participants' self-assessment of performance uninfluenced by the interpretive process of reconstructing the interaction with the researcher, to allow them to 'warm up' to the experience of being interviewed and build rapport with the researcher (Flick, 2018; Kvale, 2012), and to maximise memory activation by allowing them to create self-generated cues (Wheeler & Gabbert, 2017). The latter phases of the interview process are designed to translate embodied and tacit knowledge into an accessible form. But this initial free recall seeks to access memories which are available to articulation without the need for stimulus. These readily available memories are likely to be salient for a reason as they represent the aspects of study one that made the strongest impression on participants.

7.3.5.2 Think Aloud-type task

Phase two used a cued retrospective protocol based on think aloud methods. The cue in this instance was the GoPro footage collected while taking part in study one which showed where participants went and what they did while carrying out the mock crime and cover story tasks. While watching this footage, participants provided verbal narration effectively putting them back in the mental state they had been while carrying out the task. Because the GoPro footage was shot from the participant's perspective, rather than capturing them from an outsider view,

it functioned well as a way of externalising the internal monologue. Before the task, participants were given an explanation of what was expected of them and provided with an example by the interviewer (see Appendix Y for full interview schedule and Appendix Z for full transcripts of each interview). Specific prompts were used if the participant stopped talking for a prolonged period or failed to speak during pertinent sections of footage (e.g., “What was happening here?”, “What were you thinking now?”, “Can you remember this part?”). Individual prompts varied according to specific context but were similar for each participant. Although based on classic think aloud protocols (Ericsson & Simon, 1993) this method differed in that it involved direct requests for explanations and descriptions by the researcher rather than the very minimal “please keep talking” recommendation. Such an approach has been suggested to result in introspection data rather than the verbalisation of “currently heeded thoughts” which was the goal of pure think aloud methods (Ericsson & Simon, 1998; Ericsson & Fox, 2011). However, restricting humans to information processors in this way has been criticised (Boren & Ramsay, 2000; Nielsen et al., 2002). Prompts were kept to a minimum to avoid too much intrusion on the participants’ translation of thoughts into words, but the retrospective nature of the task made some engagement essential and this was tailored to what was happening in the footage at the time to maximise response.

Charters (2003) insists that the necessarily fragmented nature of think aloud data means that some form of triangulation should always be included in the analysis. In the current study this requirement is satisfied by the complementary data collection either side of the think aloud-type task (free recall before and video-reflexive task following) which also allows for exploration of post hoc rationalisations or memory gaps. Such triangulation is not carried out to apply a quantitative mindset to a qualitative process, so-called ‘small q’ rather than ‘big Q’ qualitative research (Kidder & Fine, 1987). Instead, it allows gaps and discrepancies to become an integral part of the account provided by each participant where they can be made sense of and identified in context for that individual.

7.3.5.3 Video-stimulated interview

Video-stimulated interviewing involves recording an activity of interest and then playing it back for the Participant, inviting their commentary on their own and others’ behaviour (Pirie, 1996).

In this case the video was of the investigative interview phase of study one. The main benefit of this technique is that it allows Participants to observe themselves from an outside perspective not normally available to them, but they retain the insider knowledge of having experienced the event first-hand. This experience prompts awareness of and reflection on practices ordinarily taken for granted. More than merely an aide memoire, video—stimulated interviewing is simultaneously a way of accessing knowledge and a reflexive artefact that helps and shapes how people recall, construct and articulate what happened. The role of participant in this kind of collaborative data collection is that of expert consultant on the topic of themselves, rather than passive subject of observation (Pink, 2004). For Dempsey (2010) the concrete nature of video footage creates “a sort of memory prosthesis, a crutch that can bring an informant beyond a recitation of traditional “best practices” or socially valorised morals or values about how one ought to act in given situations. The recordings force informants to confront their actions as they actually happened” (p. 351).

In this phase both interviewer and participant contributed to mutual sense making of their previous interaction in the investigative interview task from study one. Both reviewed their own performance from the third-person perspective and the participant was asked to explain how they attempted to deceive the interviewer; what specific aspects of their own deceptive performance were attended to? What (if any) aspects of their target’s response were attended to? Can they identify when they are credible or not? Were they aware of this at the time? Having now seen themselves from an outsider view, would they change anything about their performance? (see Appendix Y for interview guide).

By using this technique dialogically, it is also possible to explore the dyadic nature of the initial interview as both liar and target are present and can discuss their assessment of the other party while deception was occurring. Video-stimulated reflexivity using the original interview footage means it is possible to ask questions like “what were you thinking?” but also higher order questions such as “what did you think *I* was thinking?”. Such a process is of particular importance to the question of deception as the modelling of receiver perspective is a key element of proposed deceptive expertise.

7.3.5.4 Recording and data transformation

All three phases of the interview process were audio recorded and used to create a single transcript for each participant. Transcripts (Appendix Z) were created manually by two research assistants. Everything that was said by both researcher and participant was recorded. All coughs, pauses, ‘crutch words’ such as “um” and “ah”, laughing, physical gestures, feedback words and any long silences were included so that these could be included in analysis. The researcher reviewed and edited all transcripts, adding clarity on inaudible words.

7.3.6 Data-analytic strategies

Thematic Analysis is the most appropriate technique (Braun & Clarke, 2021a). But because this research programme has both a priori hypotheses and exploratory research questions it is not possible to follow the usual guidance (Braun & Clarke, 2006; 2021a; Braun et al., 2019) of taking one theoretical position (deductive vs inductive) and carrying out thematic analysis in line with the relevant assumptions and expectations of that position. Instead, the basic structure of Thematic Analysis (Braun & Clarke, 2021a) is used with the addition of both deductive and inductive phases as per Hybrid Thematic Analysis (Fereday & Muir-Cochrane, 2006). Based on this, data analysis involved six phases as listed below:

1. Data familiarisation, writing preliminary notes
2. Systematic data coding in two phases
 - a) Deductive
 - b) Inductive
3. Generation of initial themes
4. Development and review of themes
5. Refining and naming themes
6. Writing up thematic structure

The process of analysis was recursive and iterative rather than the linear progression that is represented. For example, codes were revisited and sometimes revised between transcripts and preliminary notes about inductive codes were made during the deductive coding phase. The use of a deductive coding phase aligns with what has been termed “Codebook Thematic Analysis” (Braun & Clarke, 2021b, p. 333). But based on the broader more detailed definitions

of Braun and Clarke the researcher considers this study to fit under the umbrella term Reflexive Thematic Analysis (Braun & Clarke, 2019 & 2021b).

Codes were not required to be mutually exclusive in recognition of the fact that each section of text can and does perform multiple functions simultaneously for the original speaker and listener and those interpreting it later. This approach to interpretation is best summed up by the following: "Thus, each quote has two contexts in relation to which it has been interpreted: first, the interview from which it was taken, and second, the 'pool of meanings' to which it belongs. The interpretation is an interactive procedure which reverberates between these two contexts." (Marton, 1986. p. 154). Further, both semantic (overt) and latent (implicit) meanings of language were considered, and meaning was derived from what was said and, in some cases, what was not said.

Here, as at every stage of the research process, reflexivity is essential. At its heart this involves an awareness of the researcher's own role in the creation of the original stimulus (investigative interview from study one), the data from study four (further interviews and transcriptions) and her roles in interpreting that data and communicating it. All the choices made are influenced and informed by the unique qualities of the researcher and this has an impact on the outcome of the research programme. Increasingly qualitative research considers the influence and personal involvement of the researcher as an asset (Kühner et al., 2016). Rather than something to be counteracted or guarded against it is an integral part of the method of reflexive thematic analysis (Braun & Clarke, 2019). In contrast to the 'bracketing' approach taken by the phenomenological traditions of temporarily side-lining one's own views and prior knowledge in an attempt to analyse data neutrally. This idea embraces the presence of a researcher in the analytic process and acknowledges that the research product will inevitably bear the fingerprints of the one who created it.

Nicholls (2009) refers to multi-layered reflexivity where there are the nested influences of self, interpersonal and collective reflexivity to consider. In this view, reflexivity is not merely about auditing one's own influence but plays a greater role in research honesty and must include conscious attendance to power relations especially those involving gender and ethnicity. This approach seeks to disrupt conventional ideas of who is observer (holding the power to interpret

and report) and who is observed. Using a video-stimulated technique in which the researcher also becomes the subject of observation is one way to counteract such traditional hierarchies as it reduces researcher bias by giving voice and agency to the otherwise passive and observed participant (Charters, 2003).

Interpretation of human-generated data in which the participant is both a representative of a population and an informer (Kvale, 1996) is subject to a double hermeneutic. This concept has been explained as “the participant is trying to make sense of their personal and social world; the researcher is trying to make sense of the participant trying to make sense of their personal and social world” (Smith, 2004, p. 40) and it is a well-known challenge for qualitative research. However, in this study the researcher was present in co-creating the original stimulus from study one, remains present in the co-creation of data from the qualitative interview and is also responsible for making sense of not only this data, but also the sense making of the participants and themselves. This is no longer a double hermeneutic but expands to become an interdependent, co-reflexive hermeneutic. Ultimately the responsibility for deriving meaning from the data rests with the researcher. Their expertise and experience enable them to parse both the participant’s own understanding of what they say, how this might be expected to be understood by others and how it can be understood considering psychological theory. But this task is made more challenging when the researcher is in and of the data to such an extent. Unlike in study one where the investigative interview footage serves as raw data for coding of behavioural and verbal cues and as a source of triangulation with subjective measures of participants’ perceived ability to deceive. In study two it is a reflexive artefact assisting researcher and participant to make sense of the deceptive interaction they previously shared.

7.4 Results

Before elaborating on the themes generated from this data, some non-thematic contextualising information (Braun & Clarke, 2020) is presented. The choice to use maximum variation sampling was made to compare the experiences of participants with different levels of self-reported lying frequency and actual levels of deceptive performance. However, it soon became clear that participants also differed on their position on a developmental trajectory. Some had

been actively engaged with lying for much longer than others and this is pertinent information when trying to understand their expertise. Also, their attitudes towards lying were very different, which study two identified as a potentially important factor in gaining and making use of practice. Therefore, each participant is categorised below in terms of their suggested expertise level as outlined in Chapter two (Dreyfus & Dreyfus, 1980), actual performance, stage of deceptive skill development, and their dispositional approach to lying.

- Steve (Potential Expertise): He was objectively the best performer based on study one's Matrix of measures, and in the current study Steve described using his repertoire of experiences to react to new challenges in an expert-like way. His attitude to lying is one of enthusiastic and playful engagement, focused on the opportunity to improve skill rather than to deceive others for malevolent aims. Based on his early experiences (lying to his Police Officer mother as a teenager) and seeking out opportunities to practice since, Steve's development as a liar is advanced.
- Lisa (Proficiency): Lisa's performance in study one was good, but her calibration was near perfect, and the insights shown in her qualitative interview revealed an ability to lie strategically using maxims rather than rules. She talked of suffering from a strong guilty conscience and preferring to be honest but also somewhat gleefully described a level of comfort and ease with telling high stakes lies. Like Steve, she had early exposure to lying in a challenging environment. But at nearly a decade younger than him and having not pursued practice in the way he does, she has a less developed skill.
- Farrah (Reluctant Competence): Objectively, Farrah's performance in study one was slightly better than Lisa's. But in the qualitative interview her approach to lying demonstrated only basic competence. This is probably because of her complete rejection of lying on moral grounds. Farrah was resolutely anti-lying to the extent that she could not recall any specific past experiences of deception. This stance and her young age mean Farrah has not developed any potential deceptive skill and may never do so.
- Harry (Striving Novice): Harry's deceptive performance was poor, and he was completely unaware of this, believing himself to show great mastery of deception. A

self-reported prolific liar, he came across as something of an 'armchair expert' almost to the point of fetishising lying. Harry desires deceptive expertise but appears to lack the social cognitive abilities required to learn from his experiences. Developmentally, he is early in his lying 'career' and although he held forth on deception in a theoretical sense, he had little actual personal experience on which to reflect.

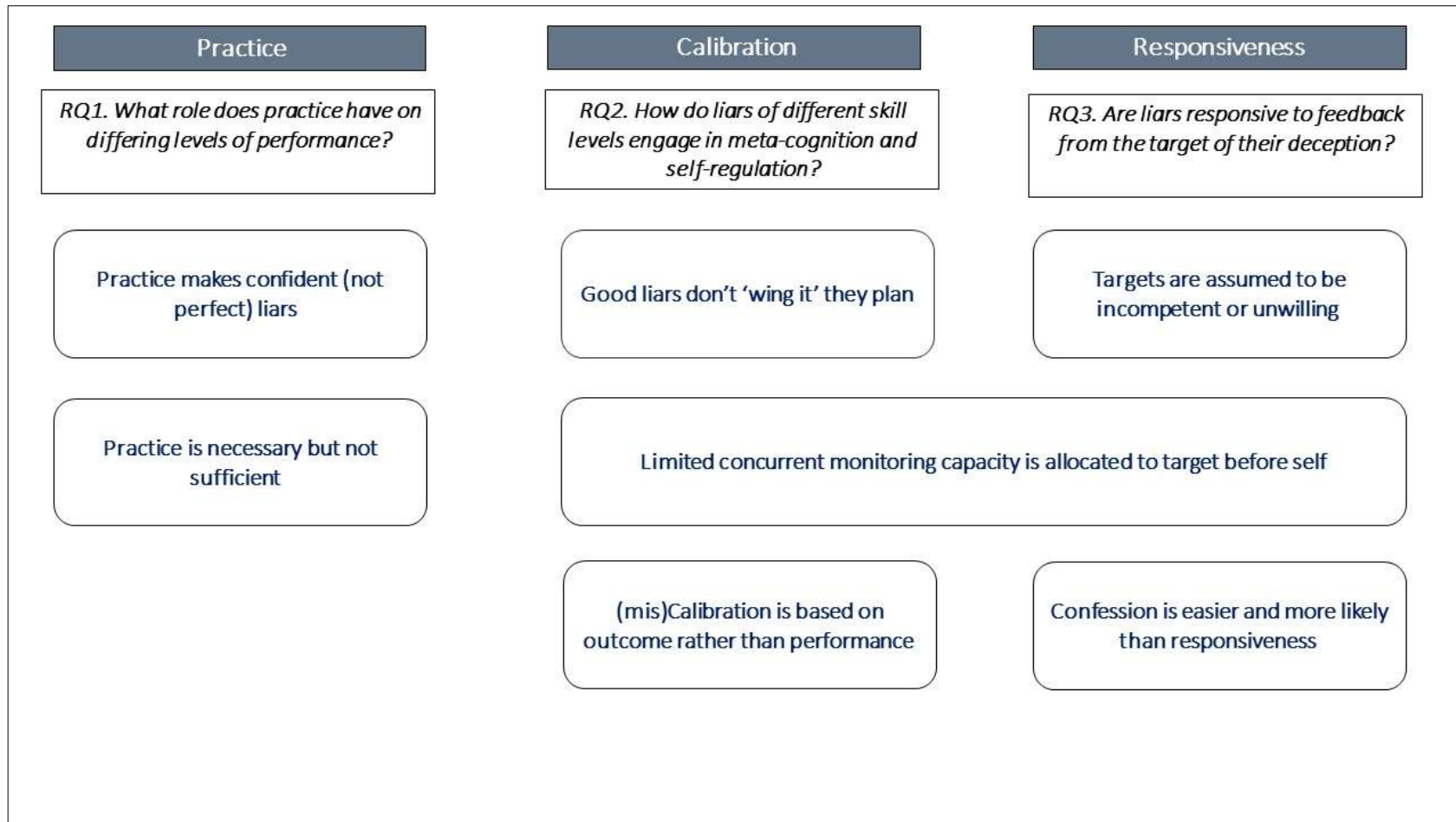
- Diane (Novice): Diane was objectively the worst performer in this sample and in the bottom quartile of study one. Her attitude to lying was apparently pragmatic but all memories of lying experiences were negative and associated with poor performance or being caught. Possibly reflecting this, Diane's miscalibration was the most extreme due to predicting less than 1% of her lies would be undetected. She was much older than the other participants and seems to have reached the end state of her development in deceptive expertise.
- The analysis resulted in seven themes as presented in Figure 14. Each of the themes is explained in more detail below.

Theme 1; Practice makes confident (not perfect) liars

As intended, this sample featured participants spanning the range of performance, allowing comparison between attitudes and opinions that differed systematically across groups, but also the identification of consistent themes across both ends of the spectrum. More experienced liars describing a greater sense of belief in their own abilities than those for whom lying was a rare event. Those who consistently claimed to never or rarely lie were convinced that this lack of practice put them at a disadvantage when attempting to do so in the study one task. Farrah's apprehension about taking part in the interview was based on her lack of familiarity with lying *"So, I don't normally lie like, to know I was going to lie, and I had to like, put on that false act, I think like, I knew I wouldn't be good at it"*. Whereas Steve, someone with much more practice, described lying as feeling enjoyable and something he would do for fun, safe in the belief that he would not be caught.

Figure 14

Thematic map



"It sounds bad, but I like lying. I like trying to see if people can read me, so yeah, so yeah, the interview bit was what I was looking forward to most... Cause there'll be people that I like, talk to and just as a joke, I'll say something that happened to me, but I'll keep a straight face and they'll still buy it, cause they're waiting for me to go "ha joking!" but I don't, I just carry on and they'll go "really?" and then they'll go to my partner "did that really happen to him?" and she'll go "no, you're up to it again" (laughs)."

He contrasted this with the more challenging task of a major lie, but even here he felt confident in his ability. *"...but if maybe if it had been for something like a serious thing, like a police interview or something then yeah, I don't think I would just-I think I would just have to sit there for hours and practice and practice over the information I was having to lie about until I almost believed it and manifested it and yeah...sort of as truth."*

This excerpt also gives a fascinating insight into the process Steve follows to produce and deliver a major lie. He talks of immersing himself in the untrue content until it becomes, for him, equivalent to the truth. This goal-directed behaviour appears to demonstrate naïve knowledge of cognitive load as predicted by the early characterisations of good liars as good psychologists (Vrij, Granhag & Porter, 2010). Steve is following the ADCAT principle that a stored or pre-rehearsed lie may become prepotent over the truth, meaning that the Activation processing component causes a lie rather than truth to be preferentially activated. His technique also has echoes of the reaction time tests carried out by Verschuere et al. (2011) showing that rehearsal can increase the dominance of the deceptive response over the truthful one. Steve is demonstrating the ability to extrapolate beyond his actual experience to what would be required of him for a hypothetical future lie. Something he feels confident in doing because of his high level of practice.

Intriguingly, those who lie more often are more confident even when, like Harry, they have little justification for such confidence and cannot identify why they should have it.

"...it's very much just like natural stuff that you can do. Or that I do when I'm lying that's just, makes it-makes it more relaxed and like believable... if you just trust your gut and lie how-how you think you need to lie, I don't know it, works for me, at least it always goes fine for me (laughs)." (Harry)

The best and worst performers were equally self-assured, but less well-practiced liars were less confident. This suggests that even when practice does not confer any advantage in terms of objective performance it does increase the liar's confidence. In the absence of clear

feedback, familiarity may be creating a sense of ease that is subjectively misinterpreted as expertise. If most lie detectors are poor, then it is easy to see how spurious correlations might form between techniques used and the success of a lie. The more such tactics are practiced and seemingly work, the more this reinforces the belief of being a good liar.

Theme two; Practice is necessary but not sufficient.

Deliberate practice has been seen as the key to developing expertise, but research into motivations for lying has not identified such behaviour in the realm of deception. Lying has been presented as a way of preserving social relations, avoiding the consequences of actions, obtaining advantage or impression management (Cantarero, et al., 2018; Levine et al., 2016) but not as a deliberate attempt to build skill. However, two interview participants (Steve and Harry) described actively seeking out opportunities to practice lying.

“I do kind of enjoy in a weird way trying to see if people buy what I tell them...Cause I think it’s just good (laughs) sounds a bit bad, but good practice just in general cause you try and keep it as close to your chest. I think, that’s something I’m trying to practice... yeah so that’s more self-improvement for myself.” (Steve)

Although this does not align with the description Ericsson et al. (1993) provide of deliberate practice as “...not inherently enjoyable” (p. 368) it does meet the other criteria of being carried out regularly with the specific aim of improving performance. The mention of self-improvement recalls a finding that experts continue to practice more and with higher intensity than less skilled performers even after expertise is attained (Deakin, 2007).

Harry, a self-reported prolific liar, also talked of telling ‘safe’ lies in a situation engineered so that the risk of being caught was very low. *“Yeah, I, I’ve, you can, you can, I can lie for a while and then go ‘Yeah, I was actually thinking this’ and people go ‘oh god like, I had no idea’”*. Taken together with the very high rate of lies he reported, this suggests a dedication to deception. But the two did not benefit equally from their practice. Objectively, Steve was the best overall performer in this sample, while Harry was a very poor performer. It might be possible that Harry would develop equivalent levels of performance to Steve with the same amount of time to develop. Potentially, those who go to the effort of seeking out opportunities to lie are demonstrating an awareness that they are not yet expert and a desire to attain that level of performance. But Harry’s very inflated sense of his own skill *“Yeah, yeah if I don’t want someone to know something they’re not going to know it. Like I*

mean they're not going to know it." and lack of insight in other areas of deception (see below) suggest this is not likely in his case.

In contrast to the two deliberate practitioners, Lisa made it clear that she preferred to avoid lying. *"Yeah, like, I have a really bad like, guilty conscience and I would like, avoid having that feeling at all costs (laughs). So, I'd rather just tell the truth like, for myself like, self-preservation"*. This should equate to poor performance, yet objectively Lisa was a Proficient performer. She went on to provide further evidence of her deceptive ability, describing an instance of high stakes lying, when her twin sister was severely depressed, self-harming and a risk to her own safety.

"So, like there's been times where...like, so, like, so, her cat died or something and I had to, like, she came home, and I had to pretend everything was fine that I hadn't just been crying and like, digging a grave and I was like, telling jokes and totally cool." (Lisa)

As well as demonstrating her deceptive ability, Lisa's accounts of having to lie due to circumstances outside her control show that she has accrued practice at deception. Those who engaged in deliberate practice did not necessarily see the benefits of that in their performance. Yet others who were opposed to lying and largely avoided it were very good liars. This suggests that while some degree of practice is necessary for the development of expertise, it is not sufficient. Individual differences play a critical role, not only in whether a person sets out to deliberately practice the skill of lying, but also in how they learn from the opportunities given. From this sample, a specific combination of the opportunity to engage in major lies (whether willingly or not) and the appropriate disposition is required for high-level performance. Although dark triad traits are likely to play a part for some individuals, here there is evidence of a much lighter, playful approach (e.g., Steve) where deception is prized for its own sake not for doing harm to others.

Theme three; Good liars don't 'wing it' they plan

When faced with lying in the experimental task in study one, there is evidence of exactly the kind of differences in forethought and planning that might be expected based on the GEF. Participants equated being good at lying with a *"natural ability"* (Lisa) or being able to just *"wing it a little bit"* (Steve) and Harry repeatedly stated that trusting his gut was the key to good performance. But in reality, better liars planned their deception. Although they did not always reflect accurate information about cue availability, better liars described having clear and specific goals for how to achieve deception. They had mental representations of what

good lying would 'look like' across multiple channels of communication and they formulated a plan for how to achieve that in their own performance. For example, Lisa was able to explain exactly what she had set out to achieve in study one.

"Um, so I had like a rough plan in my mind...So, I was like I'm not going to fidget, and I know like as well eye contact? Like maintain it and make it just be natural rather than-cos I know a lot of people when they lie, they like look away or um like, I've forgotten what it is but blink or something like that, so I was just conscious of that... So, I was actively like monitoring my body language...always sound confident so you're not doubting what you're saying...just like [sound] self-assured I guess?" (Lisa)

Steve had similar clearly defined plans for his verbal, nonverbal and paraverbal behaviour.

"...so I was trying my best to portray that I was relaxed and open and not closed off... I tried to actively look to the right where I could...I'm probably more focused on eye contact and the way I talk and sort of not stuttering too much, slowly talking and not talking too fast, things like that... I try, in interviews to make people either distracted or laugh a little bit..." (Steve)

As an expert performer, Steve not only had plans for this specific instance of lying, but a repertoire of behaviours gained from his previous lying experience which he could deploy based on circumstances *"But I think sometimes equally looking a bit flustered um, if you're in the right circumstance. If you're flustered you don't want to be calm when-when you've heard certain information, so you want to fit the information that you're giving."*

Farrah was in the middle of the sample in terms of overall performance, but she did engage in forethought, though it is interesting to note that while she too had a plan, it was more limited in complexity and specificity than that of the better performers.

"I was just, like, kind of planning it out in my head what I was going to say (in the interview room) whilst I was sat in the library. I did plan a bit...I was just sitting thinking about what I was going to say, I might even have written notes... It-it was literally just about what I was going to say, not like oh I'm gonna sit like this so that I'm not lying or anything, it was just the words I was gonna use. I didn't think about tone of voice or anything, it was literally just the words." (Farrah)

These specific, concrete plans contrasted with the recollections of the two poorest liars who were either unable or unwilling to prepare for deception in the investigative interview in study one. For example, Harry felt that his natural ability made planning unnecessary.

“No cos I think very much-I think of the whole thing the interview is the part I took least seriously... I kind of think I’m a good enough liar that I just go with my gut and that like that will get me through...” (Harry)

Despite knowing that study one would involve lying about her involvement in the mock crime, Diane describes feeling ambushed by the requirement to lie while in the moment *“And I think at this point I was thinking how do I lie? How do I lie (laughing)? How do you lie?! I don’t know, I can’t remember! I-I did myself a disservice in the fact that I was in the moment going how the hell do I lie? (laughing)”*.

These accounts mirror research on volleyball players (Kitsantas & Zimmerman, 2002) which showed that experts set more specific goals than non-experts and complete beginners fail to set any goals. But unlike expert volleyball players’ ideas on performance, the beliefs held by better liars about what cues might betray them were not all accurate. So, it is not necessarily the case that their plans were focused on the correct aspects of behaviour. Rather, it is possible that the benefit of a plan was in reducing the cognitive load of the task. This is a form of covert self-regulation (Zimmerman, 2006). By narrowing down what areas they needed to concentrate on to fixed items such as not fidgeting, those who planned could relax into their pre-determined demeanour rather than experiencing the near panic that Diane describes when trying to re-learn how to lie in the moment. Lowering cognitive load not only makes lying feel easier subjectively, but can also those lessen verbal, nonverbal and paraverbal cues to deception that are caused by higher load when lying.

Theme four; Limited concurrent monitoring capacity is allocated to target before self

Both deception theory (Buller & Burgoon, 1996; Vrij, Granhag & Porter, 2010, Walczyk et al., 2014) and expertise theory (Feltovich, 2006; Zimmerman, 2006) predict that expert liars will monitor and control their own behaviour and monitor their targets’ reactions while in the process of delivering lies. But such higher order processing is only possible if sufficient cognitive capacity is available beyond the act of deception itself. If liars are nonexpert, then they may be preoccupied with the more basic demands of engaging working memory to recall the content of their lie and thus unable to engage the central executive to concurrently monitor themselves and their target. In the current study, self-monitoring while lying appeared to be beyond the capacity of all participants. But better liars were able to save enough ‘bandwidth’ to at least monitor their target.

When viewing the video footage of themselves lying during study one, participants were surprised by verbal, nonverbal and paraverbal behaviour they had not been aware of demonstrating at the time. Had participants been able to self-monitor during the task (or indeed had spent time attending to their deceptive behaviour in real life), they would already have been aware of at least some of the behaviour they showed. But the cognitive demands of in-person deception were so high that no one could engage in self-observation while delivering their lies.

"Watching back this footage, I'd probably think more about my body language, my tone of voice as well as what I'm going to say...But when you know, you see yourself lying like you notice what to do... I'm just looking at the way my foot is moving, it's just not stopped all this time... I've never ever noticed on me that my foot moves like that (laughs)" (Farrah).

"...when you're right in front of someone, you got so many other factors that you have to consider, and you can't fully focus on one thing. You can go back as many times as you like and watch it, and you can pick up a lot, I think... I feel like I'm, just watching myself now it looks like I'm very, not fidgety but, just the-I mean... Like scratching the ear? Um, the hand movements, there's just a lot I'm doing when I'm trying to maybe concentrate a little bit, if I'm maybe trying to lie or something I mean, maybe that's what I give off without me even realising I'm doing it" (Steve)

It was not the case that self-assessment itself was too difficult because participants were able to retrospectively critique their own performance when provided with an outsider perspective via the video recording. When watching the recording back, proficient and competent liars could more capably identify their own verbal, nonverbal and paraverbal cues to deception, pointing out differences in vocal volume, facial expression and fidgeting.

"I can tell that's my nervous body language. Yeah, I get really, like, fidgety and quick, otherwise normally I move really slow...But when I'm comfortable, I'm a lot louder than this. Just in my general voice and, in the tone as well just sort of a lot more like lively than this (laughs). I'm just looking at the way my foot is moving, it's just not stopped all this time..." (Farrah)

"Ok this is me like, trying to look comfortable, but I don't think I do, I think like my face looks uncomfortable (laughs). Yeah, I'm a little bit nervous cos I'm like wiping my hands on my like,

leggings. Like I get really clammy hands when I'm nervous...I can see myself think like, I'm thinking of what I'm going to say rather than it being like a natural answer. Cos my eyes go like up like, and I usually do that when I'm thinking. Yeah...I think I like, laugh more than when I'm like, nervous laugh, yeah, yeah, yeah..." (Lisa)

Poor liars were less capable of accurate self-critique but could still identify some features of performance. Even when prompted Diane could only provide limited commentary on her deceptive performance *"I-I think, I think I was animated at the point to where I was uncomfortable"*. Harry provided a critique (or rather a defence) of his overall deceptive strategy but showed less insight into specific behaviours that may have betrayed his lies. *"So, I don't think I was very convincing in the like video... because I put too much effort into it... like I was a definitely over-eager in the interview to kind of say what I was doing... I should've just drawn it and left it, and instead let, let... let you push for that rather than going like 'and I drew this, here's the proof that I was doing it' because that just seems weird... Getting the picture out was a bit much, shouldn't have done that um...right at the end sorry, right at the end picking them up and going 'and this' was a bit much..."* (Harry)

So, self-assessment was possible but only after the fact. However, there was evidence from the better liars in the group of actively seeking to monitor the target response while delivering their lies. Steve explained that focusing on the target was his habitual approach to deception. *"Cause you know, I think, I usually tend to look at other people's reactions to gauge how well I'm doing"*. Lisa was also allocating some mental resource to the target *"Um, but I think I was kinda like, gauge your reactions?... little cues that I would hopefully understand if they came up (laughs)"*. Even Farrah who had very little experience of lying, was engaged in target monitoring. *"...I looked at your face as in for clues of-like-you know like, if you knew I was lying maybe you would smile or something..."*. But it was not the same for the two worst liars. Diane felt unable to allocate cognitive resources to her target *"I was probably too inwardly focussed for that!..."*. Whereas Harry seemed to feel that he did not need to respond to his target. *"No, I was still very aware of your responses but I-kind of, not acting on it"*.

Concurrent self-monitoring is very difficult when performing an already cognitively and metacognitively demanding task like lying. The fact that it was absent in this sample does not mean it is impossible to achieve but does indicate that it is likely to be the preserve of

experts. Potentially they have been able to practice some of the aspects of lying enough to make them intuitive, thereby lowering cognitive load. Or as seen above, by making clear and specific goals ahead of time they free up cognitive capacity to allow concurrent self-monitoring.

What the insights from this sample have shown, is that for those able to allocate cognitive resources to their target, it is possible to capitalise on the two-way nature of a deceptive interaction to monitor and respond to suspicion as it arises.

Theme five; (mis)Calibration is based on outcome rather than performance

The lack of ability to engage on concurrent monitoring described above has knock-on effects for calibration accuracy. Participants rely on post event outcomes rather than having any sense of their own performance. Even when faced with the evidence of their own deceptive cues, participants believed they had got away with their lies because they hadn't been overtly challenged in the moment. All participants were asked to evaluate their performance before and after having viewed the video footage. Despite accurately identifying multiple cues to deception in their performances, which should have caused them to critique their overall performance, all but Steve considered themselves to have done well at the end.

"...I weren't confident at all with like doing it, but looking back at it, it seemed as if I was! Like the more I watch it, we've watched it twice now, I feel like it's a bit more believable. So, I'm not sure I would change anything, maybe the foot! (laughs)" (Farrah)

While this research programme has sought to establish objective measures of lying performance using verbal, nonverbal and paraverbal channels of communication, for participants themselves the best and perhaps only way to assess whether they had performed well was whether they had been challenged. Hence when asked to evaluate performance participants relied on the only metric they had – getting caught or not. They assumed that even if the target was suspicious, they would not make an outright accusation. Not getting caught was sufficient to assess that they were good at lying despite objective evidence to the contrary. When watching the video Harry identified that *"like when I'm lying basically you can tell that it's not true because it's too much information"* yet when asked to evaluate his performance he reported that *"It's-it's absolutely fine...I was-I was really happy with that to be honest..."*.

Only proficient liars considered that a lack of challenge may not equate to a lack of suspicion with Lisa admitting *“I was worried that you were like going to figure out that I was lying. But I-I felt pretty confident in the fact that you wouldn’t say ‘oh you’re lying’. But I was kinda like, ‘does she notice?’ (laughs)”*. Steve initially states that *“I thought it went okay, yeah; I thought it went well, yeah, probably not the best but up there...”*. But having watched himself perform on the video he is less certain and realises that if his target was unconvinced then he has not done a good job of lying *“Yeah, I do remember being, um feeling confident, but...but I’m not sure how I did in total, probably left the place thinking “no she didn’t buy it” (laughs)”*.

There is a parallel to the Kruger and Dunning (1999; 2002) research in these retrospective evaluations. The best performer (Steve) was overly critical of himself after seeing his own performance, whereas Harry was miscalibrated in the opposite direction, believing that his performance was much better than it was. Ordinarily, poor calibration in deception may be attributed to the lack of accurate information on performance, both because of the difficulty of concurrent self-monitoring and the lack of feedback provided. But in this study participants were in the unique position of seeing themselves from the outside, and although the video stimuli seemed to facilitate self-critique; it did not lead to more accurate final calibration. All but the best two performers seemed to believe that not being accused of lying made them good liars. Examination of the process by which participants integrate the video footage with existing beliefs and form a final assessment suggests that their metric for success influences judgements of performance. Participants view themselves as having done well if they get away with their lie, which is not the same as aiming to be good at deception. The threshold for challenging a lie is much higher than the threshold for suspicion or even disbelief (Levine, 2014; Park et al., 2002). So, judging themselves based on not getting caught as the measure of success, means most liars erroneously believe they have performed well.

Theme six; Targets are assumed to be incompetent or unwilling detectors

Although aware of how their actual behaviour compared (sometimes unfavourably) with their mental representations of good lying, participants seemed to believe that the deceptive cues noted were only visible to themselves. Diane corrects herself from suggesting that anyone could see her discomfort to emphasise that this was evident to herself *“I think that’s something you can see. That I can see anyway”*. Farrah explained that

"I didn't believe myself, so I wasn't too sure if you would. But then, because I knew that you didn't know me as a person, you wouldn't be able to quite tell". Lisa explicitly stated that anyone but herself would be unable to detect her cues *"I think I was yeah, especially if you didn't know-well, actually anyone else I think yeah, they-they would think it was convincing. It's only because like I know myself"*. While Steve addressed the interviewer directly when identifying his nonverbal cues

"Think my body language kind of says – it looks a little bit like um, I don't know, um. Think it looks a bit stiff there to me, but you probably might think I was relaxed, but... I feel like looking at myself it looks like I'm um, knowing myself I'm-I'm lying" (Steve)

Participants relied on the environmental constraint of their target being a relative stranger and were conscious of the advantage this conferred due to the target not being familiar with their baseline (truthful) behaviour. They are not entirely wrong in this assumption, so again there is evidence of naïve psychology. But the Matrix of measures used in study one confirms that, the verbal, nonverbal and paraverbal cues produced by most of this sample were detectable by others. Meaning that other than for Steve, the confidence that a stranger could not tell they were lying was misplaced. However, detecting cues does not necessarily equate to challenging the liar because of social stigma (Bond & Fahey, 1987; Vrij, Mann & Fisher, 2006). So, it is easy to see how a liar might assume their behaviour is not suspicious if they have never been told otherwise.

Confidence in the inability of detectors extended beyond targets who did not know the participants. In a belief system reminiscent of Truth Default Theory (Levine, 2014), Harry talked of exploiting the trust of existing relationships so that even those who might be expected to notice cues to deception would disregard them.

"I think most well-adjusted normal people want to believe someone that they're seeing or sleeping with or whatever is-is like a trustworthy person, a good person.... So, I mean it makes it way easier to just accept whatever and overlook a lot of things" (Harry)

Overall, there was a belief that even though participants themselves can recognise deceptive cues in their own verbal, nonverbal and paraverbal behaviour, this will not be evident to their target, and/or if cues were perceived they would be excused. This means that responsiveness to targets is not prioritised as most nonexpert liars go into a deceptive interaction assuming their target will not detect them.

Theme seven; Confession is easier and more likely than responsiveness

As discussed above, better liars are able/willing to allocate cognitive resources to target monitoring which gives them a better chance of being able to respond to target suspicion. But responsiveness requires more than simply attending to the target. Liars must also have sufficient social processing ability to recognise suspicion cues when they appear and knowledge of what adjustments to make to their performance to regain trust. While most participants were able to state some key behaviours, they believed might indicate suspicion, few if any could identify actual suspicion from a specific target (i.e., in study one). Their preferred strategy when noting suspicion in their everyday lives was to confess rather than attempt to respond by adjusting their deceptive performance.

When asked, all participants were able to identify at least some signs from a target that they were not being believed. These ranged from vague on the part of Lisa *"... little cues that I would hopefully understand...I don't think I necessarily really knew what I was looking for just that I would know when I saw it kind of thing"* and Diane *"...eye contact...Yeah. I think I, um, gauge the situation by, yeah that connection..."* to more specific behaviours from Harry *"If you stopped writing for a second and then started again....or-or-or asked me to repeat a question, ah to repeat an answer..."*. Perhaps unsurprisingly the most detailed answer came from the best liar, with Steve again demonstrating an internal 'library' of possible signs of suspicion gained from experience.

"...if you didn't sound convinced. Like if you were going "riiiight..." that kind of stuff, that tells me a lot. That kind of, not fully buying what I'm saying. Um, quite a serious face if you're always a bit, like you're looking beyond my words trying to see through me a bit, so an intense kind of gaze, that can-that can be another one. Um. Yeah, or just being blunt-blunt...Body language-wise if you're, funnily enough I think if you're quite laidback but to the point where your head's a bit like that (tilts his head back and to the side while making a quizzical face, laughs) like looking like "what're you talking about?", then that would have also been one, but if you're a bit more forward it seems like you're almost buying it like... yeah, like little bit eager (laughs)..." (Steve)

But trying to apply these ideas to a real target in study one proved difficult. It is worth noting that the interview conducting during study one contained several clear indicators of suspicion. For example, each participant was asked to clarify the details of their story, and all were asked whether they had been in any other buildings than the ones they mentioned

and “have you got any way of verifying these details?”. Additionally, the interviewer did indeed stop writing and tilt her head to the side as described above.

Harry did not perceive any signs but was not attentive to them anyway, preferring to trust his own skill in the moment *“You-you seemed fine, and I was like I’m not gonna, I’m not gonna overthink and go like “oh no! what?” cos like, cos again, you should trust your gut in things like this”*. Farrah was actively trying to watch for cues to suspicion but found none *“You couldn’t tell at all...I looked at your face as in for clues of–like, you know, like, if you knew I was lying maybe you would smile or something. But you were consistent throughout both...”*. Even Steve, found it hard to discern cues from the target, although he was more able to do so than others.

“Um... It’s kind of, when you’re looking down, I’m probably like “ah did I give something away there, or am I-like is she believing me?” ...yeah, no you were quite–I think maybe cause you weren’t, um...I think we were quite we were laughing a few times, so it made me feel at ease, but then um you wasn’t giving too much away so that’s maybe where I’m–it’s hard to, it was, you were hard to read. (laughs)” (Steve)

When it came to their responses to a suspicious target in their everyday lives, participants tended to give up completely and confess. This was presented as the best option because adjusting in the moment was too difficult according to Harry *“...when you start backtracking, and when you start rethinking your plan, ah, midway through telling it. Nah, no-no-no you can’t do that, you just can’t do that”*. Diane made the same point and suggested that a faster admission would do less damage to the relationship *“... if you own it then there’s nothing insurmountable...so, yeah...admitting, admitting is easier than making complete lies out of nothing”*. While Lisa emphasised wanting to avoid prolonging the discomfort of not being believed *“It’s usually like with family members or something I will just stop and be like “yeah ok” and just say it cos I hate like, I just don’t like that discomfort”*. Steve detailed two contrasting approaches and appeared to use a kind of decision tree to assess whether responsiveness was appropriate. When lying to someone he felt he could try to convince, he deployed humour. Making a joke had the effect of not only distracting the target from suspicion but also calming himself down (a form of covert regulation).

“...I tend to try and get out and make the other person try and laugh a little bit, try and distract them a little bit as well... And it gives me that “ok I feel a bit better now”, makes me feel a lot at ease, um... and then I’m in control a little bit as well in a funny way.” (Steve)

But with an especially challenging target like his ex-police officer mother, he doesn't even try adjusting his deception. He knows from experience that such an attempt won't work and chooses instead to preserve his relationship with her by admitting to the lie.

"But my mum can read me like a book, like when I go visit her, she's like "stop lying to me". No—no I'd just tell her straight (laughs). I've tried plenty of times in the past, but she can still...My mum was a cop...no, she actually used to be a policewoman as well...Coming home late and she's just always like "come upstairs, where you been?". So really, I got interrogated quite a lot in a funny way".

The difficulty in identifying suspicion during study one seems to be a product of both a lack of awareness of what signs their target may provide, and the lack of cognitive capacity allocated to this task (see Theme four). Steve knew what verbal, nonverbal and paraverbal cues he was looking for, but even if Diane and Lisa had been able to monitor the target, it is by no means certain that they would have correctly identified suspicion cues given the vague nature of their descriptions for what these might be. When reacting to signs of suspicion, confession was a more likely outcome than attempts at adjusting deceptive performance. For those that do discern cues to suspicion while delivering their lies, a calculated decision is required as attempting to continue with the lie risks damage to their relationship with the target. Rather than attempting to come up with changes to their verbal, nonverbal and paraverbal performance in the moment, nonexpert liars tend to confess. Only expert liars will attempt to adjust their performance in response to suspicion, and even then, only in some circumstances.

7.5 Discussion

Qualitative interviews involving free recall, retrospective think aloud and video-stimulated interviewing were carried out with a sub-sample of the participants from study one. This meant that objective measures for each liar's deceptive performance were available, so any differences in their expressed experiences of lying could be examined considering expertise theory. Seven themes were generated from the data that addressed three research questions specific to practice, calibration and responsiveness. These themes demonstrate

that while deception does not entirely conform to the GEF there is indeed evidence for expertise in the domain of deception.

The link between practice and performance is not straightforward. Practice increases confidence for all liars but must be aligned with the right disposition to improve performance. Lying itself is a cognitively and metacognitively demanding task, leaving little capacity for the additional requirements of the self-regulation cycle. For example, in this sample no one was able to engage in concurrent self-monitoring. Even when given the opportunity to view their own performance after the fact, most liars did not evaluate deceptive performance in the nuanced way that might be expected. Instead, calibration was based on a flawed metric (not getting caught) and thus everyone apart from the best liar believed themselves to have performed well regardless of objective reality. Better liars were able to minimise their experience of cognitive demands by planning ahead, which allowed them to allocate some of their limited mental resources to their target. But the challenges of responsivity are so high that even when signs of suspicion are detected, liars prefer to 'come clean' and confess their deception rather than attempt the task of adjusting performance in the moment.

Although qualitative interviews are a staple of expertise research, this is the first time such work has been attempted in the domain of deception. So, the insights provided are of great value in understanding how well the GEF fits deceptive performance. Taken together, the findings suggest that expertise in deception exists, but it has some unique features (specifically with regard to disposition) that set it apart from high performance in other domains. Expert liars are likely to be exceedingly rare because they require a specific combination of the opportunity to practice against a sufficiently challenging target, the social cognitive abilities to minimise mental load and to extract feedback from a 'wicked' environment, and the disposition to continue to practice and to attempt to respond to suspicion despite the socially aversive consequences. Calibration of performance takes place within an 'arms race' between liar and target, where it is not in the target's best interests to let the liar know what elements of their performance were convincing lest they use this to deceive the target in future. Relying on not getting caught as a reliable indicator of performance is an ineffective but popular strategy that prevents most liars from developing expertise.

In the sample from the current study everyone but Farrah had some practice in lying. Yet only Steve and to a lesser extent Lisa were able to use this to develop a high level of performance. Harry had the boldness and confidence required to attain practice but lacked the social sensitivity to consider his target's perspective. For different reasons, Diane and Harry were both unable to develop accurate calibration (in opposing 'directions') and this prevented them from turning practice into enhanced performance. By sheer chance, Steve had early exposure to a challenging target in his police officer mother. But this could have sent him down an altogether different route, permanently averse to lying because of the high chance of being caught. Instead, because of his disposition he has taken on the challenge of attempting to become a skilled liar and actively creates opportunities to improve. The critical role of individual differences in developing deceptive expertise sheds light on the findings from other studies within this research programme and beyond. Based on the surface features required (boldness, risk taking, confidence, the willingness to deceive others) dark triad traits seem a good candidate for the ideal liar's disposition. But as previous studies have shown, the dark triad do not necessarily have more success with deception despite a willingness to use it. Narcissists are unlikely to have sufficient humility to develop accurate calibration, nor the desire to dedicate more cognitive resources to their target than themselves. Psychopaths have clear deficits in social cognition (Blair, 2008; Herpetz, 2013) and executive control (Zeier et al., 2012) making them also unsuitable for the task. This leaves Machiavellians, whose manipulative tendencies and focus on long term thinking may align better with the disposition required to develop deceptive expertise. However, it is important to note that the best two liars in this sample were explicit in their belief that lying was only justifiable if no harm was done. Also, when faced with signs of suspicion from their target, liars were more likely to confess their deception (to avoid discomfort or risking relationships) than engage in the kind of deceptive fencing match outlined in IDT. Rather than a 'dark' and exploitative approach, these findings show that lying is seen as a game to be played. So, the ideal disposition seems to be similar to Machiavellianism but not necessarily 'dark' in nature.

Participants in this study believed that it was easier to lie to a stranger than someone who knows them, and this is supported by prior research. Complex social contexts require more Theory of Mind inferences (Apperly et al., 2009) and this is magnified when the target knows the respondent well thus imposing a higher cognitive load (Walczyk et al., 2014) so

lying feels more difficult. Additionally, multiple studies show that targets with relational and contextual familiarity are more difficult to deceive (Buller & Aune, 1987; Burgoon et al.; DePaulo & Kashy, 1998; Reinhard et al., 2011). Although Park et al., (2002) found that lies that are detected by familiar targets typically happen long after they have been told and detection is based on things like physical evidence, third-party information, or the liar's confession rather than because of greater familiarity with the liar's verbal, nonverbal or paraverbal behaviour when lying. There is also support for the idea that some targets may not want to believe they are being lied to and thus will disregard deception cues. A study by Sternglanz & DePaulo (2004) found targets with a less close relationship to the liar were better able to detect concealed negative emotion than targets who were close friends. These results were interpreted as evidence for the motivated inaccuracy model of Ickes and Simpson (1997), where information which may prove threatening to the target is not attended to as a form of self-protection.

The finding that when faced with signs of suspicion, most (nonexpert) liars prefer to confess than attempt to adjust their behaviour seems to conflict with the rational choice decision making process described in ADCAT (Walczyk et al., 2014) in which liars constantly choose the path of maximum benefit and minimal negative consequence based on the information available to them at the time. Confessing to a lie risks reputational damage but liars in this sample seemed to find this preferable to the challenge of responsiveness. In the current study, no liars showed signs of concurrent self-monitoring, suggesting that this extremely cognitively demanding task is either not prioritised, or more likely is beyond the capacity of most liars. Additionally, only proficient liars allocated any cognitive resources to their target during deception. These findings contradict the assertion made in ADCAT that the allocation of cognitive resources is proportional to the level of motivation. Rather, deceptive skill must also be considered, as even a highly motivated poor performer cannot divert metacognitive and cognitive resources from the basic task of producing and delivering their lie to concurrent monitoring of self or target.

The findings of this study also challenge several ideas within GEF, namely deliberate practice and the sense of ease in performing. Although deliberate practice did appear to have an impact on performance it did not explain the differences entirely as Ericsson et al (1993; 2007) would argue. This accords with recent meta-analyses (Macnamara et al., 2014; 2016) which found that although accumulated amounts of deliberate practice rise with skill

level, it is only one of many possible explanatory factors for the variance in performance. Personality and general cognitive ability have been proposed as possible predictors (Hambrick, et al., 2019) which the current study also suggests. Performing with ease is another hallmark of expertise under the GEF. Indeed, Krampe and Baltes (2003) claim that “probably the most general characteristic of expertise in all kinds of domains is the apparent ease with which experts perform in their specific domains” (p. 50). This was partially true in the current study in that the two best liars felt more relaxed and self-confident when lying. Yet the subjective experience of the worst liar (Harry) was also that of performing with great ease, something which contributed to his self-assessment as an expert liar. Although a sense of ease may be indicative of expert performance, it is by no means definitive. The unaware poor performer is not only located in the ‘wrong’ place on the Dunning-Kruger performance graph, but they may also experience the same subjective state as an expert, albeit unjustified.

7.5.1 Limitations

There were some methodological limitations to this study. Toraldo suggests that video stimuli risks the “illusion of objectivity” (Toraldó et al., 2018, p. 449), when in fact conscious choices about what to film and when influenced the creation of the stimuli, which in turn influences the insights that can be gained. Participants may feel obliged to rationalise or provide answers for areas of their own performance into which they do not have insight. Even when assured that it is preferable to say, “I don’t know”, there are inherent demand characteristics when requesting that someone provide an answer to the question ‘what were you thinking?’. This pressure is only increased when their role as a collaborator and expert is emphasised as it is in this type of research, making post hoc rationalisations more likely.

Phase two of the qualitative interview involved a think aloud type task that differed from the standard use of this technique. However, the emphasis Ericsson and Simon (1984; 1993) placed on obtaining verbal reports untainted by any consideration risks reducing participants to “verbalising, task oriented individuals, acting in splendid isolation with no context, no senses and no emotions to hold them...loosing (sic) the psychological being and substituting it for an information processing entity” (Nielsen et al., 2002, p. 106). Because the analysis combined all phases of the interview into a single transcript, greater richness of response was prioritised over strict observance of the think aloud method.

The results of this study do not aim for generalisability. Instead transferability is one of the key criteria for trustworthiness in qualitative research as set out by Lincoln and Guba (1985; 1999). There is nothing to suggest that the findings of this study would not be transferable to other deceptive performance contexts, especially since participants reflected on not only their experiences in study one but with lying elsewhere in their lives. However, the use of a maximum variability sample means that cross-case themes involve conflicting representations from different participants (Robinson, 2014) and this does narrow the transferability of the findings somewhat.

7.5.2 Conclusion

This study aimed to explore individual deceptive performance qualitatively to provide unique insights and to expand on the results of study one. Specifically, addressing three research questions about whether the experiences and perceptions of lying differed between individuals whose performance differed across the performance spectrum. The research questions derived from the GEF were: What role does practice have on differing levels of performance? How do liars of different skill levels engage in meta-cognition and self-regulation? and Are liars responsive to feedback from the target of their deception? Seven themes were generated from the extensive qualitative data provided by a three-phase qualitative interview comprising free recall, think aloud protocol and video-stimulated interviewing. The poverty of quality feedback in the domain of deception underpins the results of all themes. The relationship between practice and performance is weakened because practice does not provide the usual opportunity to receive feedback and improve. More practiced liars are more confident but not all are justified in being so. There are clear differences in the metacognition of expert performers in the pre-event, concurrent and post-event phases of lying. Nonexperts fail to plan, do not engage in concurrent monitoring, and in the absence of clear feedback, base their evaluation solely on outcome (getting caught or not). On the question of responsiveness, nonexpert performers had only vague ideas of how suspicion would be communicated and would be most likely to confess if they encountered a suspicious target. Only an expert is prepared to take the risk of continuing to lie while adjusting their behaviour. These results offer a new way of thinking about deceptive expertise and challenge some of the assumptions of existing deception theories. Further qualitative research is essential to continue to investigate this area.

8. Study three - Testing deceptive performance across time

8.1 Abstract

To further test the effect of practice on performance and calibration in the domain of lying and to introduce the question of consistency, participants provided written truthful and deceptive accounts at four time points each one week apart. Using LIWC natural language processing software, these accounts were used to establish a lie effect at each time point to estimate episodic and overall performance. Self-ratings (trial specific and overall) were compared with actual performance to establish calibration abilities. Practice was operationalised by measuring self-reported lying frequency, personality types as a proxy for lie propensity, and task-specific practice between the start and end of the longitudinal design. Machiavellianism, a trait-based measure of habitual lying, was predictive of superiority in both performance and calibration as hypothesised. But no form of practice resulted in higher consistency of performance. As expected, better liars were also more accurately calibrated. Counter to predictions, no form of practice resulted in higher consistency, and neither was better performance associated with greater consistency in performance. Collectively, these findings provide partial support for the idea that the General Expertise Framework can be applied to the domain of deception.

Despite a widely accepted assumption that some individuals are good liars, evidence for this is sparse (Vrij et al., 2010). Individual differences in deceptive ability have been reported (Debey et al., 2015; Frank & Ekman, 2004; Hu, et al., 2012; Van Bockstaele et al., 2012; Wright et al., 2013) but effect sizes tend towards the small and difficult to replicate. Further examination of the rich cognitive psychology literature on expertise suggests that there are expert liars in the same way there are expert tennis players or expert musicians. The General Expertise Framework (GEF) posits that highly skilled practitioners across domains have certain features in common. This research aims to explore individual deceptive performance within the GEF to determine the extent to which lying is a skill.

Study one did not find the expected relationship between practice and performance nor between practice and calibration accuracy. The current study repeats tests of practice with a wider range of measures and in a different setting. Deceptive communication strategies differ between people engaged in interactive and non-interactive deception (Buller & Burgoon, 1996) so it is important to also examine performance in non-interactive context. By selecting a written task, demeanor and the potential bias of third-party raters are removed from the equation. It is also possible to collect data online facilitating a longitudinal design which also addresses consistency of deceptive performance.

Although deception is not usually studied in this way, many of the techniques used in researching skill in other areas can be readily applied. The present study proposes to assess the following well understood pillars of skill development as set out in chapters two and three; a) self-reported and total accrued amount of practice (Ericsson et al., 1993), b) test-retest consistency (Winter, 1984; Knudson, 1990; Parker et al., 1993; Klein et al., 2006) and c) the alignment of self-assessment of skill with objective measures (MacIntyre et al., 2014; Zimmerman, 2006).

8.2.1 Practiced populations

As discussed in Chapter two, there are several candidate populations when searching for highly practiced potential expert liars. Namely, prolific liars and those whose personality predisposes them to deception. The theoretical support for a relationship between practice and performance is strong. Practice in the domain of interest is a foundational feature of expertise (Ericsson et al., 1993; Newell & Rosenbloom 1981; Ward et al., 2004). Psychopaths and Machiavellians both showed a drop in cortisol immediately following a deception task

indicating that they do not experience lying as stressful (Dane et al., 2018) which may allow them to avoid producing arousal-based cues.

Additionally, a high volume of pro-social lies may also provide the necessary practice to develop deceptive performance. Therefore, two factors within the HEXACO personality framework discussed in Chapter Two are of interest in the search for practiced liars.

Extraversion is associated with both a higher rate of lying (Conrads et al., 2013; Gylfason et al., 2016; Kashy & DePaulo, 1996; Sarzyńska et al., 2017) and better performance (Levitan et al., 2015; Riggio et al., 1987a). Honesty-Humility was associated with higher lie production ability in an interactive deception game (Semrad et al., 2020) suggesting that the overall sincerity of people high in Honest-Humility serves them well when they do lie. Therefore, the current study will replicate (using self-report and the dark triad) and extend (using HEXACO) the measures of practice used in study one to further investigate this hypothesis.

8.2.2 Practice in deception studies

In an innovative and instructive study, Zhou et al. (2013) utilised a Massive Multiplayer Online Game environment to test the deceptive ability of 1470 participants, and test the hypothesis that practice contributes to deceptive skill. Here deceptive success was operationalised as winning “Mafia,” an interactive, online game of social deduction, in which the aim is for one player (the deceiver) to avoid detection and elimination by the other players (all truth-tellers) during successive rounds of group negotiation and voting. The study therefore collected measures of deceptive skill (percentage of games won previously), deceptive experience (number of previous games played as a deceiver), and ‘survivability’ which was a calculation of how many rounds of the game a deceiver managed to stay undetected adjusted to account for the number of other players. The resulting model found that players with more experience of the game in general were not more successful. Those with experience in the deceiver role lasted longer in the games but did not ultimately win more. Simply taking part in many Mafia games did not lead to greater deceptive skill. However, the experience of winning as a deceiver did lead to greater success. This was counter to the researcher’s expectations but can be readily explained. As Ericsson (2003) has argued, mere amount of prior experience is not sufficient to improve performance on its own. Rather, under his Deliberate Practice Framework, practice must take place with the conscious intention of improving a specific element of performance. Zhou et al. (2013)

suggest that rather than conveying greater insight, more experience may have merely given their participants an illusory sense of confidence, leading them to make more errors.

8.2.3 Consistency

Consistency of performance is a defining feature of skill (Bornstein et al, 2017; Glaser, 1976; Lewis, 1956) and yet deception researchers have not properly explored this simple, albeit exciting, feature. When calling someone a 'good liar' the implication is a stable ability, not that they happened to tell one good lie. Without evidence of consistency, it is possible that so-called 'good' liars are not more highly skilled than others but simply performed better on the one occasion when they were tested, or 'fell through the cracks' in pseudo-random judgements of credibility.

Only one published study has explicitly tested consistency of deceptive performance. Frank and Ekman (2004) required the same 15 participants to take part in two interviews conducted by the same interviewer on the same day, one following a mock crime activity (theft of money) and the other providing a false opinion about a contentious social issue (such as the death penalty). Short videos were shown to two different sets of raters – one for each interview - who made a binary choice of truth/lie and the proportion of ratings of each kind was totalled for each participant. When compared, there was a remarkably high correlation ($r=.87$) between proportion of truthful ratings across the 2 interviews which the study concludes is evidence for a 'consistent' ability in appearing truthful on the part of participants. It is worth underlining that this is a very specific take on consistency, more in line with inter-rater reliability than consistent performance over time.

This measure of consistency does not account for bias (or general inaccuracy) in the raters which is likely to be a factor. Bond et al., (1985) coined the term 'demeanour bias' to refer to those individuals whose natural presentation gave an honest impression whether lying or truth telling. Such an impression is not dependent on skill on the part of sender. In addition, many socio-demographic factors have been shown to influence deception judgements made by human raters, such as race (Lloyd et al., 2017; Vrij & Winkel, 1992a; Vrij & Winkel, 1994), age (Bailey & Insch, 2014; Slessor et al., 2014) and facial appearance (Masip et al., 2003).

Because this study relied solely on human raters, it is possible that what was being measured was not consistency of performance by the liar (of which there were only 8) but consistency of bias by the external judges. Frank and Ekman report that all participants were male and the original sample of 20 was 20% Black, 25% Asian and 55% White but the ethnic

make-up of the final sample of 15 and the sample of raters are not known. Also, only 8 of the participants were lying, meaning that for the other 7 the truth/lie rating was not a measure of their deceptive ability but their truth telling ability. Such a small sample, and concerns over reliability of data from Ekman, raises doubts about the validity of results and the degree to which they inform the question at hand.

8.2.4 Calibration

Despite the famous so-called “double curse” of metacognition inaccuracy where those with lowest skill overestimate their abilities and those with highest skill underestimate (Kruger & Dunning, 1999), research suggests that greater ability comes with greater metacognitive self-regulatory processes, including self-assessment (Feltovich et al., 2006, Zimmerman, 2006). Demonstrating this, expert performers in tennis (McPherson & Thomas, 1989) and the game of bridge (Keren, 1987) can state with a high degree of accuracy which of their own shots or moves are likely to be winners or losers (Dunning, 2011). So, expert liars should also show good calibration between perceived and actual performance, and this was supported by the results of study one. However, other experimental data demonstrating such a calibration ability in deception is lacking.

Self-assessed ratings of deceptive ability did not predict detectability in a deception game (Van Swol et al., 2017). Vrij et al. (1996) found that participants believed they were showing increased movement during a deceptive interview (compared to a truthful interview) when in fact the opposite was true. The participants of Frank and Ekman’s study (2004) were asked to rate both their general deceptive ability and their performance in the in the two experimental interviews. Neither of these judgments correlated with ratings from those judging the interview videos.

Accurate information about performance is always difficult to obtain in deception. Even in ‘real world’ lying, the threshold for suspicion is much lower than that for accusing someone (Levine, 2014) meaning many poorly delivered or ‘transparent’ lies go unchallenged, even when deception is suspected (Park et al., 2002). This poverty of accurate feedback may contribute to relatively poor rates of meta-awareness in deceptive performance. Even so, individuals with more practice have a better chance of developing the social cognitive abilities needed to make sense of limited feedback and develop the meta-awareness needed for good calibration.

8.2.5 The current study

As chapter three made clear, existing detection-focused deception research has not been fit for purpose when it comes to answering questions of skill. The presence of human raters of any kind introduces bias, either receiver- focused as in truth default (Levine, 2014) or sender-focused as in demeanour bias (Bond et al., 1985) and prejudice based on demographic features (Bailey & Insch, 2014; Lloyd et al., 2017; Masip et al., 2003). Thus, the performance of lie detectors contaminates the performance of lie producers. Single-session tests of lying skill cannot measure consistency and even multi-trial studies (usually reaction-time based) still only examine performance on a single occasion. Inadequate tests of skill mean that calibration of self-assessed ability with actual performance may also be inaccurate.

The current study faces the challenge of ensuring that it contains both a fair test of deception and allows for all facets of skill to be examined. The innovative experimental paradigm described below was developed to exactly match this challenge and facilitated the collection of high-quality data at a scale that increased the likelihood of rare but important sub-populations appearing in the sample. Namely, prolific liars (Serota et al., 2021) and those with dark triad traits (Coid et al., 2009; Kaufman et al., 2019). The lie elicitation component of this study uses a process developed in false memory literature (Garry et al., 1996) and subsequently adapted for deception (Barnier et al., 2005) in which a participant is first asked to view a list of events and identify which they have experienced, then provide two autobiographical accounts, one based on a genuinely experienced event (truth) and one falsely constructed account of an unexperienced event (lie). In addition to removing the need for human raters, linguistic cues to deception are considered the strongest and most reliable (Dzindolet & Pierce, 2005; Hauch et al., 2016; Tausczik & Pennebaker, 2010).

The study is longitudinal, with written truths and lies collected in four sessions each one week apart. This not only allows for the crucial test of consistency of performance across the sessions, but it means that practice and calibration can be examined at a macro and micro level. Practice is operationalised in three ways; self-reported frequency in a specific time period as is traditionally used in deception research (DePaulo et al., 1996, George & Robb, 2008, Halevy et al., 2014; Hancock et al., 2004; Serota et al., 2010; Serota & Levine, 2015; Whitty et al., 2012), trait-determined habitual liars (Paulhus & Williams, 2002; Gylfason et al., 2016; Sarzyńska et al., 2017) and nonliars (Ashton & Lee, 2008; Semrad et

al., 2020) and task-specific practice provided by the repeated measures study design. Additionally, participants are asked to assess their overall deception ability before beginning the study and to provide a distinct rating of performance after each trial. Thus, the effect on performance of accumulated lifetime experience with lying can be contrasted with recent, applied practice under the specific circumstances of this study. While calibration can also be tested at a global level -does perceived overall deception ability match actual overall deception ability? and the much more granular question of whether participants can accurately calibrate performance at each time point.

To ensure that cognitive demands of producing a lie without prior preparation were equivalent in each testing session, new stimuli were presented each time (in the form of a different sub-list of experiences). Using this newly developed task, the following hypotheses could be tested:

H₁ Participants with more practice at lying will have better deceptive performance as measured by the ability to mask differences in truthful and deceptive accounts across a range of linguistic measures using LIWC.

H₂ Participants with more practice at lying will show more consistency of performance as measured by a Coefficient of Variation (CV) for each LIWC variable across all four time points.

H₃ Participants with more practice at lying will be more accurate judges of their own ability. Specifically, overall calibration between perceived ability and actual performance will be better for those who lie more frequently (self-report and personality measures), while task-specific calibration is expected to improve for all participants across the four time points as they accrue practice in this form of lying.

H₄ Participants with better deceptive performance will have higher consistency of performance across the four time points as measured by a coefficient of variation.

H₅ Participants with better deceptive performance will be more accurate judges of their own deceptive ability. Specifically, overall calibration between perceived ability and actual performance will be better for those whose performance is in the top quartile.

8.3 Methods

8.3.1 Design

A mixed design was used to compare *within-subjects* in truth versus lie (valence) across four repeated timepoints and *between-subjects* based on differing amounts of practice and self-assessed ability.

Independent Variables are: Self-reported lying frequency, Dark tetrad personality traits (narcissism, Machiavellianism and psychopathy), HEXACO personality dimensions Honesty-Humility and Extraversion, Self-assessed overall deceptive ability and Self-assessed specific performance ratings.

Dependent variables are the LIWC variables:

LIWC_{Authenticity} (a composite indicator of "authentic" or honest communication),

LIWC_{Wordcount}, (total number of words)

LIWC_{Sentences} (Number of sentences),

LIWC_{Content} (the combined total of Regular verbs, Adjectives and Common adverbs),

LIWC_{Perceptual} (words associated with sensory and perceptual processes)

LIWC_{Cognitive} (words associated with cognitive processes).

8.3.2 Participants

An a priori sample size calculation carried out in G*Power (Faul et al., 2009) for a regression analysis with 7 predictors and a small (0.15) effect size resulted in a requirement for 103 participants for 80% power. Allowing for attrition, a target sample size of at least 200 participants was set. Recruitment was carried out via a range of sources offering much more diverse potential participants than typical deception research. These sources were a research participation scheme for undergraduate Psychology students at Goldsmiths College; the online research platform 'Prolific'; and via email appeals to the existing mailing list of the Forensic Psychology Unit (FPU) at Goldsmiths College. Students were compensated for their time with course credits, Prolific participants were paid at a rate of £5 per hour, and FPU mailing list members took part voluntarily with the incentive of a £50 online voucher prize draw.

The total sample for this study comprised 264 participants (81.4% female, 17.8% male, 0.8% Nonbinary and other) with a minimum age of 18 and maximum of 77 (mean = 22 years old, SD = 9.15). The ethnic makeup was as follows: Asian – 22%, Black – 9%, Mixed ethnicity – 9%, Not provided – 4%, Other specified ethnicities – 16% and White – 40%. Only 149 participants provided full data for all four time points. Demographic information for this

smaller sample remained largely the same (85% female, 15% male; mean age = 22 years old, SD = 9.21; Asian – 24%, Black – 6%, Mixed – 10%, Not provided – 5%, Other specified ethnicities – 20%, White – 35%).

8.3.3 Materials

8.3.3.1 Life Experience Inventory

As detailed in the Methods chapter, a Life Events Inventory was created and validated specifically for use in this study. Lies and truths were both elicited by participants reviewing a list of autobiographical experiences and then recounting one genuine memory (truth) and knowingly falsifying one experience (Barnier et al., 2005). Candidate life experiences were distributed across four sub-lists to be presented at each of the four timepoints, each balanced for the type of experience, its emotional valence and how commonly it occurs. For the full inventory, see Appendix C.

8.3.3.2 Self-report battery

The comprehensive measure of self-reported lying frequency and self-assessed deceptive ability explained in chapter four and study one was used for the current study also (see Appendix B).

8.3.3.3 Dark Triad

Due to a technical error, participants were not presented with dark triad measures during the study. However, in consultation with the Ethics Committee of the Goldsmiths Psychology Department, consent was obtained from some participants to share their data from an unrelated study carried out by another researcher which had successfully administered relevant questionnaires. This was only possible for those participants who had taken part in the unrelated study (n=147). Machiavellianism was assessed using the Mach-IV (Christie & Geis, 1970) as described in study one and presented in full in Appendix F. However, the remaining two traits were measured with different questionnaires as outlined below.

Psychopathy was measured with the TriPM - Triarchic Psychopathy Measure (Patrick, 2010). This is made up of three subscales Boldness, Disinhibition and Meanness and involves participants responding to 58 statements indicating anti-social behavior and attitudes “I have conned people to get money from them” using a four-point scale from 3 (*True*) to 0

(False). Overall psychopathy score is obtained by summing the total of all responses including reverse scored items (see Appendix N).

Narcissism was measured with the full NPI-40 Narcissistic Personality Inventory (Raskin & Terry, 1988) in which participants are presented with forty pairs of statements and asked to choose the one that comes closest to describing themselves. In each case, one statement describes a narcissistic attitude “I am an extraordinary person” whereas the other does not, “I am much like everybody else”. Participants score 1 for selecting the narcissistic option and 0 for the other statement for a total sum score which is then divided by 40 (see Appendix O).

8.3.3.4 HEXACO Personality Inventory-Revised (HEXACO-PI-R)

Honesty-Humility and Extraversion domains were measured using the 100-item version of the HEXACO personality questionnaire (Lee & Ashton, 2004). Responses are collected on a five-point Likert-type scale from 1 (*Strongly agree*) to 5 (*Strongly disagree*) relating to statements such as “In social situations, I'm usually the one who makes the first move”. The score for each domain is a sum of the choices made accounting for reverse scored items (see Appendix P).

Reliability was acceptable for NPI-40 ($\alpha = .852$), TriPM ($\alpha = .883$), and the 16-item HEXACO subscales Honesty-Humility ($\alpha = .767$) and Extraversion ($\alpha = .816$). But not for the Mach-IV ($\alpha = .669$). Despite being described by Rauthman (2013, p. 388) as both the “golden standard” of measuring Machiavellianism” and “*the benchmark criterion*” of the trait (emphasis in original), this suboptimal reliability score is not unusual (Láng, 2020; Rauthman, 2012; Rauthman, 2013). But the predictive value of the MACH-IV has been well-established (Fehr et al., 1992; Forsyth et al., 2021, O'Boyle et al., 2012) and in the absence of an alternative, it remains the best way of measuring Machiavellianism. Single sample t tests compared means for each measure in this sample with available norms¹¹. Extraversion scores were significantly lower in this sample while Honesty-Humility scores were significantly higher (full results in Appendix Q).

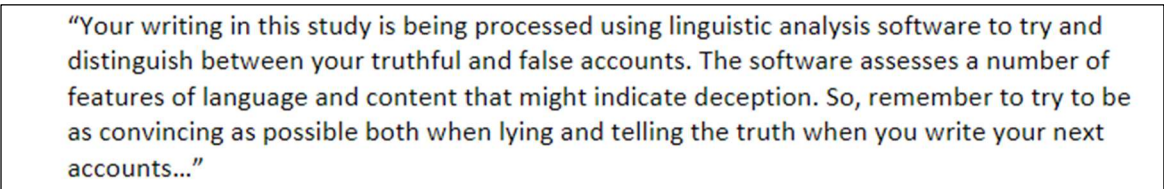
¹¹ Norm data was taken from the following sources: Mach IV – Open Psychometrics data from UK respondents (n = 5486) <https://openpsychometrics.org>, NPI - Open Psychometrics data from all respondents (n = 11.243) <https://openpsychometrics.org>, TriPM– Triarchic Psychopathy Measure: Preliminary Manual 2016 (n = 585) <https://patrickcnslab.psy.fsu.edu/wiki/images/b/b2/TPMmanual.pdf>, HEXACO - Lee & Ashton (2019) sample of Canadian college students (n = 1126)

8.3.4 Procedure

The study was conducted via Qualtrics™ online platform. Participants completed four separate sessions each at least one week apart. The HEXACO questionnaire and self-report of deception battery measures were presented (in counterbalanced order) at times one and two. Dark triad measures were collected online as explained above. At each testing session participants were shown one of four sub-lists from the Life Events Inventory. After establishing ground truth by answering whether they had or had not experienced each item, Participants were instructed to write two short (at least 150 word) autobiographical accounts, one truthful and one false. Topics for the truthful answers were chosen from a list of experienced events, while the topics for false accounts were chosen from items that had not been experienced. To increase motivation participants received the message shown in Figure 12 at the beginning of time point three. The order of truth/lie was counterbalanced across testing sessions and the use of sub-lists prevented prior preparation of either truthful or deceptive account as the stimuli was unknown each time.

Figure 15

Screenshot of time three message to participants



“Your writing in this study is being processed using linguistic analysis software to try and distinguish between your truthful and false accounts. The software assesses a number of features of language and content that might indicate deception. So, remember to try to be as convincing as possible both when lying and telling the truth when you write your next accounts...”

Completion of each session triggered an email one week later with a personalised URL link to the next session. So that over a three-week period, participants provided four truthful and four false accounts. The order of items within each sub-list was randomised, the order of presentation of the four different sub-lists was pseudo-randomised to ensure each participant saw all four. After completing each trial, participants were also asked to rate both their truthful and deceptive accounts on a 5-point Likert type scale from Extremely unconvincing to Extremely convincing.

8.3.4.1 Pre-analysis data processing

8.3.1.1.1 LIWC variables. As outlined in Chapter four, a detailed review of the literature produced 12 variables based on LIWC categories that were most likely to reliably

distinguish between truth and lie. Only five of the original variables (Word Count, Number of Sentences, Content Word Diversity, Perceptual Processes and Cognitive Processes) significantly differed when truths and lies across time points were compared. Since the remaining variables were not diagnostic of truth/lie status in the sample as a whole, it is unlikely they would produce meaningful differences at the participant level. Therefore, the following analyses are restricted to those variables which did vary according to veracity condition.

Alongside these measures, the LIWC summary variable Authenticity is also included. This is a measure of “Perceived honesty, genuineness” (Boyd et al., 2022, p. 11) reflecting the extent to which an account seems personally revealing rather than guarded or detached (Pennebaker et al., 2015). As a measure of perceived honesty this can function in a similar way to third-party ratings in an in-person lying task. Language high in Authenticity has been shown to increase interest in another person, perceived connection to them and even the odds of financial investment (Markowitz et al., 2022). While individual features of deceptive language can vary with the context and genre of communication (Hauch et al., 2015; Markowitz & Griffin, 2020) Authenticity may be a more stable feature to examine.

8.3.1.1.2 Self-assessment of deceptive ability. Self-assessment of overall deceptive ability is based on three questions¹² with each question answered once for White lies and once for Major lies. As described in the methods chapter, these individual scores were weighted and combined to produce a single score where higher values indicate higher self-rated ability. In this sample, white lies were weighted 0.86, while major lies had a weight of 0.14.

8.3.1.1.3 Deceptive Performance measures. As detailed in chapter one, deceptive ability is operationalised as a smaller lie effect, i.e., the difference between within-participant veracity conditions. In addition to lie effects for the individual LIWC categories mentioned above, a summary variable was also calculated to reflect total skill. Standardisation was carried out using the Percentage of Maximum Possible (POMP, Cohen et al., 1999) method detailed in chapter three¹³. Absolute difference scores were then calculated by subtracting POMP-standardised lie score from POMP-standardised truth score

¹² “How easy do you think it is for another person to detect the lies you tell?”, “How much mental effort do you consider it takes to tell a lie?” and “Generally speaking, do you consider yourself good at telling lies?” (Gozna et al., 2001)

¹³ As no maximum is possible for Word count or Number of sentences, the maximum score obtained for this sample was substituted to calculate relative rather than absolute POMP scores.

for each variable and the mean of these difference scores used as an overall measure of skill.

8.4 Results & Discussion

Following data processing, a total of 1568 truthful and deceptive written accounts from 264 participants were eligible for inclusion in one or more analyses. The total word count across both conditions and all participants was 309,042 words. On average, deceptive accounts were 198.76 words long ($SD = 51.64$ words) and truthful accounts were 194.42 words ($SD = 46.59$ words). Data on norms and reliability can be seen in Appendix Q.

8.4.1 Missing data

No data imputation was carried out. Due to a technical error, a small number of participants ($n=5$) were not presented with HEXACO stimuli and therefore had no score for this, but they did have complete data elsewhere. As outlined above, some participants ($n = 118$) did not provide dark triad measures, but they also had complete data elsewhere. The participants ($n = 148$) with full dark triad data were included in analysis as outlined below.

8.4.2 Frequency groupings

An Index of Dispersal as detailed in chapter five was applied to the self-reported frequency data of this sample. The break point where $D \approx 1$ was 6 lies of either type reported in the previous 24 hours.¹⁴ Prolific liars were defined as those whose number of lies was at or above this number. Nonliars were those who reported no lies of any kind during the previous 24 hours. Typical liars made up the rest of the sample (having told more than 0 lies but less than the cut-off point of 6). The sizes of each of these three groups across time points can be seen in Table 11.

While the number of prolific liars was small (14%), they were responsible for a disproportionately large percentage (54%) of all lies told, in line with previous research on this phenomenon (Levine & Boster, 2010; Park et al., 2021). However, the small and unequal sizes of the frequency groups limit the kind of analyses that can be carried out as well as the

¹⁴ This information is available separately for major and white lies in appendix X - the break point for white lies alone was 6 lies and for major lies alone it was 5 lies

nature of categorical variables. For example, neither Response Surface Analysis nor Analysis of Variance are appropriate (Barranti et al., 2017; Field, 2013). Frequency is therefore used as a continuous variable based on the actual number of reported lies.

Table 11

Participant assignment to lying frequency group

| Frequency group | Time one | Time Two | Time Three | Time Four |
|-----------------|----------|----------|------------|-----------|
| Zero | n = 32 | n = 25 | n = 22 | n = 19 |
| Typical | n = 144 | n = 134 | n = 121 | n = 110 |
| Prolific | n = 30 | n = 25 | n = 23 | n = 22 |

8.4.3 Descriptive statistics

Table 12 shows the mean scores and standardised mean differences (Cohen’s d effect size) between truth and lie for each LIWC variable at each time point, together with mean absolute differences. The overall performance score is the mean of all individual LIWC category absolute difference scores. Note that AbsDifference scores are the mean (SD) of absolute differences for each category and therefore do not correspond to simple arithmetic difference between mean truth and lie scores. When averaged across all four time points, all variables differed significantly between truth and lie conditions apart from *LIWC_{Authenticity}*. However, this was not the case at each time point (full results in Appendix R). Although there were clear differences in language use when lying and truth telling, participants did not show a classically ‘deceptive’ profile. Scores for *LIWC_{Content}* and *LIWC_{Cognitive}* were higher when lying for all four time points. For *LIWC_{Authenticity}*, *LIWC_{Wordcount}*, and *LIWC_{Perceptual}* scores were higher when lying at most time points. Such atypical linguistic behaviour further justifies the focus on absolute difference scores as an important indicator of the ability to mask differences between accounts.

Table 12*POMP-standardised truth versus lie comparison for all LIWC variables at each timepoint.*

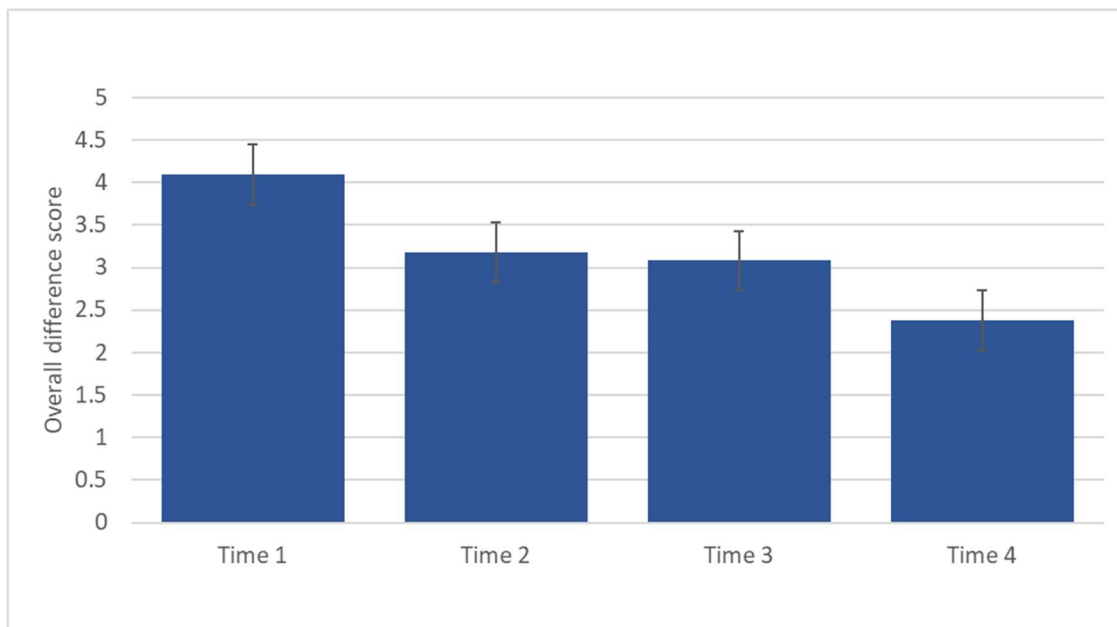
| LIWC variable | Truth | | Lie | | Abs Diff | | Mean Diff |
|-------------------|-------|---------|-------|---------|----------|---------|-----------|
| | M | SD | M | SD | M | SD | Cohen's d |
| Time one | | | | | | | |
| Authenticity | 83.48 | (20.92) | 82.88 | (19.84) | 19.46 | (20.46) | .02 |
| Word Count | 35.73 | (7.53) | 36.64 | (9.56) | 5.70 | (8.37) | -.118 |
| *Sentences | 28.90 | (12.22) | 31.31 | (15.94) | 8.45 | 10.54) | -.192 |
| Content words | 8.88 | (1.55) | 9.10 | (1.60) | 1.50 | (1.24) | -.115 |
| Perceptual | 2.70 | (1.72) | 2.80 | (1.87) | 1.78 | (1.50) | -.043 |
| Cognitive | 9.65 | (3.37) | 9.92 | (3.63) | 3.39 | (2.48) | -.064 |
| Overall | 28.18 | (4.77) | 28.79 | (5.17) | 4.69 | (4.59) | -.094 |
| Time two | | | | | | | |
| Authenticity | 84.54 | (19.68) | 87.78 | (14.52) | 15.60 | (18.06) | -.137 |
| Word Count | 36.84 | (8.95) | 37.76 | (9.80) | 5.99 | (6.72) | -.101 |
| Sentences | 31.32 | (11.74) | 32.65 | (13.65) | 7.92 | (7.99) | -.132 |
| Content words | 9.01 | (1.49) | 9.07 | (1.36) | 1.40 | (1.07) | -.066 |
| *Perceptual | 2.40 | (1.54) | 2.83 | (1.80) | 1.66 | (1.57) | -.193 |
| Cognitive | 9.77 | (3.74) | 9.84 | (3.77) | 3.58 | (2.87) | -.025 |
| *Overall | 29.30 | (6.69) | 30.35 | (6.49) | 3.81 | (3.66) | -.203 |
| Time three | | | | | | | |
| Authenticity | 83.31 | (21.32) | 84.53 | (16.57) | 16.86 | (19.50) | -.048 |
| Word Count | 40.07 | (10.95) | 39.78 | (10.51) | 7.57 | (7.60) | .009 |
| Sentences | 33.63 | (14.20) | 34.69 | (15.83) | 10.00 | (9.34) | -.088 |
| Content words | 9.32 | (1.58) | 9.34 | (1.34) | 1.46 | (1.04) | -.029 |
| *Perceptual | 2.28 | (1.56) | 2.83 | (1.64) | 1.94 | (1.28) | -.266 |
| *Cognitive | 9.93 | (3.35) | 10.65 | (3.56) | 3.37 | (2.52) | -.171 |
| Overall | 29.75 | (5.22) | 30.37 | (4.99) | 4.39 | (4.00) | -.104 |
| Time four | | | | | | | |
| Authenticity | 84.11 | (19.21) | 86.01 | (16.80) | 17.62 | (18.24) | -.075 |
| Word Count | 38.89 | (8.52) | 40.13 | (10.15) | 5.83 | (5.99) | -.151 |
| Sentences | 33.17 | (12.84) | 34.91 | (12.21) | 8.50 | (8.61) | -.140 |
| Content words | 9.21 | (1.38) | 9.39 | (1.42) | 1.32 | (1.09) | -.075 |
| Perceptual | 2.57 | (1.70) | 2.52 | (1.50) | 1.60 | (1.35) | .022 |
| Cognitive | 10.33 | (3.59) | 10.96 | (3.37) | 3.37 | (2.77) | -.121 |
| Overall | 30.10 | (7.05) | 30.85 | (5.33) | 4.36 | (4.25) | -.125 |
| Total | | | | | | | |
| Authenticity | 83.97 | (20.34) | 85.63 | (17.37) | 17.39 | (19.26) | -.049 |
| *Word Count | 37.93 | (9.05) | 38.71 | (10.04) | 6.15 | (7.35) | -.089 |
| *Sentences | 31.68 | (12.79) | 33.41 | (14.62) | 8.67 | (9.27) | -.144 |
| *Content words | 9.08 | (1.52) | 9.21 | (1.45) | 1.40 | (1.09) | -.077 |
| *Perceptual | 2.44 | (1.64) | 2.76 | (1.74) | 1.75 | (1.43) | -.118 |
| *Cognitive | 9.87 | (3.51) | 10.31 | (3.59) | 3.41 | (2.64) | -.086 |
| *Overall | 29.32 | (5.95) | 30.15 | (5.60) | 4.27 | (4.20) | -.127 |

*Denotes significant difference between truth and lie conditions

After providing each truthful and deceptive account, participants rated how convincing they believed themselves to be on a scale from 1 = Extremely unconvincing to 5 = Extremely convincing. At all four times, the modal score for deceptive accounts was 4 = Somewhat convincing, with combined ratings for both ‘unconvincing’ options never exceeding 20% at any time point. These consistently high self-ratings across all four time points do not entirely align with Figure 13 which shows the pattern of actual performance. Overall mean absolute difference scores decreased over time, demonstrating a closer match between truthful and deceptive accounts as the study progressed and more task-specific practice was provided.

Figure 16

Mean overall performance (absolute difference scores) by time



To measure intrasubject variability over time, a Coefficient of Variation (CV) was calculated for each participant for each variable by expressing the standard deviation of difference scores as a percentage of the mean, such that $CV = \sigma / \mu$. High CV indicates low consistency and low CV indicates high consistency. As a unit-free measure akin to z-scores, this allows comparison between measurements on different scales for a given sample and between samples. This is necessary here because although most LIWC output categories are expressed as a percentage of total words, $LIWC_{Wordcount}$ itself is a simple count as is $LIWC_{Sentences}$ whereas $LIWC_{Content}$ is the sum of three different LIWC categories. As can be

seen in Table 13, CV scores are not very widely distributed suggesting that most participants are relatively consistent in their performance across time.

Table 13

Coefficients of Variation for all POMP-standardised LIWC variables

| LIWC variable | Minimum | Maximum | Mean (SD) |
|---------------------------|---------|---------|-------------|
| Authenticity | 0.16 | 1.80 | 0.95 (0.34) |
| Word Count | 0.26 | 1.63 | 0.82 (0.27) |
| Number of Sentences | 0.00 | 2.00 | 0.81 (0.35) |
| Content word diversity | 0.03 | 1.32 | 0.67 (0.26) |
| Perceptual processes | 0.24 | 1.60 | 0.73 (0.28) |
| Cognitive process | 0.15 | 1.55 | 0.73 (0.28) |
| Total (POMP standardised) | 0.13 | 1.02 | 0.49 (0.19) |

8.4.4 Inferential statistics

H_1 Participants with more practice will have better deceptive performance as measured by the ability to mask differences in truthful and deceptive accounts across a range of linguistic measures using LIWC.

Outcomes were fitted to a linear mixed-effects regression model¹⁵ examining difference scores between truthful and deceptive accounts for all LIWC variables and the overall combined measure of performance. The use of longitudinal multilevel modelling made it possible to employ a ‘complete records (observed data) analysis’ (Goldstein et al., 2014) so that participants with one or more missing time points could still be included in analysis maximising statistical power. Participant ID was entered as the random effect with group variables of time, self-reported practice, scores on dark triad and HEXACO as fixed effects. Time was entered as a numerical factor as the relationship between time and performance measure is assumed to be linear. Stata software was used to fit the models and to implement Wald-tests to calculate 95% CIs.

¹⁵ Linear mixed effects models are extensions of linear regression models using data that are nested in groups and/or based on repeated measures. By controlling for both fixed effects (e.g., group-level variation) and random effects (e.g., participant-level variation), mixed effects models account for the non-independence of observations. Because of their robustness they can be used when assumptions about underlying distributions are violated (Schielzeth et al., 2020) and when longitudinal data is missing (Goldstein et al., 2014).

No MLM regression models were significant but certain predictors were significant within two individual models as set out below. Frequency of self-reported lies in the previous 24 hours was not a significant predictor of difference score for any individual LIWC variable nor for overall performance measured by total mean (POMP standardised) difference score at any of the four time points. Nor was Honesty-Humility a significant predictor of performance in any model. As shown in Table 14, Machiavellianism alone significantly predicted overall mean difference scores such that a higher score on the MACH – IV predicted a lower difference score (and therefore better overall performance) at each time point.

Table 14

Regression of overall performance on all practice measures

| Effect | Estimate | SE | 95% CI | | p |
|-------------------------------|----------|-------|--------|-------|------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | 8.837 | 2.622 | 3.70 | 13.98 | .001 |
| Time | .094 | .030 | -.161 | .348 | .471 |
| Combined lies frequency | .001 | .030 | -.058 | .060 | .975 |
| Machiavellianism ^a | -.064 | .030 | -.122 | -.005 | .034 |
| Narcissism ^b | -.021 | .038 | -.096 | .054 | .584 |
| Psychopathy ^c | .026 | .016 | -.005 | .057 | .100 |
| Honesty-Humility ^d | -.003 | .023 | -.048 | .042 | .892 |
| Extraversion ^e | -.014 | .025 | -.064 | .035 | .567 |

Note. Total observations $N = 420$. CI = confidence interval; LL = lower limit; UL = upper limit.

^a MACH-IV score. ^b NPI-40 score. ^c TriPM score. ^d HEXACO dimension. ^e HEXACO dimension.

Table 15 displays results for just perceptual processes. Machiavellianism scores and Extraversion scores both significantly predicted $LIWC_{Perceptual}$ difference scores in a negative direction indicating each predicted better performance. As stated above, no overall models were themselves significant and the magnitude of the relationship is small, therefore these results must be interpreted with caution. However, the lack of utility of a regression model does not negate the influence of individual predictors on the dependent variable.

Table 15*Regression of LIWC perceptual processes difference scores on all practice measures*

| Effect | Estimate | SE | 95% CI | | <i>p</i> |
|-------------------------------|----------|------|-----------|-----------|----------|
| | | | <i>LL</i> | <i>UL</i> | |
| Fixed effects | | | | | |
| Intercept | 4.25 | 1.06 | 2.19 | 6.33 | <.001 |
| Time | -.099 | .063 | -.223 | .025 | .117 |
| Combined lies frequency | .003 | .012 | -.021 | .027 | .793 |
| Machiavellianism ^a | -.027 | .012 | -.050 | -.003 | .026 |
| Narcissism ^b | .019 | .015 | -.011 | .048 | .219 |
| Psychopathy ^c | .006 | .006 | -.006 | .018 | .343 |
| Honesty-Humility ^d | -.001 | .009 | -.019 | .018 | .942 |
| Extraversion ^e | -.022 | .010 | -.041 | -.002 | .027 |

Note. *N* = 52,578. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

^a MACH-IV score. ^b NPI-40 score. ^c TriPM score. ^d HEXACO dimension. ^e HEXACO dimension.

No other personality traits were significantly associated with performance and self-reported lying frequency was not predictive of deceptive performance. This was the case for white lies and major lies separately, and for the combined measure of all types of lies. This suggests that telling a high volume of lies is not sufficient to confer greater ability, and neither is habitually lying more frequently over a prolonged period (as those high in psychopathy are known to do). Instead, a specific type of practice obtained by Machiavellian personality types resulted in better lie production. This may be associated with their focus on manipulative behaviour and greater impulse control than other dark triad types (Jones & Paulhus, 2017; Paulhus & Williams, 2002). The type of practice a Machiavellian personality type engages in may more closely resemble the goal-orientated ‘deliberate practice’ that Ericsson (2008) argues is essential for the development of expertise.

The fact that extraverts also showed better performance regarding their use of perceptual processes is interesting. Extraverts are considered more prone to lie (Sarzyńska et al., 2017). But this is likely to be a consequence of their higher rate of social interaction rather than a strong desire to deceive. Indeed, the lies told by extraverts may be pro-social in nature. Extraverts did not show greater performance overall (like the Machiavellians), but their

higher volume of accumulated lying practice did equate to better performance in one area of language use.

The motivation for prolific liars' behaviour is not well understood and they are likely to be a mix of several different personality types. They are more likely than others to experience the negative repercussions of being caught out lying (Serota & Levine, 2014). This could be because the higher volume of lies told increases the chances of detection. But it could also reflect the fact that they are not lying well. Repeating the same mistakes without conscious attention to improvement may mean that prolific liars simply have well-entrenched bad habits when it comes to deception.

In contrast, Machiavellian personality types have been proposed to have enhanced social cognition in specific areas which allows them to manipulate others (Bereczkei, 2018). But meta-analyses found no relationships between dark triad traits and intelligence (Michels, 2021; O'Boyle et al., 2013) and Jones and Paulhus (2011) found no relationship between Machiavellianism and mentalising or emotional intelligence. Those high in Machiavellian traits put more cognitive effort into planning (Baughman et al., 2014) and executing (Curtis et al., 2018) their lies, and have been shown to have greater fluid intelligence as opposed to crystallised intelligence (Kowalksi et al., 2018). This willingness to exert effort in pursuit of deception may translate into greater deliberateness of practice. Like psychopaths, Machiavellians experience little negative affect when lying (Furnham et al., 2013), but unlike psychopaths they are not impulsive and can combine this trait with a methodical approach to achieving goals (Paulhus & Williams, 2002). If their goal was to become a better liar, a Machiavellian may well have the ideal skill set to achieve this.

Machiavellianism and psychopathy were significantly positively associated with lying frequency, but higher scores on narcissism were not. Some prior research has found all dark triad to be more frequent liars (Azizli et al., 2016; Jones & Paulhus, 2017) and deceptive propensity is a feature of the definition of all three traits (Paulhus & Williams, 2002). But narcissism has also shown no relationship with lying frequency (Atkinson, 2019) or an association only with lies about ego-related topics such as appearance and popularity (Jonason et al., 2014). An individual high in Machiavellianism or psychopathy may go out of their way to deceive if they perceive it to be in their interests but a narcissist may only do so when their inflated self-concept is threatened.

Word count increases across both truth and lie condition across the four time points suggesting growing familiarity with the task. This has the effect of an upward trend in scores for all other LIWC variables across time because a longer account naturally leads to more words in all the categories of interest. POMP-standardised absolute difference scores steadily decrease over the same period, which suggests that task-specific practice leads to better deceptive performance. However, this observed effect was not sufficiently strong to be supported by inferential tests, suggesting that any task-specific practice effect is weak.

*H*₂ Participants with more practice will show more consistency of performance as measured by a Coefficient of Variation (CV) for each LIWC variable across all four time points. Coefficient of Variation (CV) was entered as the outcome variable in separate multiple regression models for each LIWC variable and the POMP-standardised overall score, with lying-relevant personality traits and self-reported lying frequency as predictors. No regression models were significant (see Appendix S for full results), but certain predictors were significant within individual models.

Table 16

Regression of overall Coefficient of Variation on all practice measures

| Effect | Estimate | SE | 95% CI | | <i>p</i> |
|---------------------------------|----------|------|-----------|-----------|----------|
| | | | <i>LL</i> | <i>UL</i> | |
| Fixed effects | | | | | |
| Intercept | .117 | .302 | -.483 | .718 | .699 |
| Total self-reported lies | .003 | .007 | -.012 | .017 | .716 |
| Machiavellianism ^a | .002 | .003 | -.005 | .009 | .499 |
| Narcissism ^b | .010 | .005 | .001 | .019 | .039 |
| Psychopathy ^c | -.001 | .002 | -.005 | .003 | .635 |
| Honesty - Humility ^d | .006 | .003 | .000 | .011 | .032 |
| Extraversion ^e | .000 | .003 | -.006 | .005 | .929 |

Note. *N* = 160. CI = confidence interval; *LL* = lower limit; *UL* = upper limit

^a MACH-IV score. ^b NPI-40 score. ^c TriPM score. ^d HEXACO dimension. ^e HEXACO dimension.

Table 16 shows results for overall total CV, where Honesty-Humility and narcissism score were both significant positive predictors. While in the model for CV of *LIWC*_{Authenticity}

Extraversion positively predicted consistency $\beta = .326, p = .005, 95\% \text{ CI } [0.004, 0.024]$. The positive direction indicates that these traits (Honesty-Humility, Narcissism and Extraversion) all predicted higher CV values and therefore lower consistency of performance.

Neither self-reported lying frequency nor dark triad or HEXACO personality measures predicted lower coefficients of variation across time points. Narcissism scores in fact predicted greater CV indicating less consistency of overall LIWC performance and Extraversion predicted less consistency for Authenticity scores. This may be partially explained by the unexpected finding (see H_4 below) that better performance was not associated with higher consistency. Coefficients of Variation were small across the whole sample suggesting that linguistic deceptive performance is stable over time regardless of the amount of practice an individual has.

Prior research has established that language use (Mehl & Pennebaker, 2003) and individual depictive styles (Heering & Volbert, 2017) are stable across time. So, it makes sense that linguistic performance, whether truthful or deceptive did not vary a great deal in this study. The fact that authorship can be reliably traced to an individual based on forensic linguistic analysis (Grant, 2010) supports this idea. Even when trying to conceal who they are, undercover police officers in online chat rooms are known to suffer from 'identity leakage' (Grant & McLeod, p. 92) because the idiosyncratic use of language is so ingrained as to be almost impossible to suppress. Invariance of linguistic behaviour would impact all participants regardless of their level of deception practice or status as expert or nonexpert liars. The current study only measured language, it is possible that greater consistency of nonverbal or paraverbal features may be seen in highly practiced individuals or in better performing individuals.

H_3 Those with more practice will be more accurate judges of their own ability - overall calibration between perceived ability and actual performance will be better for those who lie more frequently (using self-report and personality measures).

To allow for meaningful individual comparisons, participants' scores for overall self-rated ability (based on responses to questionnaire) and overall actual ability (measured by mean absolute difference score across all LIWC variables) were expressed as z scores. Then a calibration score for each participant was calculated by subtracting standardised actual

performance from standardised perceived performance. Higher scores on self-assessed ability indicate better perceived performance whereas lower scores on overall difference score represent better actual performance. So, a large positive calibration score indicates good calibration, and a negative or smaller score indicates poorer calibration between perceived and actual performance.

Calibration score was used as the outcome variable in a regression model with self-reported frequency and lying-relevant personality traits as predictors. The model was significant $F(6, 112) = 2.66$ and explained 12.5% of the variance in calibration scores $R^2 = .125, p = .019$. But only Machiavellianism was significant individual predictor of calibration $\beta = .345, p = .003$, 95% CI [0.021, 0.102]. Higher scores on the Mach – IV questionnaire were associated with higher calibration scores and therefore better calibration accuracy between perceived and actual performance.

Although those who reported a greater volume of lies rated themselves as better liars, self-reported lying frequency (for white lies, major lies and combined lie types) was not predictive of calibration accuracy. So frequent liars were inaccurate in their self-assessment of skill as there was no corresponding association with performance.

An aspect of the Machiavellian personality trait that is not shared with psychopathy or narcissism appears to confer an advantage when it comes to calibration. This fits with the theoretical profile of a Machiavellian personality as an astute manipulator of others (Jones & Paulhus, 2017). A highly developed sense of one's own ability (and inability) to lie is a necessary precursor to strategic use of deception. Returning to the ADCAT processing model, a key aspect of successful deception is correctly making the cost-benefit calculation of whether lying in a given set of circumstances is worth the risk (Walczyk et al., 2014). Such a calculation requires accurate calibration of one's own ability and is precisely the kind of mentalisation that a purported master manipulator should perform well.

H₃ Those with more task-specific practice will be more accurate judges of their own ability. Correlations were used to compare the relationship at each time point between self-rated ability at each time and actual performance (overall mean difference score at each time). Spearman's correlations were chosen as one measure was continuous and one ordinal (Khamis, 2008). Again, because difference scores are used, a negative correlation indicates good calibration.

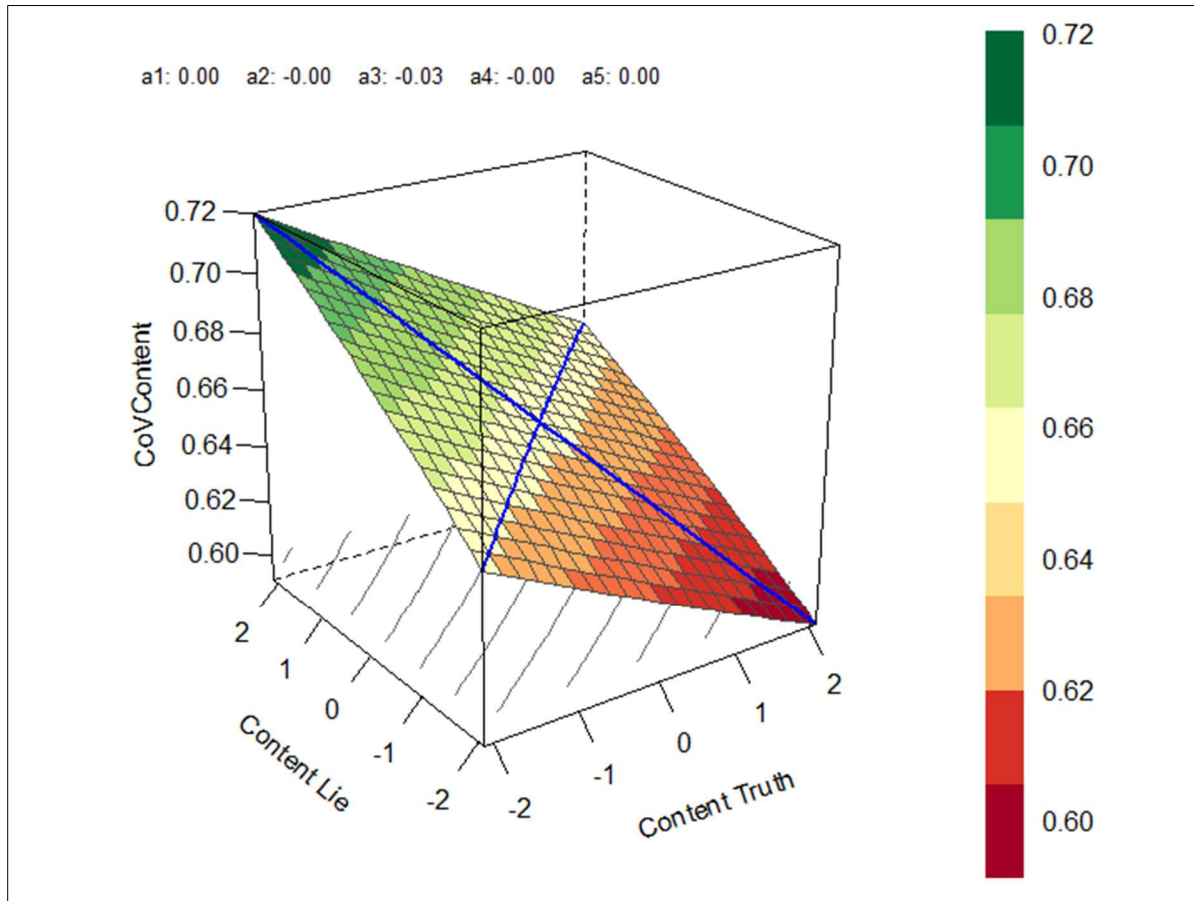
Separate correlations were calculated for each time point to determine whether calibration accuracy improved with task-specific practice. No correlation at any time point was significant, although the strength of the correlations and the significance level both increased from time one to time four. Time one $r(262) = -.006, p = .922$; Time two $r(203) = .016, p = .817$; Time three $r(167) = .021, p = .785$ and Time four $r(157) = .063, p = .431$. These correlations were then compared using Fisher's Z test and no differences between time points were significant (see Appendix T) suggesting that there was no benefit of task-specific practice on calibration accuracy.

H₄ Participants with better deceptive performance will have higher consistency of performance across the four time points as measured by a coefficient of variation. Response Surface Analysis (RSA; Box & Draper, 1987) was used to test whether participants with higher deceptive ability (operationalised by congruence between truth and lie scores at time one) also have higher consistency of performance for each of the LIWC variables. Mapping the response surface and applying coefficient tests is only justified when the initial polynomial regression model is significant (Barranti et al., 2017). This was only the case for the model with *LIWC_{Content}* Coefficient of Variation as the outcome variable $R^2 = .073, F(5,159) = 2.53, p = 0.031$. All other LIWC variables were non-significant indicating no relationship between performance in the task at time one and subsequent consistency of performance (full results available in Appendix U).

The relationship between performance at time one and consistency (variation across times two to four) for *LIWC_{Content}* are described by Figure 17. Both predictor variables (*LIWC_{Content}* scores for lies and truths) have been mean centred and are represented on the x and y axes, respectively. The outcome variable (CV) is displayed on the z axis. The response surface shows the expected values for the results of all possible combinations between the two predictors and is colour coded in a 'heatmap' style as per the key to the right of the image.

Figure 17

Response surface map for $LIWC_{Content}$ performance at time one with Coefficient of Variation



This response map can be interpreted using the outcome of four tests of effects of the polynomial regression model (detailed in Table 17). The non-significant result of a_1 indicates a lack of linear relationship between the outcome variable (consistency of performance) and the line of congruence (agreement between truth score and lie score at time one). This lack of relationships renders the test of a_2 unimportant as it is also nonsignificant. A significant negative result for a_3 indicates that coefficients of variation are highest when $LIWC_{Content}$ lie scores are higher than $LIWC_{Content}$ truth scores and lowest when $LIWC_{Content}$ truth scores are lower than $LIWC_{Content}$ lie scores. This can also be seen by the lack of the predicted 'saddle' shape to the response surface map. So, consistent performance over time is not associated with similar scores for truth and lie (and therefore a smaller lie effect indicating better performance) at time one.

Table 17*Truth and lie score congruence as a predictor of LIWC_{Content} consistency of performance*

| Test | Estimate | SE | p |
|------|----------|------|--------|
| a1 | .002 | .007 | .768 |
| a2 | -.0007 | .001 | .616 |
| a3 | -.030 | .009 | .001** |
| a4 | -.00002 | .002 | .993 |
| a5 | .0008 | .001 | .520 |

* p =.05, ** p =.01

Better performance at time one was not associated with higher consistency of performance across the remaining time points. Only one variable (*LIWC_{Content}*) resulted in a significant polynomial regression model, but the hypothesised curvilinear relationship was not seen in the corresponding response surface analysis. Instead, the lowest coefficient of variation (and therefore highest consistency of performance) was associated with highly discrepant truth and lie scores at time one indicating poor initial performance. Specifically, when *LIWC_{Content}* truth scores were much higher than lie scores. So those participants best able to sustain consistency of performance for this variable were not those who initially masked differences between truth and lie, but those with a classically 'truthful' profile of a high LIWC score for their truthful account and a low score for their deceptive account.

This result may represent deception as a stable acquired skill. During the acquisition of skill, increased ability brings increased consistency of high performance, but once a skill has developed a low performer will also perform consistently, just at a lower level. Task-specific practice does not appear to have had a significant effect on performance in this study. So, the participants were likely to be employing established linguistic strategies to appear truthful. Worse liars consistently failed to mask differences between truth and lie and better liars consistently succeeded.

*H*₅ Participants with better performance will be more accurate judges of their own deceptive ability. Specifically, overall calibration between perceived ability and actual performance will be better for those whose performance is in the top quartile.

Calibration scores as described in H₃ (standardised actual performance subtracted from standardised perceived performance) were entered as the outcome variable in a regression with overall actual performance as the predictor. The model was significant $F(1, 230) = 224.17, p < .001$ and explained 49% of the variance $R^2 = .494$. Overall performance significantly predicted calibration accuracy $\beta = -.527, p < .001, 95\% \text{ CI } [-0.596, -0.457]$ such that better overall performance (lower difference score) was associated with better calibration.

Those with higher overall performance scores also had higher calibration scores. This pattern fits with the work of Kruger and Dunning (1999) who suggest that a certain level of skill in a domain is required to know what superior performance 'looks like' for that skill. It suggests that better liars have a frame of reference for a convincing lie that they can use to assess subsequent performances. Calibration for deceptive performance is particularly difficult to develop because of the dearth of accurate feedback. A tennis player knows when they have lost a match, but a liar seldom finds out they have not been believed because of the social stigma of accusing someone of lying (Bond & Fahey, 1987; Vrij, Mann, Robbins et al., 2006). Previous research in deception has confirmed this with several studies reporting no relationship between performance and self-judgement (Frank & Ekman, 2004; Van Swol et al., 2017; Vrij et al., 1996). The results of the current study demonstrate that it is possible for some liars to engage in metacognitive self-monitoring as described in the self-regulatory cycle of Zimmerman (2006) and develop calibration accuracy as a result.

8.4.5 General Discussion

Best practice in self-report measures requires that instances of the activity of interest are restricted to a specific window of time (Tourangeau & Yan, 2007). But, as noted in study One, this means that the data captured for any one individual, on a given day, may not be a typical representation of their behaviour. Therefore, practice has been operationalised in several ways in this research programme, to attempt to capture a range of possible metrics for this little-understood behaviour. It is therefore not surprising that the self-report measures of lying practice showed only some overlap with personality traits associated with deception. The HEXACO personality trait Honesty-Humility was negatively correlated with lying frequency. Despite a suggestion that such individuals may be more likely to tell pro-social lies (Paul et al., 2022), in this sample those high in the trait were less likely to report

high lying frequency. Similarly, extraversion was not correlated with greater lying frequency despite prior research showing this (Gylfason et al., 2016; Kashy & DePaulo, 1996; Sarzyńska et al., 2017). The relationship between extraversion and lying may well be one of opportunity rather than predisposition and therefore restrictions on social interaction caused by the Covid 19 pandemic (which were in place at the time of data collection) could account for a lower-than-expected rate of lies told by extraverts.

The study by Zhou et al (2013) discussed in the introduction, presented each new instance of deception as a separate skill that must be developed 'from scratch' instead of viewing deception as a transferable cognitive skill that can be flexibly applied to new situations. The authors only considered prior experience in the mafia game to be relevant and did not include any measure of prior deceptive experience. They did not find an advantage of practice on deception success. Only previous experience winning the mafia game was associated with current success. This provided support for the argument that practice alone is not sufficient to confer expertise. In contrast, the current study assumes that all prior lying experience is relevant to a new deceptive task (in this case providing written autobiographical accounts). But this was not borne out in the results. Several groups plausibly associated with a higher than usual level of practice (self-reported prolific liars, those high in psychopathy and extraversion) showed no advantage in performance. There would be no reason to assume that experts in one domain would perform well in a novel area. Indeed Feltovich (2006, p. 47) states "This has proven to be one of the most enduring findings in the study of expertise... There is little transfer from high-level proficiency in one domain to proficiency in other domains – even when the domains seem, intuitively, very similar". But it is unlikely that each different type of lying is a separate skill with no common underlying foundation. Both ADCAT (Walczyk et al., 2014) and IDT (Buller & Burgoon, 1996) describe deception as a unified concept, albeit one that can be carried out in multiple ways and via multiple channels. Instead, the lack of relationship between most measures of practice and performance demonstrates that deception, like other skilled activities, requires a specific type of engagement in practice to obtain expert-level performance.

Because there is such limited prior research into consistency of deceptive performance it is difficult to directly interpret these findings in the context of existing literature. In Frank and Ekman's 2004 study, deceptive 'skill' (operationalised as the ability to appear truthful to

human raters) was consistent across two different settings with two sets of raters. The current study used a much larger sample which should have improved the power to detect any effects but did not show a similar pattern of results. By focusing only on the linguistic element of deception any potential confounding effects from biased raters was removed, alongside any demeanour effects associated with the sender. Additionally, the design allowed for comparison of truths and lies to create an individual profile of deceptive ability across four time points rather than testing twice on the same day. Yet even well-practised liars did not show any greater consistency of performance and nor did high performing liars.

8.4.6 Limitations

There are some limitations of this study that are worth considering. While it follows the well-established Cognitive Component skills approach (Chi, 2006; Nougier et al., 1991; Starkes & Ericsson, 2003), the decision to restrict lie elicitation to a purely written task may have inadvertently limited the scope for good and bad liars to display their abilities by lowering the cognitive load and affective arousal normally associated with producing and delivering a lie face-to-face. The linguistic channel is where some of the strongest, most reliable, and most theoretically grounded indicators of deception can be found (Dzindolet & Pierce, 2005; Hauch et al., 2016; Tausczik & Pennebaker, 2010). But it may be that the full cognitive demands of an interactive in-person lie elicitation are required to cause the tell-tale discrepancies between truthful and deceptive accounts. Deception detection performance is poorer in interactive than in non-interactive contexts (Ambady & Rosenthal, 1992; Gilbert & Krull, 1988; Granhag & Strömwall, 2001) suggesting that cues are reduced in the absence of interaction. The design of this study, necessitated by its online nature under COVID-19 restrictions may have provided participants with an insufficiently challenging task. Several linguistic variables did discriminate between truthful and deceptive accounts. But some of the expected differences between those with differing levels of practice may not have appeared if the relatively simple task did not induce sufficient cognitive load to challenge the liars.

Examination of the descriptive statistics for self-ratings of success at each of the four time points is revelatory. Modal ratings for all three frequency groups were 4 (on a Likert type scale of 1-5) and overall, 69% of participants rated their own lies as either 'somewhat' or 'extremely' convincing. This supports the idea that the task used in this study may have

seemed particularly easy. Even those whose pre-test beliefs about their deceptive abilities were low, rated each individual instance of lying in this study as being convincing. Furthermore, practice in face-to-face lying may weight deceptive skill in favour of demeanour-based tactics rather than linguistic credibility, as this is the more sustainable and efficient approach. So, when required to transfer their skill to a more narrowly constrained channel with differing affordances, even the best liars would be forced to adjust their communication strategy as per Communication Accommodation Theory (Giles et al., 1987; Dragojevic et al., 2015).

8.4.7 Conclusion

This study aimed to explore individual deceptive performance within GEF. Specifically, testing whether deception shows the expected relationships between practice and performance, consistency and calibration accuracy. Neither self-reported lying frequency nor task-specific practice resulted in greater deceptive performance. Several personality traits associated with increased (extraversion, dark triad) or decreased (HEXACO Honesty-Humility) lying behaviour were included as measures of accumulated practice. Of these only Machiavellianism had a significant impact, it positively predicted deceptive performance. Neither well-practiced liars nor high performing liars had a greater degree of consistency. Machiavellian personality types were more accurately calibrated as were better liars. Taken together this suggests that when measured purely through linguistic behaviour, deceptive skill partially aligns with features of GEF.

The inherently manipulative, goal-directed, instrumental nature of Machiavellians may drive them to seek and obtain opportunities for deliberate practice in deception leading not only to better performance but also better metacognitive awareness of their own abilities and thus more accurate calibration. Study four will address whether this also affords them advantages in developing responsiveness to feedback, or whether this element of deceptive expertise requires a different kind of practice.

9. Study four - Responsiveness to feedback

9.1 Abstract

Having achieved proficiency in a domain, responsiveness to feedback is a key aspect of attaining expertise. The current study used a four-part longitudinal design with a feedback intervention half-way through to assess the relationships between responsiveness and practice, performance, and calibration. It was hypothesised that better performers would be more responsive to feedback but that those who self-assessed as being better at lying may resist changing their deceptive behaviour in line with instructions. Also, that those with a higher amount of practice (both self-reported frequency and habitual lying based on relevant personality traits) would be more responsive to instructions to amend their linguistic behaviour, both immediately after feedback and one week later at the next testing session. Results showed that only a small percentage of the sample amended their linguistic behaviour meaningfully and an even smaller percentage did so in the instructed direction with the remainder of the sample either unwilling or unable to respond to feedback. These results are discussed in the context of deception theory and the General Expertise Framework (GEF) as well as the relative difficulty of amending linguistic behaviour.

In deception research, it has been recognised for some time that there is greater variability in sender versus receiver performance (Bond et al., 1985; Bond & DePaulo, 2008; Levine et al., 2011). But lie production ability remains the 'poor relation' in comparison to lie detection ability (Levine, 2010) with the vast majority of research focusing on the receiver and not sender (Vrij, Granhag & Mann, 2010). When deception production ability is studied, it is not connected with the existing body of research on expertise in other domains which limits the understanding of this area of performance. The General Expertise Framework (GEF) can be applied across a range of different activities. There are well-established similarities in the way that skill is acquired, developed, and maintained regardless of the specific task involved (Anderson, 1982; Ericsson & Smith 1991; Dreyfus & Dreyfus, 1986; Glaser et al., 1985; Hoffman, 1998). Experts have certain features in common, such as a high volume of accumulated practice and well-developed meta-awareness which facilitates adaptability of performance in response to feedback. If true expert liars exist, they ought to show similarities with highly skilled performers in other areas. This study aims to apply the General Expertise Framework (GEF) to deceptive performance with a specific focus on responsiveness to feedback.

9.2.1 Practice

Practice is required to refine skill and confer the fluidity and ease of performance that delineates expert from non-expert (Ericsson et al., 1993; Ericsson, 2007; Helsen et al., 2000). But the extent to which practice is the primary determinant of inter-individual differences in performance is disputed (Hambrick et al., 2014; Mcnamara & Maitra, 2019). Developmental influences such as the age at which the skill is first learned, cognitive ability and even personality can all account for differences in skill level attained (Hambrick 2020). In this context it is worth noting that while children are encouraged and even taught to tell socially acceptable 'white lies' (Bergstrom et al., 2016; Reinecke et al., 1997), deception is generally considered to be negative act, reducing the opportunities for early practice. However, there are several populations (e.g., prolific liars, members of the 'dark triad' and extraverts) that do obtain a higher degree of practice than the norm and it is from these groups of practiced liars that experts are likely to emerge.

As outlined in Chapter three, existing research has shown conflicting results with regard to the effect of practice on performance in deception. The two previous quantitative studies in this PhD have also failed to establish a clear link between the two. Study one found no

relationship between dark triad traits or self-reported lying frequency and performance in an interactive deception task. Study three showed that Machiavellian individuals had greater ability to mask differences between their written truths and lies and showed greater calibration between perceived and actual performance. But no other practice-related hypotheses were supported. Theoretical support for an advantage in highly practiced liars is strong. Recent research has shown that not only are dark triad traits predictive of a greater propensity to lie across multiple contexts (Markowitz, 2022), those high in these traits also report lower cognitive load and less negative affect when lying (Forsyth et al., 2021; Turi et al., 2022) which would reduce many potential cues to deception (Vrij, Mann, Robbins et al., 2006).

9.2.2 Calibration

Feedback ought to contribute positively to accurate calibration because it clarifies the quality of actual performance which can then be compared with perceived performance more clearly. Generally, the calibration between perceived and actual performance is high for experts and low for non-experts (Dunning et al., 2004; Dunning, 2011). In deception, calibration appears poor (Frank & Ekman, 2004; Vrij et al., 1996), although the previous two studies both showed that better liars had better calibration accuracy. Van Swol et al. (2017) asked their participants for overall ratings of their own deceptive ability and compared these with success in a deception game. There were no significant differences in the detectability of lies produced by self-rated 'good' and 'bad' liars nor in their recorded demeanour. Liars tend to overestimate their ability to control verbal elements of deception and underestimate the degree to which their nonverbal behaviour is indicative of lying (Vrij, Edward & Bull, 2001).

9.2.3 Responsiveness to feedback

Part of the reason for poor calibration could be the lack of reliable feedback given to a liar. In childhood, being caught out in a lie may be inadvertently used as an instructive lesson, which Vasek (1986) theorised may cause some children to do better in future. But most of the time, the risk of incorrectly accusing someone of lying and incurring the related social cost means it is rarely done (Bond & Fahey, 1987; Vrij, Mann, & Fisher, 2006) even when suspicion is high (Levine, 2014). But it may be that a liar does not need to be challenged by an outright accusation to receive feedback that a lie has been unsuccessful. Humans are

remarkably sensitive to subtle social cues (Gardner et al., 2000), so it stands to reason that behavioural and linguistic signs of suspicion presented by a deception target would be received and understood. An increase in the number of questions may alert a liar that their plausibility is in doubt, and an expert liar with high self-regulation should be able to use this information to adapt their deceptive performance. Hancock et al. (2008) report that conversational partners in a synchronous text-based task adjusted their linguistic styles (e.g., asking more questions, using shorter sentences) when being lied to despite not being consciously aware of the deception nor being accurate at detection.

Feltovich (2006, p. 60) states that “additional experience appears to make performance less effortful and less demanding, but to improve performance it is necessary to seek out practice activities that allow individuals to work on improving specific aspects, with the help of a teacher and in a protected environment, with opportunities for reflection, exploration of alternatives, and problem solving, as well as repetition with informative feedback”.

Having experienced this ideal training environment, the would-be expert can move from reliance on an external teacher, to developing their own internal systems of self-regulation that will allow them to critique and adjust performance in vivo.

Such an opportunity in the realm of deception is difficult to envisage and may require very specific personality and situational antecedents. Even an individual highly motivated to develop deceptive expertise would struggle to identify a teacher willing and able to provide feedback. Instead, deception practice occurs in an environment where feedback may be absent, delayed and/or inaccurate. Klein and Hoffman (1992) distinguish between personal, directed, manufactured and vicarious experiences and argue that the traditional route of obtaining accumulated personal experience is inefficient. Instead, it is possible or even preferable to learn vicariously from the stories of experts. This approach may make more sense for the development of deceptive skill.

9.2.4 Theoretical support for responsiveness in deceptive performance.

The cognitive deception theory ADCAT (Walczyk et al., 2014) specifies self-regulatory processes as a core element of successful lying. During the *Action* component of the model “The targets’ behaviour and that of the self may be monitored to infer whether lies are believed” (p. 32). Regardless of the liar’s ability to produce a deceptive performance in line with their goals, it is their responsiveness to how well that performance is being believed by their specific target that will determine the success of the lie. Similarly, Interpersonal

Deception Theory (IDT) is based on the idea that the unavoidably dialogic nature of deception means that the sender's performance is directly influenced by overt and covert communication signals from their target (Buller & Burgoon, 1996). So, monitoring and reacting appropriately to feedback is an essential part of deceptive skill both 'in-the-moment' and reflectively after delivery of deception is complete.

Media Richness Theory predicts that liars should choose a multiple-cue format that gives them immediate feedback (Daft & Lengel, 1986; Whitty et al., 2012). This is borne out by research showing that the rates of reported deception are highest over the telephone and in face-to-face communication and lowest in asynchronous, text-based formats like email and text messaging (Hancock et al., 2004; Markowitz, 2022; Whitty et al., 2012). This preference has been explained by a reluctance to leave a concrete record of deception. But it is also possible that liars deliberately choose communication channels that will afford them feedback from their target despite this also being a more dangerous option in terms of their own possible leakage of deceptive cues.

There is also evidence that liars with higher self-awareness scores were more successful in deceiving third party judges who watched short videos of them being interviewed (Johnson et al., 2005) and high self-monitors showed significantly less pause rates and non-fluency, a difference that increased under conditions of rehearsal suggesting high self-monitors were better able to use the practice (Miller et al., 1983). However, the sample of liars was very small (n=12 and n= 32 in each study respectively) and the connection with responsiveness to feedback is implied based on self-regulation abilities rather than demonstrated outright.

9.2.5 Empirical support for responsiveness in deceptive performance.

Research has shown that feedback can have a direct impact on subsequent lies told in an experimental setting. Hu et al. (2012) designed a study in which they contrasted feedback alone with feedback coupled with practice. All participants took part in a differentiation of deception paradigm (DDP) which required them to respond "self" or "other" to personal information presented on a screen while being cued to respond truthfully or deceptively. In the feedback condition, participants were shown their own accuracy and reaction time data from a completed baseline task and instructed to speed up their deceptive responses and improve accuracy. Participants in a "training" condition received the same information as those in the feedback condition but also carried out 360 additional deceptive trials to practice the instructions given to speed up and increase accuracy. In a subsequent test,

reaction times decreased for deceptive responses in both groups. But for the feedback only group, truths and lies were still significantly different from one another. Whereas those in the training group were able to lower their deceptive reaction times so that they were no longer significantly different from truths. Accuracy rates did not change for either group. By giving similar but effectively opposite instructions to the previous study, Verschuere et al. (2009) successfully influenced reaction times for participants taking the autobiographical Implicit Association Test (aIAT) after a mock crime. Instead of speeding up deceptive responses, they advised participants to slow down truthful reaction times. The authors reasoned this would achieve the same aim of reducing differences between truthful and deceptive reaction times with less effort. After taking part in a baseline task, 'faking instructions' were issued to all participants. The response times of innocent participants did not change significantly from the baseline, but the aIAT was no longer able to correctly classify guilty and innocent responders due to the changes made by guilty responders. More subtle feedback is likely to be the norm in 'real life' lying. Within a single interview, Burgoon et al. (1996) demonstrated changes in the nonverbal behaviour of liars in response to signs of suspicion from the receiver. For example, liars smiled less frequently but for longer. However, effects were small and were moderated by degree of relationship, and deception type (omission versus fabrication).

The studies reviewed in this section illustrate that it is possible to influence the approach taken to deception by providing feedback and instruction. However, it is not known whether better liars are more sensitive to feedback, and/or more flexible in the adjustments they can make to their deceptive behaviour. Similarly, there is no existing data to suggest whether practice plays a role in superior responsiveness.

9.2.6 The current study

The complexity of how 'real world' feedback is sent and received makes it difficult to replicate the experience in an experimental situation. The current study uses a longitudinal testing paradigm as study three, eliciting four truthful and deceptive written accounts of life experiences in an asynchronous online setting. A human interviewer inadvertently providing information to the participant through their reactions may confound data on responsiveness to feedback. Additionally, the pragmatic reality of recruitment and retention means a study that can be administered entirely online is preferable to one that requires participants to attend a specific place at a particular time (Ribisl et al., 1996).

Constructing written deception in the absence of a receiver denies the liar the usual opportunities to receive feedback that occur during turn-taking in an interactive exchange (Picornell, 2013). But this means that it is possible to standardise the form and amount of feedback given, so that responsiveness to it can be measured in a controlled way. Although potentially less ecologically valid, a single point of specific feedback allows for a clear test of proof of concept on whether and how participants respond. By providing feedback on specific linguistic features of deception halfway through the four time points, it is possible to measure whether participants respond immediately at time three and whether there is an enduring effect one week later at time four. The same feedback is provided to all participants highlighting the need to be more believable and specifying what features of language they should adjust based on known indicators of deception from the classic Newman and Pennebaker (2003) LIWC deception study i.e., fewer pronouns, lower cognitive complexity (indicated by less exclusive words), more negative emotion words and more simple verbs.

Responsiveness to feedback is assessed by whether a reliable change is seen in the LIWC scores for the features of language participants are instructed to change. The Reliable Change Index or RCI (Jacobson & Truax, 1992) is a psychometric criterion that specifies the amount of change required in an individual score over time to indicate that change is statistically significant rather than due to measurement error. Often used to assess clinical outcomes (White et al., 2013) it is also useful in determining meaningful changes in the demonstration of skill (Martin et al., 2013).

To test the hypotheses below, responsiveness will be compared between liars with more and less practice, higher and lower self-rated ability and better and worse deceptive task performance. Calibration of perceived and actual performance is also compared at each time point to assess the value of task-specific practice and the impact of feedback.

*H*₁ Participants with more practice will show more responsiveness to feedback both immediately after intervention at time 3 and one week later at time 4.

*H*₂ Participants with better deceptive performance (*LIWC*_{Authenticity} score when lying) will show more responsiveness to feedback both immediately after intervention at time 3 and one week later at time 4.

*H*₃ Participants with more in-task practice will become more accurate judges of their own ability as they accrue practice in this form of lying (i. e., calibration scores will improve from time one to time four).

*H*₄ Participants with better performance will show greater calibration accuracy

*H*₅ Participants who self-assess as better liars based on their overall self-assessment score will be less likely to show responsiveness to feedback both immediately after intervention at time 3 and one week later at time 4.

9.3 Methods

9.3.1 Design

A mixed design was used to compare *within-subjects* in truth versus lie (valence) across four repeated timepoints and *between-subjects* based on differing amounts of practice, performance and self-assessed ability.

Independent Variables are self-reported lying frequency, dark tetrad personality traits (narcissism, Machiavellianism and psychopathy), HEXACO personality dimensions Honesty-Humility and Extraversion, actual lying performance, self-assessed overall deceptive ability and self-assessed performance ratings after each timepoint.

Dependent variables are the following LIWC categories:

- *LIWC_{Pronouns}* – all personal (but not impersonal) pronouns used (e.g. I, she, they)
- *LIWC_{Differentiation}*¹⁶ – a measure of high cognitive complexity due to elaboration of account, based on words that indicate category membership (e.g., hasn't, but, else)
- *LIWC_{Negemo}* – all negative emotion words (e.g., hurt, bad, mean)
- *LIWC_{Verb}* – a measure of low cognitive complexity based on verbs (e.g., walk, drive)

9.3.2 Participants

Recruitment for this study took place concurrently with study three, with participants randomly allocated to a different 'branch' of the testing paradigm (either study three or study four) after providing consent.

An a priori sample size calculation carried out in G*Power (Faul et al., 2009) for a regression analysis with 5 predictors and a small (0.15) effect size resulted in a requirement for 92 participants for 80% power. Allowing for attrition, a target sample size of at least 150

¹⁶ Between LIWC2007 and LIWC2015 this category was renamed from Exclusive to Differentiation but still represents the same concept.

participants was set. To maximise diversity in the sample recruitment was carried out from a range of sources including a research participation scheme for undergraduate Psychology students at Goldsmiths College, the paid online research platform 'Prolific'; and via email appeals to the mailing list of the Forensic Psychology Unit (FPU) lab group at Goldsmiths College. Students were compensated with course credits; Prolific participants were paid at a rate of £5 per hour and FPU mailing list members took part voluntarily with the incentive of a prize draw for a £50 online voucher. As part of an attrition minimisation strategy compensation was only awarded to those who completed at least three of the four timepoints.

The final sample for this study comprised 163 participants (71% female, 28% male, 0.5% non-binary, 0.5% not provided) with a minimum age of 18 and maximum of 82 ($M = 28$, $SD = 12.25$). The ethnic makeup was as follows: Asian – 14%, Black – 2%, Mixed ethnicity – 8%, Not provided – 9%, Other specified ethnicities – 12% and White – 55%. After accounting for attrition, there were 151 participants who provided full data for all four time points and 159 with data for at least three time points. Demographic information remained very similar after accounting for attrition (73% female, 26% male, 0.5% non-binary, 0.5% not provided); Mean age of 28 ($SD = 12.25$); Asian – 13%, Black – 1%, Mixed – 9%, Not provided – 9%, Other specified ethnicities – 13%, White – 55%.

9.3.3 Materials

The same materials (listed below) as described in study three were used.

- Life Experiences Inventory (Appendix C)
- Self-report of deception battery (Appendix B)
- Dark Triad (Appendices F, N and O)
- HEXACO Personality Inventory-Revised (Appendix P)

As data collection for this study was concurrent with study three the same issue with missing dark triad measures applied, however fewer participants ($n = 23$) had provided this data elsewhere that could be recovered.

Reliability was acceptable for NPI-40 ($\alpha = .763$), TriPM ($\alpha = .816$), and the 16-item HEXACO subscales Honesty-Humility ($\alpha = .771$) and Extraversion ($\alpha = .881$). But not for the Mach-IV ($\alpha = .605$) which may be a consequence of the small sample size for dark triad traits in this study. As discussed in study three, the MACH-IV often demonstrates poor reliability, but it

remains the preferred measure for this construct (Láng, 2020). Single sample t tests compared means for each measure in this sample with available norms¹⁷. Narcissism and Extraversion scores were significantly lower in this sample while Honesty-Humility was significantly higher (full results in Appendix V).

9.3.4 Procedure

The study was conducted online using the *Qualtrics* platform using the same testing paradigm as study three with the addition of a single feedback intervention at the midway point of the experiment (the beginning of time three). Over the course of the study, participants provided four truthful and four false accounts a minimum of one week apart. Before providing their accounts at time three participants received the following feedback:

You need to be more believable!

Your writing so far has been processed using linguistic analysis software and it has been able to identify which accounts are truthful and which are false.

The software looks at features of language that indicate deception and truthfulness. Truthful accounts typically show more pronouns (e.g., I, me, she, they) and more cognitive complexity, whereas deceptive accounts show more negative emotion words (e.g., anger, enemy), and more simple verbs.

Use this information when you write your next accounts to try to be as convincing as possible both when lying and telling the truth...

The feedback necessarily took advantage of the so-called ‘Barnum effect’ or ‘Forer effect’ (Forer, 1949). It was presented as specific to each participant and based on analysis of their previous accounts but was in fact standardised such that all participants received the exact same ‘feedback’. To test participants’ ability to adjust their use of language in response to feedback, a convincing and ecologically valid selection of linguistic features was required. It was not ethical to provide detailed information on how to improve deceptive ability nor was it practical to provide genuine individual feedback. Therefore, LIWC category variables were

¹⁷ Norm data was taken from the following sources:

Mach IV – Open Psychometrics data from UK respondents (n = 5486) <https://openpsychometrics.org>

NPI - Open Psychometrics data from all respondents (n = 11.243) <https://openpsychometrics.org>

TriPM– Triarchic Psychopathy Measure: Preliminary Manual 2016 (n = 585)

<https://patrickcnslab.psy.fsu.edu/wiki/images/b/b2/TPMmanual.pdf>

HEXACO - Lee & Ashton (2019) sample of Canadian college students (n = 1126)

selected based on the Newman Pennebaker (NP) Model of Deception (Bond & Lee, 2005; Markowitz & Griffin, 2019; Newman et al. 2003)¹⁸ which showed that liars use fewer pronouns (both self and other) and exclusive words and more negative emotion words and simple verbs. No specific information was provided to participants on how cognitive complexity might be expressed and ‘verbs’ were not further specified as simple motion verbs. This resulted in a mix of relatively simple linguistic features (pronouns, verbs, and negative emotions) alongside more complex or esoteric features (differentiation) that could be presented to participants without contravening ethics.

The additional measures (HEXACO and self-report battery) were presented at the first two sessions, one per session in counterbalanced order. Dark triad measures were collected as part of a separate study as explained in study three. The presentation order of the four different sub-lists from the Life Events Inventory was pseudo-randomised to ensure each participant saw all four stimuli. Presenting different stimuli each time ensured that participants could not prepare ahead of the session and would instead have to produce and deliver truths and lies spontaneously.

9.3.5 Pre-analysis data processing

9.3.5.1 Self-assessment of deceptive ability

As described in the methods chapter, individual scores to three questions about self-assessed deceptive ability were weighted and combined. White lies were weighted 0.90, while responses about major lies had a weight of 0.10. Once weighted, answers for each question and each type of lie were combined to create a single score for self-assessed lying ability where higher scores indicate higher self-rated ability.

9.3.5.2 Deceptive Performance measures

For this study, unlike studies one and two, deceptive performance is measured by *LIWC_{Authenticity}* score when lying. Authenticity refers to language that is sincere and personal, conveying a sense of truthfulness. Those who score high on *LIWC_{Authenticity}* are perceived as honest and straightforward as opposed to low scorers who seem evasive and impersonal. This summary variable is not only an established and validated measure of verbal

¹⁸ These were largely supported by the meta-analysis of Hauch et al., (2015) except for personal pronouns where only first person pronouns were found to be lower when lying, the opposite effect was seen for second and third person pronouns.

authenticity capable of discriminating truthful from deceptive accounts (Alsubari et al., 2020), but recent research has also shown that $LIWC_{Authenticity}$ can function as an accurate proxy for human judgments similar to thin slices of behaviour. Communication high in $LIWC_{Authenticity}$ is associated with greater perceived connection to the sender by third party judges and greater interest in them as well as higher likelihood of receiving financial investment from investors and greater engagement via social media metrics (Markowitz et al., 2022). Unlike individual LIWC category variables, scoring for summary variables such as $LIWC_{Authenticity}$ is based on the area under a normal curve. A standardized score is given that can range from 0 (very low Authenticity) to 100 (very high Authenticity) with a mid-point of 50.

9.3.5.3 Measuring responsiveness to feedback

A Reliable Change (RC) score was calculated for each participant. This is achieved using the Reliable Change Index (Martin et al., 2013) which is an individual's difference score (before intervention – after intervention) divided by the standard error of measurement of the difference (SEDiff). This study uses the process set out by Blampied (2016) which is based on Jacobson and Truax (1992). Responsiveness to feedback in this study is thus operationalised by examining the extent to which participants change their linguistic behaviour when lying. The formula explained below is applied to deceptive accounts only.

First the Standard Error of measurement (SEm) is calculated using the following formula:

$$SEM = s\sqrt{1 - r_{xx}}$$

Where s = variability measured by SD of a reference group and r_{xx} = the reliability of the measurement instrument. Then the SEDiff is calculated, which standardises the difference between two measurements into SD units:

$$SEDiff = \sqrt{2(SEm^2)}$$

Finally, each person's difference score is divided by the SEDiff to give their RC score. If the resulting figure is $\geq \pm 1.96$ we can say that any change is indeed a reliable change and should be attributed to the feedback intervention rather than measurement error. A separate RC score was calculated for each participant for each LIWC variable. This was done once comparing time two with time three to test the immediate responsiveness to feedback, and once comparing time two with time four to test for any enduring effects of feedback on week after the intervention.

Table 14 summarises the reliability and variability data used to calculate the Standard Error of measurement (SEm) for each of the LIWC categories used in this study.

Table 18

LIWC population-based variability and reliability measures with RCI

| Variable | Population SD | Reliability | SEm | SEDiff |
|---------------------------------------|---------------|-------------|------|--------|
| <i>LIWC_{Pronouns}</i> | 3.02 | .61 | 1.89 | 2.67 |
| <i>LIWC_{Differentiation}</i> | 1.18 | .78 | 0.55 | 0.77 |
| <i>LIWC_{Negemo}</i> | 1.09 | .55 | 0.73 | 1.03 |
| <i>LIWC_{Verb}</i> | 2.93 | .23 | 2.57 | 3.63 |

Note: Both variability and reliability measures come from LIWC 2015 Psychometric manual (Pennebaker et al., 2015) based on over 100,000 samples of language.

^aSpearman Brown corrected alphas are used to measure reliability in place of Cronbach's alpha. This is the recommended measure for individual word categories (Pennebaker et al., 2015).

9.4 Results

After data cleaning and validation 634 truthful and 638 deceptive written accounts from 163 participants were included in analysis. On average, deceptive accounts were 207.21 words long ($SD = 64.03$ words) and truthful accounts were 201.93 words ($SD = 60.36$ words). The total word count across both conditions and all participants was 260,223 words. Norm and reliability data for questionnaires can be found in Appendix V.

9.4.1 Missing data

Complete data was collected for the HEXACO questionnaire and self-report of deception battery. Data collection for studies two and three was concurrent and the same technical error impacted both in terms of dark triad measures. It was only possible to collect data for a small number ($n = 19$) of participants after the fact as fewer participants assigned to the current study had provided dark triad measures elsewhere. No data imputation was carried out. Although dark triad measures were included in analysis where appropriate as detailed below, results must be considered with extreme caution due to the very low sample size.

9.4.2 Frequency groupings

As outlined in the methods chapter, participants were grouped by self-reported lying frequency over the previous 24-hour period using an Index of Dispersion. The ‘break-point’ in the data where D approximated zero was six lies of either type. Table 19 details the distribution of distinct types of liars across the four time points of this study. Prolific liars (10% of the sample) accounted for 48% of the total 343 lies reported. The extreme discrepancies in group size means statistical comparisons between groups are inadvisable (Rusticus & Lovato, 2014) so while these categories remain of interest, lying frequency is treated as a continuous variable in analysis.

Table 19

Participant assignment to lying frequency group

| Frequency group | Time one | Time Two | Time Three | Time Four |
|-----------------|----------|----------|------------|-----------|
| Nonliars | n = 33 | n = 33 | n = 33 | n = 30 |
| Typical | n = 112 | n = 108 | n = 109 | n = 106 |
| Prolific | n = 19 | n = 18 | n = 18 | n = 16 |

9.4.3 Descriptive statistics

Table 20 shows the mean scores and standardised mean differences (Cohen’s d effect size) between truth and lie for each LIWC variable at each time point, together with mean absolute differences. In addition to the four variables taken from Newman et al. (2003), *LIWC_{Authenticity}* is included as a measure of overall sincerity. Unlike the LIWC variables taken from the Matrix of measures and used in study three, it is notable that none of the scores differ significantly between truth and lie (for full details see Appendix W) and all have very small effect sizes.

Table 20*POMP-standardised Mean truth versus lie comparison for LIWC variables at each timepoint*

| LIWC variable | Truth | | Lie | | Abs Diff | | Mean Diff |
|-------------------|-------|---------|-------|---------|----------|---------|-----------|
| | M | SD | M | SD | M | SD | Cohen's d |
| Time one | | | | | | | |
| Authenticity | 82.58 | (22.70) | 82.10 | (20.45) | 20.01 | (22.14) | .016 |
| Personal Pronouns | 11.85 | (3.37) | 11.42 | (2.92) | 3.07 | (2.57) | .108 |
| Differentiation | 2.89 | (1.75) | 2.69 | (1.48) | 1.56 | (1.35) | .096 |
| Negative Emotions | 1.92 | (1.45) | 1.81 | (1.28) | 1.41 | (1.15) | .063 |
| Verbs | 17.56 | (3.58) | 17.31 | (2.90) | 3.09 | (2.39) | .065 |
| Time two | | | | | | | |
| Authenticity | 83.96 | (21.21) | 84.50 | (18.56) | 16.75 | (18.83) | -.021 |
| Personal Pronouns | 12.09 | (2.97) | 11.94 | (3.12) | 3.08 | (2.35) | .040 |
| Differentiation | 2.91 | (1.54) | 2.86 | (1.48) | 1.40 | (1.14) | .028 |
| Negative Emotions | 1.76 | (1.40) | 1.86 | (1.34) | 1.38 | (1.23) | -.053 |
| Verbs | 17.53 | (3.03) | 17.80 | (2.92) | 2.90 | (2.20) | -.072 |
| Time three | | | | | | | |
| Authenticity | 82.65 | (19.95) | 83.86 | (20.20) | 17.84 | (18.62) | -.047 |
| Personal Pronouns | 12.17 | (3.23) | 12.35 | (3.07) | 3.17 | (2.42) | -.045 |
| Differentiation | 2.66 | (1.47) | 2.75 | (1.41) | 1.49 | (1.16) | -.047 |
| Negative Emotions | 1.60 | (1.33) | 1.73 | (1.48) | 1.50 | (1.32) | -.065 |
| Verbs | 17.32 | (3.12) | 17.71 | (3.07) | 2.93 | (2.35) | -.101 |
| Time four | | | | | | | |
| Authenticity | 82.24 | (19.56) | 81.28 | (20.20) | 17.19 | (18.03) | .037 |
| Personal Pronouns | 11.90 | (3.13) | 11.79 | (2.83) | 2.81 | (2.37) | .029 |
| Differentiation | 2.68 | (1.55) | 2.79 | (1.41) | 1.39 | (1.15) | -.061 |
| Negative Emotions | 1.52 | (1.19) | 1.61 | (1.26) | 1.20 | (1.08) | -.054 |
| Verbs | 17.55 | (2.89) | 17.63 | (2.92) | 2.61 | (1.94) | -.022 |
| Total | | | | | | | |
| Authenticity | 82.86 | (20.88) | 82.95 | (19.86) | 17.95 | (19.47) | -.003 |
| Personal Pronouns | 12.00 | (3.17) | 11.88 | (3.00) | 3.03 | (2.43) | .033 |
| Differentiation | 2.79 | (1.58) | 2.77 | (1.44) | 1.46 | (1.20) | .007 |
| Negative Emotions | 1.70 | (1.36) | 1.75 | (1.34) | 1.37 | (1.20) | -.027 |
| Verbs | 17.49 | (3.16) | 17.61 | (2.95) | 2.88 | (2.23) | -.031 |

*Denotes significant difference between truth and lie conditions

Note: AbsDifference scores are mean (SD) of absolute differences for each category and therefore do not correspond to simple arithmetic difference between mean truth and lie scores

Reliable change scores (Table 21) were calculated for each participant as described above, using scores at time two as the pre-intervention reference point. The first reliable change score compares scores at time two with scores at time three to examine immediate responsiveness. The second compares time two with time four, seeking to determine whether any changes were sustained a week after receiving feedback. Most participants did not amend their linguistic behaviour in a meaningful way in response to the feedback intervention. The use of differentiations appears to be the most adaptable LIWC category. In contrast, only a very small percentage of participants made changes of any kind to their use of verbs.

Table 21

Percentage of participants showing reliable change (from time two) for each LIWC variable

| LIWC variable | Time three | | | Time four | | |
|-------------------|----------------|------------------|-----------|----------------|------------------|-----------|
| | Correct change | Incorrect change | No change | Correct change | Incorrect change | No change |
| Personal Pronouns | 8.75 | 6.88 | 84.38 | 5.88 | 9.15 | 84.97 |
| Differentiation | 18.75 | 21.25 | 60.00 | 20.26 | 20.92 | 58.82 |
| Negative Emotions | 13.13 | 9.38 | 77.50 | 16.34 | 10.46 | 73.20 |
| Verbs | 3.75 | 1.25 | 95.00 | 1.96 | 3.27 | 94.77 |

The four graphs below (Figure 18 – Figure 21)¹⁹ contrast actual data with hypothesised data to illustrate the difference between the two. The solid blue line represents actual scores when lying for each variable, while the dashed grey line shows predicted scores had participants followed the instructions and achieved reliable change in each of the LIWC variables at time three and maintained the change in linguistic behaviour at four.

¹⁹ Note that the scale of the y axes differ as the range of scores is not uniform between LIWC variables

Figure 18

Line graph of actual LIWC_{Pronouns} mean scores versus predicted scores

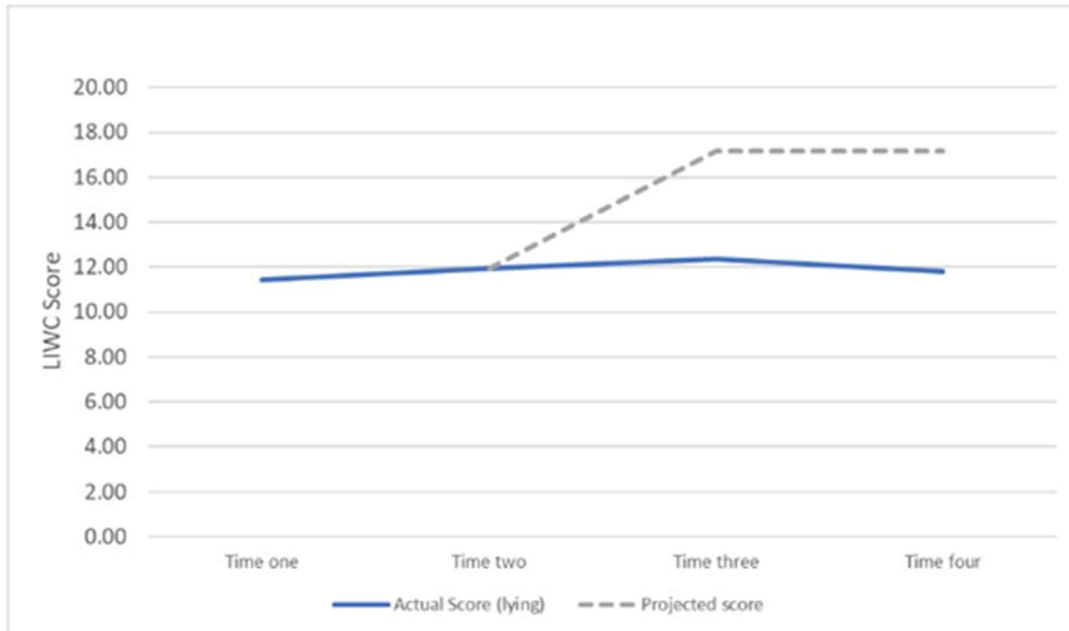


Figure 19

Line graph of actual LIWC_{Differentiation} mean scores versus predicted scores

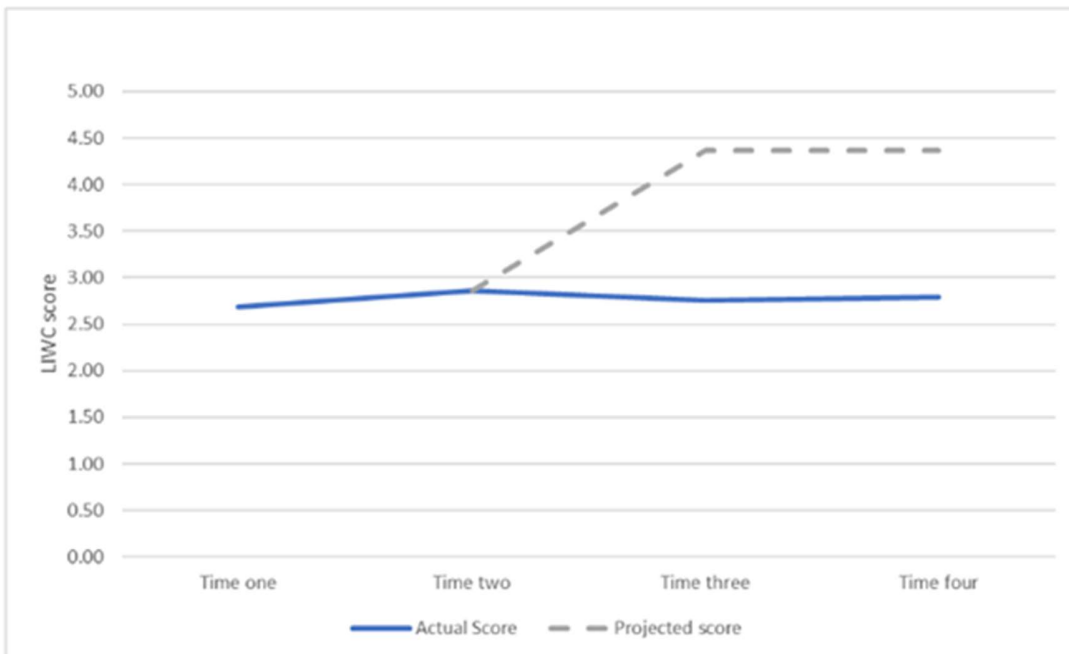


Figure 20

Line graph of actual LIWC_{Negemo} mean scores versus predicted scores

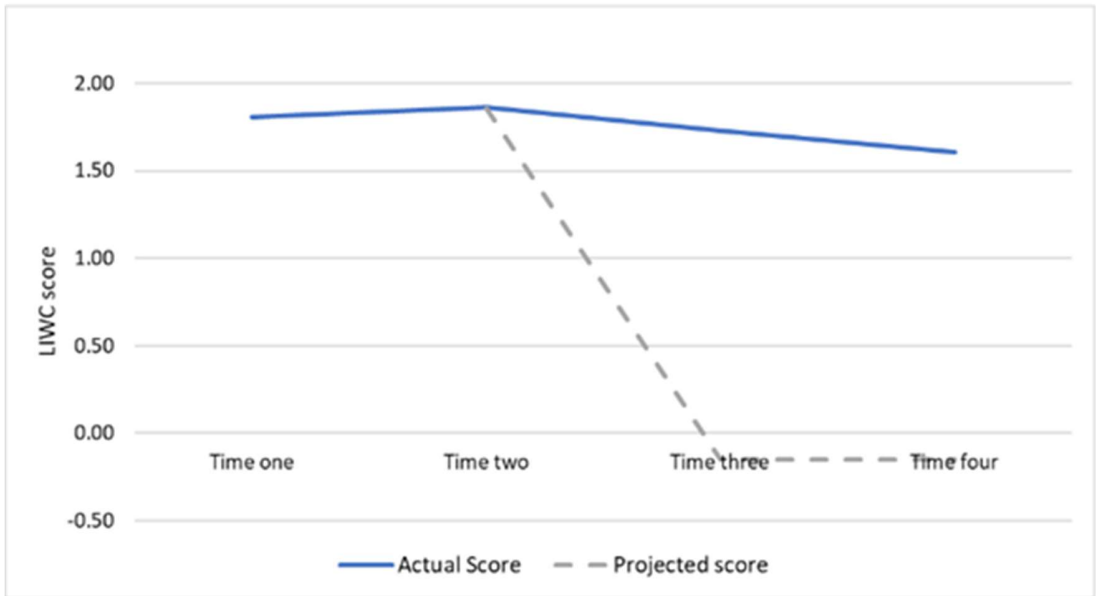
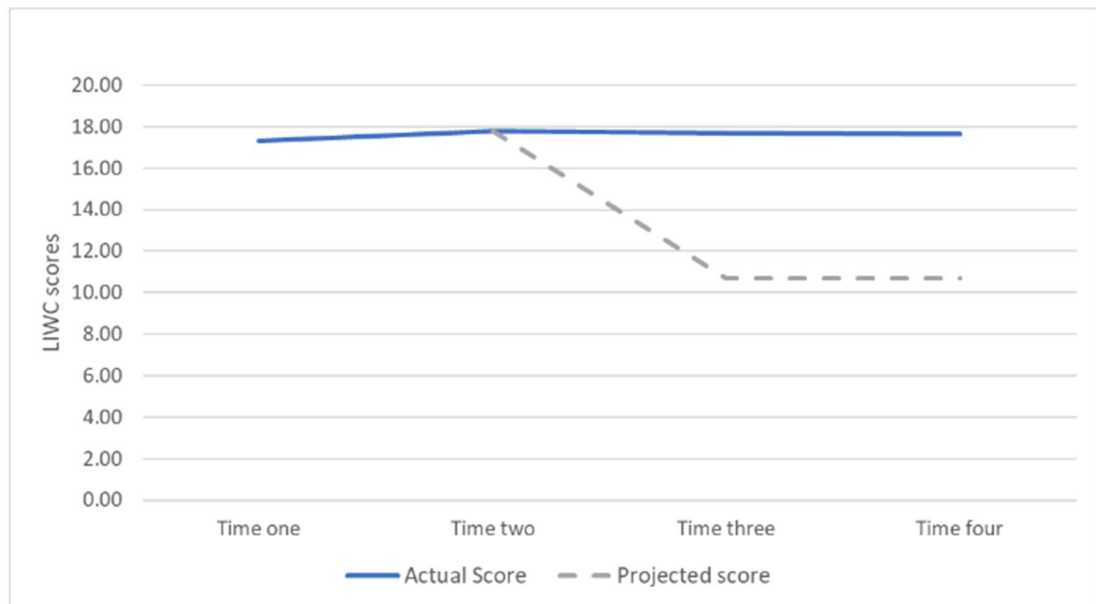


Figure 21

Line graph of actual LIWC_{Verb} mean scores versus predicted scores



After providing each truthful and deceptive account, participants rated how convincing they believed themselves to be on a scale from 1 = Extremely unconvincing to 5 = Extremely convincing. At all four times, the modal score for deceptive accounts was 4 = Somewhat convincing, with less than 15% of participants rating their lies as 'unconvincing' at any time point. Directly after the feedback intervention at time three there was an increase in the percentage choosing 'Somewhat unconvincing' and a slight decrease in the percentage choosing 'Extremely convincing' but the feedback intervention did not appear to have a major impact on self-ratings.

9.4.4 Inferential Statistics

Hypotheses one, two and five were tested using the same analysis.

H₁ Participants with more practice will show more responsiveness to feedback.

H₂ Participants with better deceptive performance (*LIWC_{Authenticity}* score when lying) will show more responsiveness to feedback.

H₅ Participants who self-assess as better liars based on their overall self-assessment score will be less likely to show responsiveness to feedback.

Immediately after the feedback intervention at time three, there were significant negative bivariate correlations between reliable change scores for *LIWC_{Negemo}* and both narcissism score $r(20) = -.61, p = .002$ and psychopathy score $r(20) = -.43, p = .046$. This indicates that participants high in the two dark triad traits were less likely to amend their use of negative emotions as instructed immediately following the intervention. A further significant negative correlation between lying performance and reliable change score for *LIWC_{Differentiation}* $r(151) = -.17, p = .036$ suggests those with better lying performance were more responsive in terms of using cognitive complexity.

To explore further, linear multiple regression models were fit separately for each of the variables *LIWC_{Pronouns}*, *LIWC_{Differentiation}*, *LIWC_{Negemo}* and *LIWC_{Verbs}* to examine the effect of practice, self-assessed ability, and performance on responsiveness to feedback immediately after the intervention at Time three (full results available in Appendix W). Predictor variables

were self-reported lying frequency, lying relevant personality traits²⁰ (Honesty-Humility and Extraversion), self-assessed ability score and actual lying performance (*LIWC_{Authenticity}* score) and the outcome variable was reliable change score. None of the regression models were significant and no individual predictors within the models were significant. Immediate responsiveness to feedback was not predicted by any of the measures of practice, performance or self-assessment.

To test for any effects of feedback one week after the intervention, further regression models examined the effect of practice, self-assessed ability and performance on responsiveness to feedback at Time 4. As above, predictor variables were self-reported lying frequency, lying relevant personality traits (Honesty-Humility and Extraversion), self-assessed ability score and lying performance (*LIWC_{Authenticity}* score) and the outcome variable was reliable change score. None of the regression models were significant and no individual predictors within the models were significant (full results available in Appendix W). Immediate responsiveness to feedback was not predicted by any of the measures of practice, performance or self-assessment.

H₃ Participants with more in-task practice will become more accurate judges of their own ability as they accrue practice in this form of lying (i. e., calibration scores will improve from time one to time four).

Correlations were used to compare the relationship between self-rated ability and actual performance (measured by *LIWC_{Authenticity}* score when lying) at each time point. Spearman's correlations were chosen as one measure was continuous and one ordinal (Khamis, 2008). Separate correlations were calculated for each time point to determine whether calibration accuracy improved with task-specific practice and whether there was any change in calibration following the feedback intervention. No correlation at any time point was significant. Time one $r(161) = -.11, p = .178$; Time two $r(156) = .05, p = .547$; Time three $r(156) = .08, p = .341$ and Time four $r(146) = -.07, p = .371$. These correlations were then compared using Fisher's Z test (Lenhard & Lenhard, 2014), which is appropriate for comparing Spearman's coefficients (Myers

²⁰ The very small number of responses to dark triad measures for this sample meant that the data could not be included in regression models.

& Sirois, 2004). No differences between time points were significant (see Appendix X) suggesting that there was no benefit of task-specific practice on calibration accuracy.

H₄ Participants with better performance will show greater calibration accuracy.

As in study three, participants' scores for overall self-rated ability (based on responses to questionnaire) and overall actual ability (measured by mean LIWC authenticity score when lying) were expressed as z scores. Then a calibration score for each participant was calculated by subtracting standardised actual performance from standardised perceived performance. Higher scores on self-assessed ability indicate better perceived performance and higher LIWC Authenticity scores represent better actual performance. So, a smaller calibration score indicates better calibration, a negative score shows underestimation, and a positive score shows over estimation. As the direction of miscalibration is not of interest, absolute calibration scores were used.

Calibration scores were entered as the outcome variable in a regression with overall actual performance as the predictor. The model was significant $F(1, 159) = 6.20, p = .014$ but explained just 3.8% of the variance $R^2 = .038$. Overall performance significantly predicted calibration accuracy $\beta = -.162, p = .014, 95\% \text{ CI } [-0.291, -0.034]$ such that better overall performance (higher LIWC Authenticity score) predicted better calibration (lower absolute calibration score).

9.5 Discussion

The current study aimed to investigate the relationships between practice, performance, calibration, and responsiveness. The GEF predicts that expert liars should show greater responsiveness to feedback and that this should also be linked to a greater degree of practice. Further hypotheses were made that self-assessed good liars would be less responsive to feedback and that in-task practice would improve calibration between perceived and actual performance. Overall, these hypotheses were not supported by the results. Immediately after the feedback intervention when its effects should be at their strongest, none of the independent variables (self-assessed ability, actual performance, or practice) predicted responsiveness. After a delay of one week, only one variable (*LIWC_{Differentiation}*) showed

significant relationships with the independent variables; here, better liars were more likely to amend their use of differentiations after one week and those who rated themselves as good liars were less likely to do so. Calibration accuracy did not improve with increased task-specific practice. Correlations between perceived and actual performance were all non-significant and comparing correlations between each timepoint revealed they were not significantly different. Participants did vary their linguistic behaviour across the four timepoints in this study but did not appear to consciously amend it in response to the feedback intervention. The magnitude of what is considered a 'reliable change' depends on the various metrics for each LIWC variable (population norms for reliability and variance). So, for example the raw amount of change in scores required is 7.11 for *LIWC_{Verbs}* but only 1.51 for *LIWC_{Differentiation}*. LIWC scores are a percentage of each type of word present in a passage of text. Based on the average word count of deceptive written accounts in this study (207.21 words), in real terms a reliable change would require removing 15 verbs, or 11 pronouns which is arguably a major adjustment. It could be that effective deception is achieved with more subtle linguistic changes than the mathematical measure used in this study. Humans are sensitive to minor changes in language use, even demonstrating nonconscious verbal coordination to facilitate social relationships known as language style matching (Gonzales et al., 2010; Ireland & Pennebaker, 2010; Niederhoffer & Pennebaker, 2002). This extends to deception-specific contexts. Hancock et al., (2008) tracked the changes in language use when lying in a synchronous text-based study and found that receivers of lies changed their linguistic behaviour when being lied to, despite being unaware of the lie. Presumably, a reversal of the changes in language that unconsciously influenced conversational partners in Hancock's study would also be processed. So, perhaps the threshold of reliable change does not need to be reached to successfully deceive. The absence of significant differences in responsiveness could suggest an inability to adjust linguistic behaviour at the required level. Reaction time studies discussed in the introduction (Hu et al., 2012; Verschuere et al., 2009) demonstrate that feedback in an experimental setting can have a direct impact on subsequent deception and make it more believable. But changing the speed of response to prompts is perhaps less difficult than amending one's use of language in a written communication task. Uniquely, this study involved a productive rather than reactive

act. In addition to the executive functioning processes required (e.g., truth inhibition, shifting and updating) this also demanded creation of a logical, plausible account using multiple linguistic features. Potentially, the low rate of responsiveness was due to the difficulty of the task. A recent commercial poll revealed that 57% of UK adults could not identify a verb or pronoun (Open Access Government, 2018) so it is plausible that participants were not able to adjust their use of specific linguistic features due to a lack of knowledge. In addition, researchers in the field of stylometry have established the idea of an individual idiolect, a writing style that uniquely characterizes and potentially identifies each person (Eder, 2011; Jockers et al., 2008; Neal et al., 2017). If language use is so idiosyncratic and characteristic as to be used as an identifier (Neal et al., 2018) then perhaps it is highly resistant to conscious change.

An alternative explanation is that participants were genuinely not responsive to the feedback rather than incapable of implementation. Mean overall self-assessment scores were 14.57 out of a maximum 21, and the pattern of high self-ratings after each time-point from the very beginning of the study suggests that most participants thought themselves to be good at lying already. Potentially they disregarded the feedback in the belief that they did not need it to improve their deceptive performance. Perella (2017) argues that a self-protective mechanism can cause feedback to be rejected as perceived criticism. If the feedback is dismissed as wrong, then the self-concept of being a competent performer can remain unchallenged. This seems unlikely in the current study based on the pattern of self-ratings. The proportion of “Extremely convincing” ratings dropped from 28.75% to 20.38% at time three, directly after the feedback intervention which suggests that at least some participants recognised that their deception was not as convincing as they had previously thought. However, “Extremely unconvincing” ratings dropped from 3.75% to 1.27% at time three. While this could be interpreted as a rejection of the feedback, it could also represent those participants with the lowest confidence increasing their self-ratings after applying the feedback provided. Now armed with knowledge about how to produce a more convincing lie they no longer felt their attempt at deception was ineffective. Had the feedback been genuine rather than ‘Barnum’ then it should also have increased calibration by providing crucial information on the quality of actual performance. Nevertheless,

repeated task-specific practice between the start and end of the study was expected to narrow the gap between perceived and actual performance, but this was not seen in the results. In study three, with a similar design, only Machiavellianism was predictive of better calibration not in-task practice. In both studies, the nature of the effectively 'broadcast' lies required (i.e., lies not told to a specific individual or even a known audience) would have been unfamiliar to participants and in the absence of accurate feedback, calibration of a novel task would be difficult. It is possible that with more repetitions of the task calibration would have improved.

9.5.1 Limitations

The nature of the feedback intervention is one of the limitations of this study. As discussed in the introduction, it is difficult to replicate ecologically valid feedback in the context of deception where explicit feedback is unlikely to occur. Instead, the focus was on ensuring instructions were standardised, ethical, and sufficiently detailed that measurement of the outcome was possible. Because of the range of folk beliefs and stereotypes about cues to deception (Global Deception Research Team, 2006), a general exhortation to improve believability may have resulted in changes to different linguistic features for each participant making comparison impossible. But as a result of these experimental requirements, it is likely that the feedback lacked realism and required knowledge of basic elements of language such as verbs and pronouns which participants might not possess.

A further limitation was the online, written communication medium made necessary by the Covid-19 pandemic restrictions in place at the time of data collection. There are known differences in comfort levels with and tactics employed in deception in different media. Lies have lower word count than truths in face-to-face interviews and conversations, but in an interactive computer task this pattern is reversed (Markowitz & Hancock, 2019). People appear to prefer lying via a medium that leaves no record and in which their target is engaged at the same time. Hancock et al. (2004) report most lies told via telephone (synchronous and record-less) and least by email (asynchronous and with a 'paper trail'). This means that even prolific liars may be less familiar with the constraints of lying in an online written environment. However, in the nearly twenty years since Hancock's study the use of asynchronous text-based communication has increased markedly. So, this may be an increasingly common way to lie.

A possible issue arose in that variation in the use of negative emotions could be influenced by topic choice rather than truth/lie valence. The stimuli lists of candidate topics were balanced across positive and negative events but writing about being bitten by a dog will likely involve more negative emotion words than writing about getting married regardless of the veracity of the account. Also, the original study of Newman et al. (2003) used *LIWC_{Exclusives}* as the measure of cognitive complexity but this category no longer exists in the LIWC 2015 software. It has been replaced by *LIWC_{Differentiation}* “largely due to consistently low base rates, low internal reliability, or infrequent use by researchers” (Pennebaker et al., 2015, p. 7). It cannot be independently verified that the new category captures all of the linguistic features of the discontinued one.

Finally, incomplete data for dark triad personality traits meant it was not possible to fully explore relationships between practice and responsiveness. This is particularly unfortunate as Machiavellianism was the only proxy for deceptive practice that was significantly related to outcome variables in the previous study. It is possible that Machiavellian individuals would show greater responsiveness to feedback based on their purported superiority in strategic manipulation. Although results from correlations did not bear this out.

9.5.2 Conclusion

Theory and research have established the central importance of responsiveness as a component of the General Expertise Framework (Feltovich, 2006; Zimmerman, 2006) and multiple theories of deception (e.g., IDT and ADCAT) include attentiveness and responsivity to feedback as vital for successful deception (Buller & Burgoon, 1996, Walczyk et al., 2014). So, even if the LIWC variables chosen for this study are not those that an expert liars would normally use, they should still have been able to react to the feedback intervention by adjusting their use in this setting. In fact, only a small percentage of the sample amended their linguistic behaviour meaningfully and an even smaller percentage did so in the instructed direction with the rest either unwilling or unable to respond to feedback. Given that the conditions for developing expertise in deception are so rarefied, it is entirely possible that this sample did not contain any expert liars who had developed the ability to adjust their verbal behaviour in response to feedback. Those who have obtained the necessary amount of practice are already a

small sub population, those who are able to apply this and create the conditions in which they can also develop the required self-regulation and metacognition would be a sub population of a sub population and thus a very small minority in the general public from which this sample was drawn.

10. General Discussion

This programme of research involved four empirical studies which sought to answer an overarching question: Can deceptive performance be conceptualised as a skill, as defined by the General Expertise Framework (GEF)? The hypotheses listed below address key features of the GEF. Because of their central importance to the GEF, practice (*H1*) and calibration (*H3*) were tested in all four studies. Study three addressed consistency of performance (*H2*), while studies three and four both tested responsiveness (*H4*).

H1. Expert liars are expected to possess a greater volume of practice in deception.

H2. Expert liars will show consistency of performance across repeated measures tests of lying ability.

H3. Expert liars will be aware of their abilities and limitations and able to accurately calibrate their performance as well as discuss it reflexively.

H4. Expert liars are responsive to feedback and adapt their performance accordingly.

The following chapter will briefly summarise the results of each study and then discuss how these provide answers to each of the research questions in turn, considering any new questions which emerged during the process of research. It will then provide an explanation of what the empirical results contribute to the broader theoretical context (IDT, ADCAT and GEF) within which they are situated, and the practical implications of these findings, before discussing limitations and future research directions.

10.1 Summary of empirical results

10.1.1 Study one

Study one addressed hypotheses one and three. Deceptive performance was compared across participants using a Matrix of measures covering verbal, nonverbal and paraverbal channels as well as gestalt, subjective indicators. Lying was elicited in a face-to-face investigative interview following a mock crime task. Practice (*H1*) was operationalised using the dark triad of personality traits as a proxy for habitual lying behaviour alongside self-reported lying frequency in the previous 24-hours. All three dark triad traits correlated positively with lying frequency. But neither measure of lying practice predicted deceptive performance at a channel or overall

level. Calibration (H_3) was tested by comparing perceived versus actual performance in two ways; percentage of lies undetected, and overall performance. Self-reported lying frequency did not correspond to greater calibration accuracy and neither did habitual lying via dark triad trait measures. In fact, higher scores for Machiavellianism predicted worse calibration. Better liars were more able to calibrate their predicted and actual percentage of lies undetected than poor liars. Study one was an intensive, interactive design which resulted in a small sample size ($n=40$). This may have restricted the number of participants with the traits of interest (prolific liars, dark triad habitual liars and very high performing liars).

10.1.2 Study two

Study two addressed hypotheses one, three and four and sought to enhance the quantitative findings through use of carefully selected qualitative approaches. A three-phase qualitative interview was conducted with a sub-sample of the participants of study one. An initial free-recall was followed by a retrospective think-aloud task carried out while watching self-filmed footage obtained during the mock crime and cover story tasks of study one. Finally, a video-stimulated interview allowed participants to review and critique their own performance while lying during the study one investigative interview. This structure and the flexibility of qualitative methods meant that participants were questioned about both a specific instance of lying and their experience of lying more generally in their lives.

Themes developed using Thematic Analysis showed that while practice (H_1) increases confidence for all liars, it (alone) is not sufficient to improve performance. Rather disposition and social cognitive skills must combine with practice. Challenging practice is not easily come by in life and this means that developing deceptive expertise beyond the level of competence is rare. Themes relating to calibration (H_3) emphasised the cognitive demands of lying. Few liars had sufficient capacity to engage in concurrent self-monitoring and even when given the unusual opportunity to view themselves on tape after the fact, only an expert liar was able to evaluate deceptive performance accurately. For most, calibration was based on the basic outcome metric of not getting caught, and because direct challenges are unlikely in normal social interaction a clear sense of one's own ability does not form. Cognitive load also impacted responsiveness (H_4) by leaving little 'bandwidth' available to monitor the target for signs of

suspicion. Liars tended to assume their targets would not be suspicious and unless known to them, would not be capable of recognising their deceptive cues. Surprisingly, when they did detect signs of suspicion; participants showed a strong preference for responsiveness in the form of confessing to deception rather than attempting to adjust their behaviour. Continuing to deceive with the additional pressure of awareness of suspicion was only possible for experts and even then, only after weighing up the possible consequences.

10.1.3 Study three

Study three addressed hypotheses one, two and three. Truthful and deceptive written accounts were collected online at four different time points, each one week apart. Performance was operationalised as the ability to minimise the lie effect (differences between truthful and deceptive accounts) across a range of linguistic variables measured by Linguistic Inquiry Word Count (LIWC) software. Practice (H_1) was measured as in study one, with the addition of Extraversion and Honesty-Humility dimensions from the HEXACO personality framework as these are also indicative of habitual lying behaviour. The longitudinal design allowed task-specific practice to also be included as an additional measure of the hypothesised practice effect (differences in performance between the start and end of the study). A Coefficient of Variation (CV) was calculated for each participant to measure Consistency (H_2) of performance. Calibration (H_3) was tested at the macro and micro level by collecting self-assessment of overall deception ability and estimates of performance at each time point respectively and comparing these with relevant measures of actual performance.

For overall performance, aggregated across all LIWC linguistic indicators, habitual deceptive practice in the form of Machiavellianism predicted better performance. While $LIWC_{Perceptual}$ difference scores were smaller (indicating better performance) for those scoring high in Extraversion and Machiavellianism. Task-specific practice did not improve performance and in the case of Wordcount there was an increase in the lie effect between truthful and deceptive accounts between times one and four. In terms of practice, neither self-reported frequency of lying nor dark triad traits predicted higher consistency. Honesty-Humility and Narcissism both predicted higher CV values and therefore lower consistency, for the overall, combined measure of performance. For $LIWC_{Authenticity}$ only, Extraversion predicted lower consistency. Participants

with better performance did not show any greater consistency across the four time points. High scores in Machiavellianism were associated with better calibration accuracy suggesting that the practice obtained by those with this personality trait allowed them to not only perform better when lying, but also to show meta cognitive awareness of their ability. As in study one, those with better performance also showed more accurate calibration.

10.1.4 Study four

Study four addressed hypotheses one, three and four. A four-part longitudinal design similar to study three was used to collect written truthful and deceptive accounts online. Study four included a feedback intervention half-way through to allow for the assessment of responsiveness. Practice (H_1) was measured as in previous studies by self-report of lying frequency, scores on deception-relevant personality questionnaires (dark triad, HEXACO) and task-specific performance across the four timepoints. Calibration (H_3) was tested by comparing self-assessment of performance at each time point with actual performance ($LIWC_{Authenticity}$ score when lying). Responsiveness (H_4) was measured by calculating a Reliable Change Score for each participant for each of four LIWC variables ($LIWC_{Pronouns}$, $LIWC_{Differentiation}$, $LIWC_{Negemo}$, and $LIWC_{Verb}$) feedback was given on. This was done once at time three to assess immediate responsiveness and once at time four to assess whether any changes to performance were sustained a week later.

Neither immediate responsiveness to feedback (at time three) nor sustained responsiveness (at time four) were predicted by practice of any kind, nor by self-assessment of performance.

There was no benefit of task-specific practice on calibration accuracy. Although participants did vary their linguistic behaviour across the four timepoints in this study, they did not appear to consciously amend it in response to the feedback intervention. With only a small percentage of participants showing any reliable change in their use of linguistic indicators and an even smaller percentage doing so in a way that showed responsiveness to the feedback provided.

10.2 Answering research questions

The use of mixed methods and differing quantitative designs allowed certain hypotheses to be tested repeatedly in a form of internal replication. A synthesis of all the evidence is considered

in the answers provided below to each of the research questions set out in the beginning of this thesis.

10.2.1 RQ1 - *Is it possible to differentiate potential expert liars when performance is uncontaminated by receiver judgments?*

Although expertise was assumed to exist within the domain of deception, it had not previously been objectively tested. So, one of the first questions to answer was whether any high performing individuals could be identified when the possible confound of lie detector performance was removed and/or minimised. The distribution of performance within each of the first three quantitative studies showed that some high performing liars existed across a range of tests, but they were rare. The lack of correlation between third party ratings and any other score in study one might be interpreted to illustrate the importance of objective measures of performance uncontaminated by potentially biased receiver performance.

Qualitative results in study two revealed that an objectively high performing liar (Steve) also demonstrated the other attributes expected of an expert i.e., a dedication to practice, better ability to engage in metacognition and self-regulation, and the ability and willingness to show responsiveness to feedback. Other participants with differing levels of ability could also be positioned along the Dreyfus & Dreyfus (1980) stages of expertise (Novice, Competent, Proficient and Expert), suggesting that there is indeed a skill-like structure to deceptive performance.

Yet the behaviour of the targets does play an important role. One explanation for the relative scarcity of expert liars is that it might not be a skill people generally need or want to develop to a high standard. The poor performance of humans as lie detectors means that there is little need to progress beyond basic competence to fool most people most of the time. As Truth Default Theory explains, most liars are given the benefit of the doubt by credulous receivers (Levine, 2014). When lies are detected outside the laboratory, this is not done by examining the liar's behavioural cues but by contextual information gathered after the fact such as conflicting physical evidence (Park et al., 2002). Not only are most would-be lie detectors unskilled, but it is also socially unacceptable to accuse someone of lying (Bond & Fahey, 1987; Marrett & George, 2013; Vrij, 2000; Vrij, Mann & Fisher, 2006) so suspicions are often pushed aside. This means

there is little reason to invest the time and effort in becoming an expert liar. That such individuals do exist has been demonstrated by research evidence, but it is not surprising that they are rare.

10.2.2 RQ2 - Is there evidence of a practice effect?

It is more correct to ask whether there are practice effects, plural. Although related, there are differences between the effects of practice on performance, calibration, and responsiveness respectively. The connection between practice and performance is supported by vast evidence (Ericsson, 1996; Ericsson et al., 1993; Ericsson & Lehmann, 1996; Hambrick et al., 2020; Helsen, et al., 2000; Macnamara & Maitra, 2019; Simon & Chase, 1973; Starkes et al., 1996) and the Ubiquitous or Power Law of Practice (Newell & Rosenbloom, 1981; Ward et al., 2004). So, the current programme of research expected to see a similar monotonic relationship between the amount of practice and the level of performance. Practice was hypothesised to increase the ability of an individual to calibrate their own perceived and actual performance by making some aspects of lying automatic and thus freeing up cognitive resources to engage in metacognition and self-regulation. Finally, practice ought to provide an individual with a larger reference bank of past experiences to draw upon. Making them more able to recognise suspicion from a target when they see it and giving them a repertoire of possible 'moves' with which to respond. So, it was surprising that in studies one and three there was no evidence for the hypothesised advantage for well-practiced populations. Only Machiavellian personality types demonstrated the expected relationships between practice and performance and practice and calibration (in study three), while responsiveness was not related to practice at all.

One explanation for this is the way practice was operationalised. Although it is the most popular way of recording lying habits within deception research, the 'snapshot' view provided by self-report diaries of lying frequency does not adequately capture practice. Although previously assumed to be a useful proxy for the propensity to lie (Halevy et al., 2014; Levine et al., 2013; Park et al., 2021), more recent longitudinal research (Serota et al., 2021) has revealed that 42% of the total variance in lying frequency reported over a 3-month period was explained by daily within-participant fluctuations. As a result of this study, the same group of authors who

originated the idea of prolific liars (Serota & Levine, 2014) have begun to move towards a more nuanced idea of the existence of both prolific liars and high and low volume lie days.

Even if self-report data was collected over a longer period of time, it would still not provide any information about the quality of the lying engaged in and therefore the usefulness of it as practice. Ericsson et al. (1993) make a clear distinction between mere repetition and deliberate practice which incorporates a conscious effort to improve performance, often focusing on weaknesses, and often reliant upon coaching or instruction to 1) identify areas of practice and 2) to help motivation. This means that a high volume of accumulated lies as measured by simple frequency may not confer the advantages of practice that is assumed. Klein et al. (1986) demonstrated that 10 years of firefighting service in a rural volunteer department were not as effective as 1 year in an inner-city department because the former experience did not provide “the opportunity to be continually challenged” (Klein & Hoffman, 1992, p. 215). In a similar way, telling a high volume of lies to targets without the means or motivation to detect them, or in a context where the odds are in your favour, is not comparable to telling lies to suspicious targets in a novel environment.

Successive attempts to classify deception motivations (Cantarero et al., 2018; Levine et al., 2016; Turner et al., 1975) have used varying frameworks but all emphasise the clear difference between pro-social and anti-social lies. Many pro-social lies are not just tolerated but expected from a competent social actor, with failure to deliver them seen as a major misstep (Giles et al., 2019; Levine & Schweitzer, 2014). This means the risk of being ‘caught’ in such lies is non-existent, making them of low or no value in terms of deception practice. Anti-social lies told by necessity may be effective in developing the skill of lying, but they also do not represent deliberate practice. Only lies told by choice, with the intention of testing and developing one’s abilities would align with practice as defined by Ericsson et al. (1993). Current measures of self-report of lying frequency do not provide sufficient information to distinguish between these very different kinds of deception which may contribute to the lack of association between lying frequency and expertise.

It is entirely possible that prolific liars are engaging in repeated lying but not practice. In that they are simply solidifying poor habits by making the same mistakes often, hiding in the truth

default, rather than consciously seeking out opportunities to improve their performance. The experience of Steve in study two was unique in that he was given the chance to practice deception regularly against a 'worthy adversary' in the form of his police officer mother. For most people, such a situation would need to be engineered or sought out in some way. The risks involved mean that this would be an unappealing path for all but the most dedicated. But the inherently manipulative, goal-directed, instrumental nature of Machiavellians may drive them to seek and obtain opportunities for deliberate practice in deception. As study three showed, high scores on Machiavellianism were associated with not only better performance but also better metacognitive awareness of their own abilities and thus more accurate calibration.

Based on existing literature, the dark triad were all assumed to be equally likely to have obtained sufficient practice by their habitual lying behaviour to achieve expert status. But neither narcissism nor psychopathy were associated with any greater ability. This is likely to be because of the differences in strategic focus between the three traits. Jones and Paulhus (2017, p.29) describe it thus "Machiavellians plan ahead, build alliances, and do their best to maintain a positive reputation...Machiavellians are strategic rather than impulsive. They avoid manipulating family members, and any other behavioural tactics that might harm their reputation, for example, feigning weakness. In sum, the key elements of Machiavellianism appear to be (a) manipulateness, (b) callous affect, and (c) a strategic-calculating orientation. This last element is often overlooked by researchers". Perhaps all three of the dark triad might be equally motivated to improve their deceptive abilities, but it might be that only Machiavellians have the strategic orientation required to achieve this aim. By selectively creating opportunities to practice deception they come closest to the deliberate practice seen in sports, musical performance and other domains.

10.2.3 RQ3 - Is deceptive performance consistent across time?

Based on the evidence available from the current research, deceptive performance is consistent across time, but this is not dependent on the expertise of the liar. Better liars were no more consistent than poor liars and there was no association between practice and consistency. But overall, consistency of performance was high. It seems that poor performers are consistently

poor and high performers are consistently good. This may be because deception was tested at a point in development where it has stabilised. The move from unstable to stable performance happens early in the developmental trajectory (Bornstein et al., 2016). Early (e.g., childhood) attempts at lying may show greater variation with the occasional successful attempt by an otherwise poor liar and vice versa for generally good performers slipping. But the adult sample used for study three might have represented a group for whom the ability to construct and deliver written lies has settled.

The channel used to test consistency may have influenced results. To facilitate the longitudinal design and allow an appropriate sample, online written lies were elicited from participants. But there is evidence that the so-called 'linguistic thumbprint' of how a person communicates is very stable (Heering & Volbert, 2017; Mehl & Pennebaker, 2003). Liars who may have varied levels of performance in an interactive or face-to-face task could have shown consistency in this purely linguistic environment because of the nature of the task. But, given the ubiquity of online communication it is also highly likely this channel is used by expert liars, for whom a chameleon-like verbal presentation may be much more accessible than for nonexperts.

10.2.4 RQ4 - Do high performing liars show superior calibration between perceived and actual ability?

Support for the hypothesised relationship between performance and calibration accuracy was provided by all four studies in the thesis. In both an interactive in-person interview and when providing written lies in an online environment, with differing measures of performance, better liars were more accurate at calibrating their perceived and actual performance. It is possible that the nature of lying as an antisocial activity may cause participants to under-rate their ability. When participants talked of deceptive skill in the qualitative interviews they did so with caveats and excuses, prefacing claims to be good at lying with phrases like "it's really bad but..." demonstrating an awareness of the undesirable nature of lying. But as data were collected anonymously it is likely that participants were honest. Especially as other more unacceptable behaviour was freely admitted to via the dark triad measures.

The data showed a similar pattern to the work of Kruger and Dunning (1999) in that better liars tended to underestimate their performance and poor liars tended to overestimate. However,

study two revealed that this is not a product of poor liars not knowing what good lying performance requires but rather the result of a lack of feedback. The cognitive load of delivering deception makes concurrent monitoring for subtle signs of suspicion from the target if not impossible, then certainly extremely difficult for nonexperts. Thus, their only way of assessing performance is whether their target accuses them of lying or not at 'point of sale'. As discussed above, this is highly unlikely even if suspicions are aroused because of the socially unacceptable nature of such an accusation and the social sanction implied. So, liars assume they have been successful (with the corollary assumption that their performance must have been good) when this is not the case. Even in the rare situation that a lie is challenged, it is unlikely that any degree of actual performance-based feedback is provided. The phrase "I don't believe you" might be said but it will not be followed by a detailed explanation of which precise verbal, nonverbal and paraverbal behaviour was unconvincing.

The process described above feeds poor quality information into the self-regulation cycle, making the development of expertise especially challenging. It is not clear whether more deliberative approaches to practice, or superior metacognitive processing (or both) allows certain individuals to overcome the poverty of feedback, or whether, somehow, the development of deceptive expertise confers improved metacognition. What is evident is that expert liars do indeed show superior calibration between perceived and actual ability.

10.2.5 RQ5 - Are high performing liars able to flexibly apply their skills showing adaptability and responsiveness to feedback?

Expert liars should be able to respond to feedback by adjusting their behaviour to maintain a high level of performance. However, in a controlled experimental setting (study three) this was not seen. When provided with explicit albeit 'Barnum' feedback on their linguistic behaviour, very few participants made either the appropriate adjustments based on the instructions around deception relevant linguistic cues, or any clear adjustments at all, instructed to create more believable lies. Better liars were slightly more likely to amend their use of differentiations (words that indicate category membership such as 'hasn't' or 'but'), not immediately but one week after receiving the feedback intervention. For all other variables there was no relationship

between responsiveness and deceptive performance either immediately or after one week.

Overall, there was very little change in linguistic behaviour in response to feedback.

Computer-mediated deception as used in study four affords the liar time to edit and craft their message (Hancock et al., 2009; Markowitz & Hancock, 2018) so responsiveness should have been easier in this channel, yet these hypotheses were not supported. As outlined above, linguistic habits are relatively invariant, and feedback is rare in the domain of deception. This may have posed a doubly challenging task, despite its apparent simplicity. This may have been the first time participants had ever been instructed to adjust specific behaviour in order to become more believable. It is possible that the lack of responsiveness was related to the novelty and difficulty of the task rather than an intrinsic lack of responsivity. Study four measured a specific type of responsiveness (linguistic) when liars may be more accustomed to adjusting their nonverbal or paraverbal behaviour.

Qualitative interviews in study two provided a more nuanced view on what responsiveness involves on the part of the liar. Here nonexpert participants described adjusting their deceptive behaviour (via any channel) while engaged in lying as being far too demanding to contemplate. Their limited cognitive resources are fully engaged in delivering a lie and if they perceive that the target is suspicious the most likely outcome is confession. This was presented as preferable because it avoided the discomfort of feeling under suspicion, and because it would do less damage to their ongoing relationship with the target than attempting to continue the lie and being unsuccessful. Only the expert liar (Steve) could conceive of conditions under which he would demonstrate responsiveness. This was because he had a far greater repertoire of responses available to him based on wider experience of lying to different targets under different circumstances. For a nonexpert with only a limited range of verbal, nonverbal and paraverbal behaviour, coming up with an alternative strategy while already experiencing high cognitive demand was inconceivable. Steve's lower cognitive load while lying combined with an internal repository of possible responses made it possible for him to demonstrate responsivity. But even he would not attempt to do so in circumstances he perceived as too challenging. On the basis of studies three and four it seems reasonable to conclude that responsiveness is possible but demanding. Depending on the synchronisation of multiple complex cognitive

operations. Thus, it might be the preserve of true experts and as already discussed such individuals are likely to be exceedingly rare because of the multiple challenges involved in attaining deceptive expertise.

10.2.6 Can deceptive performance be conceptualised as a skill, as defined by the General Expertise Framework (GEF)?

Considering the answers to all the subordinate research questions, it is apparent that expertise in the domain of deception may exist and aligns with many but not all the features of the GEF. Its development requires a convergence of circumstances and individual traits to first overcome the social prohibitions against lying and subsequently create sufficient quality and quantity of practice to attain high levels of performance, calibration and responsiveness. There may be multiple presentations of a skilled liar and consistency of performance may only appear in certain channels or situations. Testing must be ecologically valid to take into account the situationally contingent nature of deception. But when expert liars are identified, they will have engaged in dedicated practice, they will accurately calibrate their perceived and actual performance, and this will make them capable of adaptability and responsiveness to feedback.

10.3 Contribution to theoretical literature

The insights provided above allow for elaboration of the theoretical structures provided by IDT, ADCAT and GEF. Neither IDT nor ADCAT specifically addresses expertise, and both make assumptions about the abilities of liars that the current findings challenge. The General Expertise Framework is built upon research into skills that are socially acceptable and sought after rather than actively discouraged. This means that it does not fully account for skills such as deception.

10.3.1 IDT

IDT allows for differences in deceptive ability and states that more skilled senders will be more attuned to the behaviour of their target and better able to react to suspicion. But the theory assumes that even poor liars will actively engage in a dialogical exchange. It is a fundamental tenet of IDT that both parties, liar and target, are highly responsive to behavioural displays from one another. The current research contradicts this position, suggesting that responsiveness is

beyond all but expert liars. For those with lower levels of skill, the act of producing and delivering a lie is so effortful that there is no additional cognitive capacity for attending to cues of suspicion let alone responding to them. The apparent responsiveness that Burgoon et al. (1996) have reported may be an example of style matching rather than conscious adaptation of their communication in reaction to suspicion, thus a subconscious rather than conscious activity. Hancock et al. (2008) demonstrated that both liars and receivers amended their linguistic behaviour despite being unaware they were doing so. It is possible that nonverbal behaviour is subject to the same phenomenon, and this would not necessarily indicate responsiveness. The unique insights from qualitative research suggest that IDT overstates the ability of most liars to attend to and respond to signs of suspicion from their target especially when these are covert.

10.3.2 ADCAT

ADCAT (Walczyk et al., 2014) recognises the advantage that practice can confer and includes a degree of calibration for liars in making the quasi-rational choice of whether and how to lie. The four processing components account for the complexity of deception but despite this, the theory does not distinguish between liars of differing levels of expertise. The authors simply state that “throughout serious deception, individuals are inferring the current or potential mental states of targets and taking steps to minimize the allocation of cognitive resources during delivery...” (p. 22). There is an assumption that all liars are equally able to monitor and control their own behaviour during deception which the current research disputes.

There are clearly fundamental differences in cognitive processing between expert and nonexpert liars. To the extent that it may not be possible to conceptualise the cognitive process of an episode of deception in a single model that captures the experience of experts and nonexperts. The decision component of ADCAT is revisited recursively while deception is ongoing, and it can be revoked at any time. The insights drawn from the novel application of qualitative enquiry suggest that, when faced with suspicion nonexpert liars are more likely to ‘bail out’ of their lie and confess, rather than attempt to adjust their behaviour. Thus, target behaviour whilst lying is explicitly linked with the decision process which should be represented within the model. Nonexperts may follow a fairly linear journey through the four processing

components, but experts can and do return to the Decision component and recommit to the lie albeit with amended technique. The options available to a liar at each stage of the unfolding deception can be thought of as branches on a decision tree. These are limited by the amount of practice a liar has, because practice confers a greater repertoire of possible 'moves' to make when deceiving. They are also limited by what an individual liar has the confidence to attempt, something underpinned by calibration ability. Because expert liars hold this enhanced repository of ways to deceive, the "Construction" element is less effortful for them as it involves invoking a pre-existing template of content and associated delivery behaviour rather than coming up with a novel lie in the moment. Expert liars can also automate certain elements of deception and thus free up cognitive resources during the "Action" element to allow them to monitor their target more effectively. Whereas nonexperts are unlikely to be capable of the simultaneous monitoring of self and target that ADOACT assumes all liars conduct. While still the most useful cognitive theory suggested thus far, because ADCAT does not capture the cognitive experience of expert liars across these several processes, it should be viewed as a model of deception for non-experts only.

10.3.3 GEF

The classic description of the trajectory from novice to expert suggests that learners follow phases of 1) instruction 2) training and 3) experience (Ericsson et al., 1993). The exact role and the importance of each stage have been disputed (Hambrick et al., 2020) but the wide range of skills covered by the GEF all include each of these to a greater or lesser extent. Deception is very different. Apart from the unusual case of undercover operatives, there is no period of deliberate instruction. Deception is actively discouraged from childhood onwards. To obtain any kind of experience, a liar must commit an undesirable act against another person. This presents immediate barriers to practice for many individuals on moral grounds and for others because of the possible risks of being caught. At best the skill can be learned via observation, trained by trial and error and experience gained only through risking the social consequences of failure. Thus, deception provides an example of an antisocial skill which is something the GEF is not equipped to explain.

Deception also lacks a vital part of the metacognitive cycle at the core of the GEF (Feltovich, 2006; Zimmerman, 2006). Theories of expertise describe moving from external feedback to developing the ability to self-regulate based on metacognitive awareness, but this is only possible after a period of receiving informative external feedback (Ericsson et al., 1993). As explained above, a liar only ever receives outcome information rather than actual feedback on performance. Outcome information is not only not feedback, but also not necessarily reflective of performance. One could tell a perfect lie but then information comes to light that gives away the deception. The outcome in this scenario would be failure but the performance may have been masterful. Perhaps more common is delivering a poor performance to a target who is incapable or disinclined to detect deception. Here the outcome would be success, denying the liar potentially useful feedback on the poor quality of performance.

Expert liars with superior calibration accuracy exist, but how they develop their abilities is not accounted for within the existing framework, suggesting the GEF could be revised and elaborated on more fully with respect to complex, dynamic, cognitive and interpersonal skills of the type explored here. The existing framework owes much to qualitative interviews with expert performers from across a wide range of domains. Further research of this kind with expert liars will allow for a more complete theory to be developed that encompasses antisocial skills.

While it was not within the scope of the current project to develop a new framework for antisocial skill, some suggestions can be made based on the findings of this thesis. Antisocial skill development must account for the lack of explicit instruction and feedback. Engaging with this process requires a willingness to hurt others and a degree of comfort with risk-taking, but not of the reckless type often associated with psychopathy. Rather, an expert in deception must be strategic. Driven by an abundance of motivation, it is likely that the potential expert begins with a phase of self-instruction based on careful observation of others alongside trial and error. Having developed proficiency, they proactively seek challenging practice opportunities in lieu of structured training. Ruthlessness and/or selfishness in the pursuit of their goals is one of the defining psychosocial differences between elite and super elite athletes (Hardy et al., 2017) and may also prove to be a key element of expertise in deception.

10.4 Practical Implications

The practical importance of gaining a better understanding of deception production was made clear in Chapter one. If task-specific practice results in increased lying performance, then using standardised investigative interview procedures such as the 'PEACE' model (NCF, 2004), may be inadvertently enhancing deceptive skill amongst those who repeatedly encounter the police. Additionally, existing deception detection techniques which focus on cognitive load may be ineffective against expert liars who would not be subject to increased mental demands when lying. Finally, the use of more complex tactics such as Strategic Use of Evidence (SUE) may be unsuitable for expert liars if they are capable of the concurrent monitoring of, and responsiveness to their target that is proposed by expertise theory. The results of this research project suggest that law enforcement need not substantially adapt their current tools in response to deceptive expertise. The challenges of becoming an expert liar outlined above mean that such a person is likely to be exceptionally rare. Studies three and four both demonstrated no benefit of task-specific practice in written deception, and study two revealed that even high performing liars struggle with the demands of cognitive load when lying, with all but the very best unable to spare any mental resources to monitor or respond to their target. This means that the current best practice techniques of law enforcement within the UK are appropriate for use with the majority of suspects.

A further potential contribution of this programme of research is improved insights into the training and selection of undercover officers and agents, a role in which deceptive expertise is critical (Semrad et al., 2020). Given the unique way in which lying expertise seems to develop – at the margins of socially acceptable behaviour, self-instructed in a hostile environment rather than following a programme of deliberate instruction – selection of existing experts is likely to be a more important element than attempts to train deception. This thesis suggests a relationship between Machiavellianism and deceptive skill. But the qualitative results illustrate that far from being an entirely 'dark' experience, for experts, deception can feel like a game. This element of playfulness, alongside the enhanced social cognition required to concurrently monitor the self and respond to subtle feedback is a key attribute for law enforcement agencies

to consider when recruiting undercover officers. Also important would be to select for those with the increased flexibility and adaptability of true experts. The non-expert preference for admitting guilt when under suspicion could prove fatal in the situations such operatives find themselves. So having multiple alternatives when faced with signs of doubt is essential.

10.5 Limitations

In addition to the limitations specific to each study discussed in the relevant chapters, there is a need to consider some broader issues that have impacted the thesis. This research set out to investigate whether each element of the GEF could be demonstrated in the domain of lying. But the reality is that expertise functions as a suite of interrelated elements that are inseparable. Practice can only be carried out effectively if one has sufficient meta-cognition to integrate it into the self-regulatory cycle. Calibration and responsiveness are also both dependent on metacognition as well as feedback. Separating expertise into distinct testable hypotheses creates an illusory sense of how it is experienced in reality, as study two showed.

Levine (2018b) argues that deception in 'the lab' is one of many possible valid ecologies within which to research the phenomenon. Although the circumstances do not match all possible types of lying, it is sufficiently representative of the relevant context and environment to confer external validity. However, when seeking to test deceptive expertise, the limits of the controlled laboratory setting become more problematic. Deception is highly variant depending on context and part of the skill of lying is in its strategic deployment. One of the reasons that calibration of deceptive skill is so important is that it can guide a liar's decision on whether or not to attempt deception in any given setting. An expert will know what their own strengths and weaknesses are and will use these when lying (alongside any channel affordances), to maximise the chances of success. Any experimental design in which participants are compelled to lie or to lie in a particular channel removes this vital element from the equation and risks inaccurate assessment of skill. Study one sought to allow a much greater range of options than usual for liars in experiments. But each person was still required to lie (even if only by omission) as a part of the investigative interview. Studies three and four required written accounts, divorcing the verbal content from the sender's nonverbal and paraverbal behaviour. It is

conceivable that some lies that were highly detectable 'on paper' would have fared better if delivered by the liar in a multi-channel format.

Additionally, there are likely to be several subcomponents that make up expert lying performance in the same way that good hand eye coordination contributes to expertise in tennis playing. A research setting necessitates testing individual components separately to maintain experimental control and avoid confounding effects, but this results in an unnatural context. There is merit in exploring the written-only channel for example as this type of communication becomes increasingly prevalent in modern life and therefore used for deception. Although it may be somewhat artificial, there is no reason to suggest that the experimental setting deviates so dramatically from the relevant skill base that it renders the current research void. Scams and fraud via dating sites, grooming of minors and radicalisation in chat rooms and via social media, and even some initial police statements all take place in a written environment online. But these are generally very targeted communications to a specific individual. Research (Picornell, 2013) has shown that preparing a written statement for an unknown other who is not present at the time or place of writing is qualitatively different from a text-based interaction and results in different use of language.

Finally, the novelty of much of the research in this thesis meant there were few established protocols on which to rely. For practical reasons four time points were selected as sufficient to demonstrate consistency while not being so long that attrition would present a major issue. Perhaps this was not long enough for patterns of variation to be measured or the format of the task simply asked too much. If participants were still adjusting to the requirements of a novel paradigm, they may have failed to demonstrate consistency and/or responsiveness that would have been evident in a longer study. In an attempt to account for the small effect sizes and lack of reliability of established cues to deception, a rigorous selection process was followed in creating the Matrix of measurements employed in study one. But the idiosyncratic nature of deceptive performance means that this may have missed key elements of each person's truthful baseline. On reflection, there is nothing that immediately suggests fundamental error in the selection of measures, but future research using the full Matrix would be optimal.

10.6 Future research

Additional analyses of the current data are one avenue for future research. It was outside the scope of this research programme to use a bottom-up, text-mining approach to linguistic deception. But the large corpus of written lies and truths provided by studies two and three lends itself to machine learning and this is a growing area of research (Enos et al., 2006; Schutte et al., 2021). One future study possibility is to have human raters assess the believability of the written accounts and use machine learning to derive profiles of how language is used by successful liars based on these ratings. This would be a strong interdisciplinary project where psychological techniques contribute to domains of Computer Science and Linguistics. There was no effect on performance from the task-specific practice provided by a three-week longitudinal design (studies two and three). In previous reaction time studies participants were able to rapidly improve performance by reducing the discrepancy between truthful and deceptive responding (e.g., Van Bockstaele et al., 2012). So, the executive control processes responsible for response inhibition seem to respond to practice. But a similar reduction in linguistic differences between truthful and deceptive written accounts was not achieved in two studies in the current research. An interesting possible line of analysis would be to compare the performance across time between participants with higher and lower levels of Machiavellianism. The current sample size is small because of missing dark triad measures so this would be exploratory but potentially revealing of differences in the ability to adapt to a novel type of deception.

Although practice is a key component of expertise, the question of what useful practice in deception 'looks like' remains unanswered. One potentially fruitful line of research is to collect data that reveals the types, motivations and contexts of lies told. Harnessing wearable technology alongside an experience sampling measure within a smartphone app would allow participants to submit real-time data on why, where, when, and to whom they are lying while their physiological data is recorded automatically. Concurrent or prompted retrospective measures of their emotional responses and the outcome of various deception could also be collected. This would move self-report data from the blunt instrument of a single numerical data point per day to a rich idiographic picture of how lying is used and what the consequences

are. Including when opportunities for deception are not taken. The naturalistic setting of data collection from within the everyday lives of participants would resolve many of the criticisms of ecological validity that lab-based deception research is subject to (Levine, 2018b).

From such an initial large-scale study, purposive samples could be recruited for more detailed qualitative research. For example, especially high-volume liars, those who appear to have little physiological response when lying, or those with a high reported success rate. Expert interviews are a common technique in expertise research but because of the low rate of deception experts it is unlikely many will appear in samples recruited in the traditional way. Many potential expert liars are unable or unwilling to participate in an expert interview. Undercover officers from law enforcement and intelligence have usually signed agreements with their governments prohibiting any discussion of their working lives. Highly successful con artists are unlikely to be willing to share the 'tricks of the trade' with only very rare examples of reformed characters (e.g., the stage illusionist and skeptic James Randi). But if security concerns could be overcome, there is great value in taking the expert interview approach as this would shed light on the otherwise unreachable qualitative information such individuals hold.

Finally, the longitudinal approach taken in the current research has the potential to be expanded upon to develop a stronger test of consistency of performance. Taking the same sample of participants and testing their ability to deceive across channels (verbal, nonverbal, paraverbal) and contexts (one to one, one to many, with strangers or those close to them, with preparation or "off the cuff") would answer the question of whether there are only specialist deceivers or some individuals who excel in all areas and all types of deception like an Olympic decathlete. As Dreyfus (2004) explained "... facing an unfamiliar situation... an expert does not calculate. He or she does not solve problems. He or she does not even think. He or she just does what normally works and, of course, it normally works" (p. 180). With sufficient experience different targets ought to appear to an expert liar the same way that various chess positions do for a chess master (Ericsson et al., 2006). That is, as familiar patterns similar to situations experienced before. So that rather than dealing with individual targets, they can be treated as archetypes and managed as known quantities even if they are in fact strangers.

10.7 Conclusion

Following a systematic review of the available literature and careful consideration of theoretical models, this thesis carried out four studies using mixed methods to answer the question: Can deceptive performance be conceptualised as a skill, as defined by the General Expertise Framework? The results suggest that deception is a particular example of a skill, learned in a wicked environment, poorly practiced by most, and situationally contingent. Expert liars can be identified by using objective measures and they demonstrate many of the features predicted by the GEF. Namely, an effect of practice (focused, strategic use of lying not mere repetition), superior calibration of perceived and actual performance, and the ability to adapt their behavior in response to suspicion. There are many types of lying and experts are likely to specialise based on their own natural inclinations and the channels and methods that have proven effective in the past. Thus, future research in this area needs to embrace novel or complex multivariate approaches to measuring performance and continue to employ the valuable qualitative methods that have provided such unique insights in the current research.

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Appendix A
Systematic review items

Table A1

List of all articles considered at the stage of abstract review.

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| Alloway, T. P., Mccallum, F., Alloway, R. G., & Hoicka, E. (2015). Liar, liar, working memory on fire: Investigating the role of working memory in childhood verbal deception. <i>Journal of Experimental Child Psychology</i> , 137, 30–38. |
| Anolli, L., & Ciceri, R. (1997). The voice of deception: Vocal strategies of naive and able liars. <i>Journal of Nonverbal Behavior</i>, 21(4), 259-284. |
| Atkinson, D. J. (2019). What makes a good liar? The relationship between cognitive and personality assessments' and lying ability using traditional and strategic interview approaches. |
| Berger, C. R., & Jordan, J. M. (1992). Planning sources, planning difficulty and verbal fluency. <i>Communications Monographs</i> , 59(2), 130-149. |
| Billings, F. J. (2004). Psychopathy and the ability to deceive (Doctoral dissertation, The University of Texas at El Paso) |
| Bond, C. F., Kahler, K. N., & Paolicelli, L. M. (1985). The miscommunication of deception: An adaptive perspective. <i>Journal of Experimental Social Psychology</i>, 21(4), 331-345. |
| Book, A., Methot, T., Gauthier, N., Hosker-Field, A., Forth, A., Quinsey, V., & Molnar, D. (2015). The Mask of Sanity Revisited: Psychopathic Traits and Affective Mimicry. <i>Evolutionary Psychological Science</i>, 1(2), 91–102. |
| Bowditch, P. (2014). James Randi: An honest liar. <i>Australasian Science</i> , 35(10), 20. |
| Burgoon, J. (2015). When is Deceptive Message Production More Effortful than Truth-Telling? A Baker's Dozen of Moderators. <i>Frontiers In Psychology</i> , 6. |
| Burgoon, J. K., Buller, D. B., & Guerrero, L. K. (1995). Interpersonal deception: IX. Effects of social skill and nonverbal communication on deception success and detection accuracy. <i>Journal of Language and Social Psychology</i>, 14(3), 289-311 |
| Burgoon, J. K., Buller, D. B., Ebesu, A. S., White, C. H., & Rockwell, P. A. (1996). Testing interpersonal deception theory: Effects of suspicion on communication behaviors and perceptions. <i>Communication Theory</i> , 6(3), 243-267. |
| Burgoon, J. K., Buller, D. B., White, C. H., Afifi, W., & Buslig, A. L. (1999). The role of conversational involvement in deceptive interpersonal interactions. <i>Personality and Social Psychology Bulletin</i>, 25(6), 669-686 |
| Clements, J. A., Boyle, R., & Proudfoot, J. G. (2016). Exploring political skill and deception. <i>International Journal of Sociology and Social Policy</i> |
| Cody, M. J., & O'Hair, H. D. (1983). Nonverbal communication and deception: Differences in deception cues due to gender and communicator dominance. <i>Communications Monographs</i>, 50(3), 175-192. |
| Conroy, E., Kowal, M., Toth, A. J., & Campbell, M. J. (2020). Boosting: Rank and skill deception in esports. <i>Entertainment Computing</i> , 100393 |

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| Crossley, L. N. (2016). The influence of the Dark Triad and communication medium on deceptive outcomes (Doctoral dissertation, University of British Columbia) |
| Davis, S. K., & Nichols, R. (2016). Does Emotional Intelligence have a 'Dark' Side? A Review of the Literature. <i>Frontiers in Psychology</i> , 7, 1316. |
| Debey, E., De Schryver, M., Logan, G. D., Suchotzki, K., & Verschuere, B. (2015). From junior to senior Pinocchio: A cross-sectional lifespan investigation of deception. <i>Acta psychologica</i>, 160, 58-68. |
| Debey, E., Ridderinkhof, R. K., De Houwer, J., De Schryver, M., & Verschuere, B. (2015). Suppressing the truth as a mechanism of deception: Delta plots reveal the role of response inhibition in lying. <i>Consciousness and Cognition</i> , 37, 148-159. DOI: 10.1016/j.concog.2015.09.005 |
| DePaulo, B. M., & Rosenthal, R. (1979). Telling lies. <i>Journal of personality and social psychology</i>, 37(10), 1713 |
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Note: Bold items were included in review

Appendix B
Self-report battery

Combined questions from 'Lying in everyday life' questionnaire (Gozna et al., 2001) with the Lying Prevalence measure from the Science Museum study (Serota & Levine, 2014)

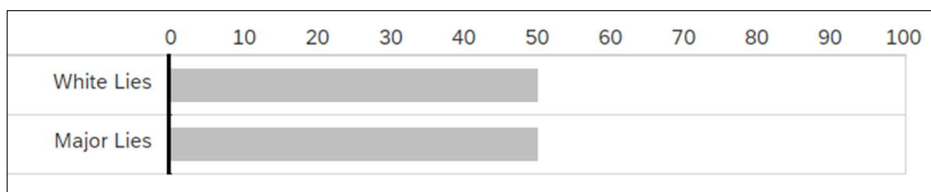
1. Think about where you were and what you were doing over the past 24 hours, from this time yesterday to right now. Think about all the kinds of people you might have lied to (e.g. family members, friends or other people you know socially, people you work/study with or know as contacts, people you do not know but might see occasionally like a shop assistant, and total strangers) and how you might have talked to them, either face to face or some other way, such as in writing, by phone or over the internet.

On Average, how many times in the last 24 hours did you tell White Lies? Click below next to the number that best describes the number of White Lies you have told. If you have not told any White Lies please click 0

2. Think again about where you were and what you were doing over the past 24 hours, from this time yesterday to right now. Think about all the kinds of people you might have lied to (e.g. family members, friends or other people you know socially, people you work/study with or know as contacts, people you do not know but might see occasionally like a shop assistant, and total strangers) and how you might have talked to them, either face to face or some other way, such as in writing, by phone or over the internet.

On Average, how many times in the last 24 hours did you tell Major Lies? Click below next to the number that best describes the number of Major Lies you have told. If you have not told any Major Lies please click 0

3. What percentage of the lies you tell do you think remain undetected?



4. Please answer the questions below by clicking the circle that best reflects your answer to that question for WHITE LIES.

| | Not at All | Rarely | Occasionally | Neutral | Moderately | Frequently | A Lot |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Generally speaking, do you worry about the possibility of being caught when you tell a lie? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Generally speaking, do you feel guilty when you lie to someone? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Generally speaking do you feel duping delight when you lie to someone (the joy associated with successful deception)? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| When lying, do you feel that you are manipulating the person on the receiving end of the lie? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

5. Please answer the questions below by clicking the circle that best reflects your answer to that question for MAJOR LIES.

| | Not at All | Rarely | Occasionally | Neutral | Moderately | Frequently | A Lot |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Generally speaking, do you worry about the possibility of being caught when you tell a lie? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Generally speaking, do you feel guilty when you lie to someone? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Generally speaking do you feel duping delight when you lie to someone (the joy associated with successful deception)? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| When lying, do you feel that you are manipulating the person on the receiving end of the lie? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. How easy do you think it is for another person to detect the lies you tell?

| | Very Difficult | Difficult | Somewhat Difficult | Neutral | Somewhat Easy | Easy | Very Easy |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| WHITE lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MAJOR lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

7. How much mental effort do you consider it takes to tell a lie?

| | No effort at all | Low effort | Some effort | Neutral | Moderate effort | High effort | Very high effort |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| WHITE lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MAJOR lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. Generally speaking do you consider yourself good at telling lies?

| | Very poor | Poor | Quite poor | Neutral | Quite good | Good | Very good |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| WHITE lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MAJOR lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9. Generally speaking, do you find it difficult to tell a lie?

| | Very untrue | Untrue | Somewhat untrue | Neutral | Somewhat true | True | Very true |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| WHITE lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| MAJOR lies | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Appendix C

Life Events Inventory

Table C1

Items in the Life Events Inventory showing frequency of selection in studies three and four (combined)

| Experience | Selected Truth | Selected Lie |
|--------------------------------------------------------------------|-------------------|-----------------|
| Become a parent | 4 | 21 |
| Been back-packing | 11 | 13 |
| Been bitten by a dog | 29 | 40 |
| Been bitten by a snake | 3 | 43 |
| Been bungee jumping | 3 | 19 |
| Been caught in a natural disaster (hurricane, tsunami, earthquake) | 18 | 19 |
| Been electrocuted | 8 | 9 |
| Been hit by lightning | 0 | 11 |
| Been in a hot air balloon | 5 | 29 |
| Been in a plane crash | 0 | 23 |
| Been on a blind date | 4 | 43 |
| Been on a cruise ship | 10 | 19 |
| Been on a submarine | 2 | 3 |
| Been on safari | 6 | 6 |
| Been pulled over by the police | 21 | 15 |
| Been skinny-dipping | 12 | 19 |
| Been stung by a jellyfish | 15 | 50 |
| Been surfing | 10 | 24 |
| Been to a fashion show. | 9 | 12 |
| Been trapped in an elevator. | 25 | 49 |
| Been yelled at by someone at my job. | 31 | 12 |
| Caught a fish | 21 | 20 |
| Changed a car tire | 5 | 5 |
| Cut your own hair. | 57 | 27 |
| Donated an organ | 0 | 8 |
| Failed a driving test | 1 | 0 |
| Fainted in public | 57 | 42 |
| Faked being sick to get out of work or school | 50 | 2 |
| Fallen asleep on public transport | 25 | 29 |
| Fallen off a bike | 57 | 10 |
| Got a tattoo | 26 | 55 |
| Got married | 14 | 24 |
| Got stitches | 29 | 22 |
| Had a broken arm or leg | 45 | 54 |

| | | |
|--------------------------------------------------------------|----|----|
| Had a broken jaw | 1 | 22 |
| Had a severe allergic reaction. | 21 | 39 |
| Had braces fitted | 38 | 8 |
| Had major surgery | 18 | 7 |
| Had someone walk in on you naked | 5 | 7 |
| Had to ask to borrow a stranger's phone | 13 | 20 |
| Had to call the RAC/AA/motorway recovery service | 13 | 12 |
| Lied in a job interview | 10 | 8 |
| Locked yourself out of your house | 46 | 17 |
| Looked through someone else's phone without their permission | 24 | 13 |
| Met someone famous | 1 | 0 |
| Missed a flight | 22 | 68 |
| Moved to another country | 29 | 15 |
| Played in a sports team that won a competition | 9 | 11 |
| Pretended to be someone else | 13 | 9 |
| Quit a job | 35 | 18 |
| Raised money for charity | 49 | 7 |
| Represented your country in a sport or cultural event | 6 | 10 |
| Ridden a horse | 29 | 9 |
| Ridden an animal other than a horse | 18 | 16 |
| Run a marathon | 4 | 21 |
| Seen the Northern Lights | 0 | 1 |
| Sent food back in a restaurant | 13 | 28 |
| Sung karaoke in front of people. | 18 | 12 |
| Trained your pet to do a trick | 16 | 10 |
| Visited Afghanistan | 0 | 1 |
| Visited Armenia | 1 | 3 |
| Visited Australia | 12 | 19 |
| Visited Bolivia | 1 | 2 |
| Visited Brazil | 3 | 9 |
| Visited Cameroon | 0 | 1 |
| Visited Canada | 11 | 14 |
| Visited China | 5 | 11 |
| Visited Egypt | 10 | 9 |
| Visited France | 72 | 17 |
| Visited Germany | 32 | 3 |
| Visited Haiti | 0 | 2 |
| Visited Jamaica | 3 | 6 |
| Visited Japan | 8 | 13 |
| Visited Malaysia | 3 | 5 |
| Visited Mexico | 7 | 8 |
| Visited Morocco | 9 | 12 |
| Visited South Africa | 6 | 4 |

| | | |
|-----------------------------------|----|----|
| Visited Spain | 39 | 8 |
| Visited Zimbabwe | 2 | 4 |
| Vomited in public | 54 | 29 |
| Walked in on someone else naked | 10 | 8 |
| Won an award | 24 | 3 |
| Won the lottery | 3 | 20 |
| Worked at a fast-food restaurant. | 1 | 0 |
| Worked in a clothing store | 24 | 36 |
| Written a book that was published | 3 | 12 |

Appendix D

R code for Response Surface Analysis

Example code for LIWC variable "Hearing"

```
##### Get Data #####
library(readxl)
data <- read_excel("rfile.xlsx", sheet="Sheet1")
##### Rename Variables #####
library(reshape) #You may need to install the reshape package first: install.packages("reshape")
library(dplyr)
rsa.data <- data
rsa.data$ParticipantNumber <- as.numeric(rsa.data$ParticipantNumber)
##### Centering #####
rsa.data$HearingLie <- rsa.data$HearingLie + 1 #(I added 1 jsut in case of 0)
rsa.data$HearingTruth <- rsa.data$HearingTruth + 1 #(I added 1 just in case of 0)
midpointlie <- 1.564853 #enter the midpoint of your predictors (e.g., midpoint <- 2, I used the
meanscore for each variable)
midpointtruth <- 1.559922
midpointlie <- 0.5648527
midpointtruth <- 0.5599225
rsa.data <- within.data.frame(rsa.data, {
  centered.predictor1 <- HearingTruth - midpointtruth #Center predictor 1
  centered.predictor2 <- HearingLie - midpointlie #Center predictor 2
  squared.predictor1 <- centered.predictor1 * centered.predictor1 #Create squared term
  squared.predictor2 <- centered.predictor2 * centered.predictor2 #Create squared term
  interaction <- centered.predictor2 * centered.predictor1 #Create interaction term})

##### Run MLM #####
# we assume the intercept is random but not the five polynomial effects.
library(nlme) #You may need to install the nlme package first: install.packages("nlme")
mlm.model <- lme(Hearing ~ centered.predictor1 + centered.predictor2 + interaction +
  squared.predictor1 + squared.predictor2,
  data = rsa.data,
  random = ~ 1 | Time,
  na.action = "na.omit" )
summary(mlm.model) #View Model
vcov(mlm.model) #View covariance of model

##### Run RSA for Time with +1 #####
library(RSA)
RSA.ST(x = -0.3635398, # Enter main effect of predictor 1 from mlm model
  y = -.3350809, # Enter main effect of predictor 2 from mlm model
```



```

x2 = 0.1039288, # Enter squared effect of predictor 1 from mlm model
xy = -.0229585, # Enter interaction effect from mlm model
y2 = 0.0996949, # Enter squared effect of predictor 2 from mlm model
b0 = 1.2838146, # Enter intercept from mlm model
SE = c(x= 0.03578107, #Enter respective standard errors
      y= 0.03710818,
      x2=0.01342057,
      xy=0.03170026,
      y2= 0.01404787),
COV= c(x_y= -8.742546e-05, #Enter covariances
      x2_xy = -1.171218e-04,
      x2_y2 = 5.866493e-06,
      y2_xy = -1.085021e-06),
df = 629) #To be conservative, take the lowest number of degrees of freedom

```

```

plotRSA(x = -0.3635398, # Enter main effect of predictor 1 from mlm model
      y = -.3350809, # Enter main effect of predictor 2 from mlm model
      x2 = 0.1039288, # Enter squared effect of predictor 1 from mlm model
      xy = -.0229585, # Enter interaction effect from mlm model
      y2 = 0.0996949, # Enter squared effect of predictor 2 from mlm model
      b0 = 1.2838146, # Enter intercept from mlm model
      type = "3d", surface = "predict",
      xlab = "Hearing Truth",
      ylab = "Hearing Lie",
      zlab = "Hearing VCov")

```

Run RSA for Time with orig data####

```

RSA.ST(x = -.3635397, # Enter main effect of predictor 1 from mlm model
      y = -.3350810, # Enter main effect of predictor 2 from mlm model
      x2 = 0.1039288, # Enter squared effect of predictor 1 from mlm model
      xy = -.0229585, # Enter interaction effect from mlm model
      y2 = 0.0996949, # Enter squared effect of predictor 2 from mlm model
      b0 = 1.2838145, # Enter intercept from mlm model
      SE = c(x= 0.03578106, #Enter respective standard errors
            y= 0.03710818,
            x2=0.01342057,
            xy=0.03170026,
            y2= 0.01404787),
      COV= c(x_y= -8.742546e-05, #Enter covariances
            x2_xy = -1.171218e-04,
            x2_y2 = 5.866493e-06,
            y2_xy = -1.085021e-06),
      df = 629) #To be conservative, take the lowest number of degrees of freedom

```

```
plotRSA(x = -0.3635398, # Enter main effect of predictor 1 from mlm model
  y = -.3350809, # Enter main effect of predictor 2 from mlm model
  x2 = 0.1039288, # Enter squared effect of predictor 1 from mlm model
  xy = -.0229585, # Enter interaction effect from mlm model
  y2 = 0.0996949, # Enter squared effect of predictor 2 from mlm model
  b0 = 1.2838146, # Enter intercept from mlm model
  type = "3d", surface = "predict",
  xlab = "Hearing Truth",
  ylab = "Hearing Lie",
  zlab = "Hearing VCov")
```

Appendix E

Written instructions – study one



You must carry out this mission alone and un-assisted.

Complete your tasks in the following order:

Task 1 - FIRST 15 minutes - Collect an envelope addressed to Jim Phelps from the noticeboard opposite the entrance to RHB138. Transport it to the location written on the back and destroy it there.

Task 2 - NEXT 15 minutes - Create your cover story (a plausible explanation for your presence on campus). Remember to generate some verifiable evidence.

THEN report back to this location for a short forensic interview in which you will **Lie** about every aspect of Task 1 but be completely **Truthful** about every aspect of Task 2.

- The success of your mission depends on being believed, so you must be as credible as possible both when lying and telling the truth.

Appendix F

Mach- IV (Christie & Geis, 1970)

| 1 | 2 | 3 | 4 | 5 |
|----------------------|----------|---------|-------|----------------|
| Disagree Strongly | Disagree | Neutral | Agree | Agree Strongly |

- _____ 1. Anyone who completely trusts anyone else is asking for trouble.
- _____ 2. Most people who get ahead in the world lead clean moral lives.
- _____ 3. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.
- _____ 4. One should take action only when sure it is morally right.
- _____ 5. Generally speaking, people won't work hard unless they're forced to do so.
- _____ 6. It is wise to flatter important people.
- _____ 7. It is hard to get ahead without cutting corners here and there.
- _____ 8. People suffering from incurable diseases should have the choice of being put painlessly to death.
- _____ 9. Most people are brave.
- _____ 10. The best way to handle people is to tell them what they want to hear.
- _____ 11. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.
- _____ 12. Honesty is the best policy in all cases.
- _____ 13. Barnum was very wrong when he said there's a sucker born every minute.
- _____ 14. Most people are basically good and kind.
- _____ 15. When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which might carry more weight.
- _____ 16. It is possible to be good in all respects.
- _____ 17. Most people forget more easily the death of a parent than the loss of their property.
- _____ 18. Never tell anyone the real reason you did something unless it is useful to do so.
- _____ 19. There is no excuse for lying to someone else.

_____ 20. All in all, it is better to be humble and honest than to be important and dishonest.

Appendix G

SRP(SF) - Self-Report Psychopathy Scale 4 - Short Form (Paulhus, Neumann & Hare, 2016)

Please rate the degree to which you agree with the following statements about you. You can be honest because your name will be detached from the answers as soon as they are submitted.

| 1 | 2 | 3 | 4 | 5 |
|----------------------|----------|---------|-------|-------------------|
| Disagree Strongly | Disagree | Neutral | Agree | Agree Strongly |

1. I'm a rebellious person.
2. I have never been involved in delinquent gang activity. (R)
3. Most people are wimps.
4. I've often done something dangerous just for the thrill of it.
5. I have tricked someone into giving me money.
6. I have assaulted a law enforcement official or social worker.
7. I have pretended to be someone else in order to get something.
8. I like to see fist-fights.
9. I would get a kick out of 'scamming' someone.
10. It's fun to see how far you can push people before they get upset.
11. I enjoy doing wild things.
12. I have broken into a building or vehicle in order to steal something or vandalize.
13. I don't bother to keep in touch with my family any more.
14. I rarely follow the rules.
15. You should take advantage of other people before they do it to you.
16. People sometimes say that I'm cold-hearted.
17. I like to have sex with people I barely know.
18. I love violent sports and movies.
19. Sometimes you have to pretend you like people to get something out of them.
20. I was convicted of a serious crime.
21. I keep getting in trouble for the same things over and over.
22. Every now and then I carry a weapon (knife or gun) for protection.
23. You can get what you want by telling people what they want to hear.

24. I never feel guilty over hurting others.
25. I have threatened people into giving me money, clothes, or makeup.
26. A lot of people are “suckers” and can easily be fooled.
27. I admit that I often “mouth off” without thinking.
28. I sometimes dump friends that I don’t need any more.
29. I purposely tried to hit someone with the vehicle I was driving.

Appendix H

NPI-16 Narcissistic Personality Inventory - Short form (Ames et al., 2006)

Read each pair of statements below and place an "X" by the one that comes closest to describing your feelings and beliefs about yourself.

You may feel that neither statement describes you well, but pick the one that comes closest. Please complete all pairs.

1. ___ I really like to be the center of attention
 ___ It makes me uncomfortable to be the center of attention

2. ___ I am no better or no worse than most people
 ___ I think I am a special person

3. ___ Everybody likes to hear my stories
 ___ Sometimes I tell good stories

4. ___ I usually get the respect that I deserve
 ___ I insist upon getting the respect that is due me

5. ___ I don't mind following orders
 ___ I like having authority over people

6. ___ I am going to be a great person
 ___ I hope I am going to be successful

7. ___ People sometimes believe what I tell them
 ___ I can make anybody believe anything I want them to

8. ___ I expect a great deal from other people
 ___ I like to do things for other people

9. ___ I like to be the center of attention
 ___ I prefer to blend in with the crowd

10. ___ I am much like everybody else
 ___ I am an extraordinary person

11. ___ I always know what I am doing
 ___ Sometimes I am not sure of what I am doing

12. ___ I don't like it when I find myself manipulating people
 ___ I find it easy to manipulate people
13. ___ Being an authority doesn't mean that much to me
 ___ People always seem to recognize my authority
14. ___ I know that I am good because everybody keeps telling me so
 ___ When people compliment me I sometimes get embarrassed
15. ___ I try not to be a show off
 ___ I am apt to show off if I get the chance
16. ___ I am more capable than other people
 ___ There is a lot that I can learn from other people

Appendix I

Study one – interview guide

Explanation (slight variations by participant/context):

We have asked you to come in and be interviewed about your recent activities because you might have information useful to our investigation. Just relax and try to give me as much detailed information as you can. If I'm not clear on something I might ask you to clarify but otherwise hopefully you'll be doing most of the talking. If I'm not looking at you that doesn't mean I'm not listening, I'm just making lots of notes. This isn't a memory test, so if you're not completely sure of something do feel free to say so that's fine.

Prompt (exactly the same for all participants):

"In your own words, tell me where you've been and what you've been doing since <TIME = interview less 30 minutes> today"

Probes (Specific to participant – at least two used for each interview):

"Can you explain in more detail what you mean by X"

"At approximately what time was that?"

"So, you said you were in XXX location... what can you tell me about who else was there?"

"You mention you came into XXX building can you tell me more about when this was?"

"describe for me how you got to XXXX"

"were you in any other buildings on campus during the last half hour"

"Could you be mistaken about that?"

Verifiable evidence probe (exactly the same for all participants):

"And if I was to ask you if you had any way of verifying what you've told me would you be able to do that?"

Interview close (slight variations by participant)/context):

"Is there anything you'd like to add?"

“Thank you very much for your time, if you’d like to head downstairs to my colleague, we’re all done”

Appendix J

Inter-coder reliability – study one

Intraclass correlation coefficients were calculated using a two-way, mixed effects, consistency, multiple raters model (McGraw & Wong, 1996).

Table J1

Intraclass correlation coefficients for all measures of data coding

| Measure | Number of raters | Estimate | 95% CI | |
|------------------|------------------|----------|-----------|-----------|
| | | | <i>LB</i> | <i>UB</i> |
| CBCA Truth | 3 | .923 | .869 | .956 |
| CBCA Lie | 3 | .896 | .824 | .941 |
| Nonverbal Truth | 2 | .899 | .809 | .947 |
| Nonverbal Lie | 2 | .885 | .783 | .939 |
| HDI Truth | 3 | .931 | .872 | .966 |
| HDI Lie | 3 | .899 | .816 | .951 |
| Paraverbal Truth | 2 | .945 | .895 | .971 |
| Paraverbal Lie | 2 | .867 | .748 | .929 |

Appendix K

Norms – Study one

Questionnaire norms

Single sample t tests compared means for this sample with published norms for each of the individual difference measures for which norms were available.

Table K1*Dark triad scores compared with norms*

| Dark triad measure | Sample mean (SD) | Norm (SD) |
|--------------------|------------------|---------------|
| Mach-IV | 57.33 (9.94) | 58.74 (6.59) |
| NPI- 16 | 0.27 (0.19)* | 0.36 (.19) |
| SRP-SF | 60.60 (17.16)* | 52.47 (17.61) |

Note. *Denotes significantly different from published norms

^aNorm data was taken from the following sources: Mach IV – Open Psychometrics data from UK respondents (n = 5486)

<https://openpsychometrics.org>, NPI16 - Ames et al., (2006), SRP(SF) – Multiple large-scale studies (Foulkes, et al., 2014; Gordts et al., 2017; Neumann, Hare & Pardini 2014).

Narcissism scores were significantly lower than available norms $t(39) = -3.17, p < .001$ while psychopathy scores were significantly higher $t(39) = 3.00, p < .001$.

LIWC norms

Transcripts of the interviews were analysed using Linguistic Inquiry and Word Count, and the results compared to norms published by the authors and developers based on over 3000 files. The results for this sample were largely comparable with norms specific to transcripts of ‘natural language’ (i.e., speech) for all relevant LIWC variables with a few notable exceptions discussed below.

Several differences are likely to be driven by the demands of the behavioural task itself. For example, this sample had rates more than twice as high as the norms for past tense focus and one and a half times higher than norms for motion and space words. Since participants were directly asked where they had been and what they had been doing for the past half hour this is not surprising. Similarly, the much higher rate of words involving eating ($M = 0.87$ versus norm $M = 0.35$) can be explained by the fact that most participants chose to talk about spending time in campus cafes as part of their cover story. The higher than usual number of words categorised as ‘female’ is likely to be a reflection of the gender bias in the student body of the Psychology department from which the participants came.

This sample also diverged from published norms in categories of specific interest to deception. Showing more than twice as many nonfluencies and fillers, nearly 1.5 times as much use of the third person and more than 60% less negative emotion words than norms. The within-participants design of the study means that each participant is compared with their own use of

language in the truthful baseline, so such deviations from wider norms are not a problem. But it is worth noting that the contextual nature of language impacts deception-relevant cues.

Appendix L

Study one - Significance testing between truth and lie conditions

Table L1

Results of comparing Truth versus Lie across channels

| Channel | Truth | | Lie | | <i>t</i> (39) | <i>p</i> | Cohen's <i>d</i> |
|-------------------------|----------|-----------|----------|-----------|---------------|----------|---------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Nonverbal | 5.31 | 1.87 | 5.89 | 3.31 | -1.32 | .19 | -.209 |
| Paraverbal | -10.17 | 6.22 | -14.39 | 8.99 | 3.06 | .002 | .483 |
| Verbal - CBCA | 23.24 | 10.02 | 16.94 | 6.97 | 3.54 | .001 | .560 |
| Verbal - LIWC | 4.64 | 2.10 | 6.47 | 2.48 | -4.26 | <.001 | -.667 |
| Subjective - Ratings | 67.31 | 13.36 | 60.45 | 15.23 | 2.84 | .007 | .449 |
| Subjective - HDI | 71.10 | 14.22 | 57.70 | 10.52 | 7.15 | <.001 | 1.130 |
| Overall | 26.91 | 4.65 | 22.18 | 5.06 | 6.22 | <.001 | .983 |

Appendix M

Study one – Full correlations

| | | Correlations | | | | | | | | | | | | | |
|----------------|---------------------|--------------|-----------|--------------|--------------------|--------|--------|--------|----------|---------|---------|--------|--------|----------|------------|
| | | Whitefreq | MajorFreq | Totalliefreq | SelfAssessm ent | NPI16 | MACHIV | SRPSF | CBCADiff | HDIDiff | RtgDiff | NVDiff | PVDiff | LIWCDiff | TOTAL_Diff |
| Whitefreq | Pearson Correlation | 1 | .665** | .965** | .295 | .416** | .201 | .502** | .040 | .003 | -.065 | -.088 | -.095 | .109 | -.038 |
| | Sig. (2-tailed) | | <.001 | <.001 | .065 | .008 | .213 | <.001 | .805 | .984 | .692 | .591 | .559 | .502 | .818 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| MajorFreq | Pearson Correlation | .665** | 1 | .837** | .172 | .389* | -.029 | .387* | .008 | -.065 | -.172 | -.113 | .012 | -.010 | -.119 |
| | Sig. (2-tailed) | <.001 | | <.001 | .289 | .013 | .858 | .014 | .962 | .691 | .287 | .487 | .940 | .950 | .463 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Totalliefreq | Pearson Correlation | .965** | .837** | 1 | .276 | .441** | .137 | .503** | .032 | -.020 | -.108 | -.104 | -.065 | .076 | -.069 |
| | Sig. (2-tailed) | <.001 | <.001 | | .084 | .004 | .398 | <.001 | .843 | .901 | .508 | .524 | .688 | .639 | .671 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| SelfAssessment | Pearson Correlation | .295 | .172 | .276 | 1 | .494** | .555** | .333* | .027 | .029 | -.184 | .055 | .077 | .042 | -.033 |
| | Sig. (2-tailed) | .065 | .289 | .084 | | .001 | <.001 | .036 | .871 | .860 | .255 | .737 | .638 | .796 | .842 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| NPI16 | Pearson Correlation | .416** | .389* | .441** | .494** | 1 | .434** | .548** | -.173 | .100 | -.102 | .012 | .101 | .090 | -.036 |
| | Sig. (2-tailed) | .008 | .013 | .004 | .001 | | .005 | <.001 | .285 | .540 | .532 | .944 | .537 | .581 | .828 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| MACHIV | Pearson Correlation | .201 | -.029 | .137 | .555** | .434** | 1 | .597** | -.087 | -.059 | -.016 | .143 | -.071 | -.078 | -.088 |
| | Sig. (2-tailed) | .213 | .858 | .398 | <.001 | .005 | | <.001 | .595 | .719 | .921 | .379 | .663 | .631 | .589 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| SRPSF | Pearson Correlation | .502** | .387* | .503** | .333* | .548** | .597** | 1 | .036 | -.050 | .080 | .016 | .202 | -.092 | .081 |
| | Sig. (2-tailed) | <.001 | .014 | <.001 | .036 | <.001 | <.001 | | .825 | .761 | .623 | .920 | .212 | .574 | .618 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| CBCADiff | Pearson Correlation | .040 | .008 | .032 | .027 | -.173 | -.087 | .036 | 1 | .302 | .020 | -.096 | .092 | -.283 | .569** |
| | Sig. (2-tailed) | .805 | .962 | .843 | .871 | .285 | .595 | .825 | | .058 | .905 | .555 | .570 | .077 | <.001 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| HDIDiff | Pearson Correlation | .003 | -.065 | -.020 | .029 | .100 | -.059 | -.050 | .302 | 1 | .064 | .206 | .093 | -.034 | .684** |
| | Sig. (2-tailed) | .984 | .691 | .901 | .860 | .540 | .719 | .761 | .058 | | .695 | .202 | .568 | .837 | <.001 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| RtgDiff | Pearson Correlation | -.065 | -.172 | -.108 | -.184 | -.102 | -.016 | .080 | .020 | .064 | 1 | -.019 | .246 | -.135 | .580** |
| | Sig. (2-tailed) | .692 | .287 | .508 | .255 | .532 | .921 | .623 | .905 | .695 | | .909 | .126 | .407 | <.001 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| NVDiff | Pearson Correlation | -.088 | -.113 | -.104 | .055 | .012 | .143 | .016 | -.096 | .206 | -.019 | 1 | .054 | .330* | .190 |
| | Sig. (2-tailed) | .591 | .487 | .524 | .737 | .944 | .379 | .920 | .555 | .202 | .909 | | .741 | .037 | .240 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| PVDiff | Pearson Correlation | -.095 | .012 | -.065 | .077 | .101 | -.071 | .202 | .092 | .093 | .246 | .054 | 1 | -.135 | .486** |
| | Sig. (2-tailed) | .559 | .940 | .688 | .638 | .537 | .663 | .212 | .570 | .568 | .126 | .741 | | .407 | .001 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| LIWCDiff | Pearson Correlation | .109 | -.010 | .076 | .042 | .090 | -.078 | -.092 | -.283 | -.034 | -.135 | .330* | -.135 | 1 | -.111 |
| | Sig. (2-tailed) | .502 | .950 | .639 | .796 | .581 | .631 | .574 | .077 | .837 | .407 | .037 | .407 | | .493 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| TOTAL_Diff | Pearson Correlation | -.038 | -.119 | -.069 | -.033 | -.036 | -.088 | .081 | .569** | .684** | .580** | .190 | .486** | -.111 | 1 |
| | Sig. (2-tailed) | .818 | .463 | .671 | .842 | .828 | .589 | .618 | <.001 | <.001 | <.001 | .240 | .001 | .493 | |
| | N | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The three dark triad measures were significantly positively intercorrelated. But only narcissism and psychopathy were positively associated with the amount of lies reported in the last 24 hours. Machiavellianism did not have significant associations with any measure of self-reported lying frequency. Those with higher scores on narcissism, Machiavellianism and psychopathy rate themselves higher in deceptive ability. But self-assessed ability was not significantly correlated with self-reported lying frequency.

Appendix N

TriPM - Triarchic Psychopathy Measure (Patrick, 2010)

1. I'm optimistic more often than not.
2. How other people feel is important to me.
3. I often act on immediate needs.
4. I have no strong desire to parachute out of an airplane.
5. I've often missed things I promised to attend.
6. I would enjoy being in a high-speed chase.
7. I am well-equipped to deal with stress.
8. I don't mind if someone I dislike gets hurt.
9. My impulsive decisions have caused problems with loved ones.
10. I get scared easily.
11. I sympathize with others' problems.
12. I have missed work without bothering to call in.
13. I'm a born leader.
14. I enjoy a good physical fight.
15. I jump into things without thinking.
16. I have a hard time making things turn out the way I want.
17. I return insults.
18. I've gotten in trouble because I missed too much school.
19. I have a knack for influencing people.
20. It doesn't bother me to see someone else in pain.
21. I have good control over myself.
22. I function well in new situations, even when unprepared.
23. I enjoy pushing people around sometimes.
24. I have taken money from someone's purse or wallet without asking.
25. I don't think of myself as talented.
26. I taunt people just to stir things up.
27. People often abuse my trust.

28. I'm afraid of far fewer things than most people.
29. I don't see any point in worrying if what I do hurts someone else.
30. I keep appointments I make.
31. I often get bored quickly and lose interest.
32. I can get over things that would traumatize others.
33. I am sensitive to the feelings of others.
34. I have conned people to get money from them.
35. It worries me to go into an unfamiliar situation without knowing all the details.
36. I don't have much sympathy for people.
37. I get in trouble for not considering the consequences of my actions.
38. I can convince people to do what I want.
39. For me, honesty really is the best policy.
40. I've injured people to see them in pain.
41. I don't like to take the lead in groups.
42. I sometimes insult people on purpose to get a reaction from them.
43. I have taken items from a store without paying for them.
44. It's easy to embarrass me.
45. Things are more fun if a little danger is involved.
46. I have a hard time waiting patiently for things I want.
47. I stay away from physical danger as much as I can.
48. I don't care much if what I do hurts others.
49. I have lost a friend because of irresponsible things I've done.
50. I don't stack up well against most others.
51. Others have told me they are concerned about my lack of self-control.
52. It's easy for me to relate to other people's emotions.
53. I have robbed someone.
54. I never worry about making a fool of myself with others.
55. It doesn't bother me when people around me are hurting.
56. I have had problems at work because I was irresponsible.

57. I'm not very good at influencing people.

58. I have stolen something out of a vehicle.

Appendix O

NPI-40 Narcissistic Personality Inventory (Raskin & Terry, 1988)

This inventory consists of a number of pairs of statements with which you may or may not identify.

Consider this example:

- A. I like having authority over people
- B. I don't mind following orders

Which of these two statements is closer to your own feelings about yourself? If you identify more with "likeing to have authority over people" than with "not minding following orders", then you would choose option A.

You may identify with both A and B. In this case you should choose the statement which seems closer to yourself. Or, if you do not identify with either statement, select the one which is least objectionable or remote. In other words, read each pair of statements and then choose the one that is closer to your own feelings.

Indicate your answer by writing the letter (A or B) in the space provided to the right of each item. Please do not skip any items.

1. A. I have a natural talent for influencing people.
B. I am not good at influencing people.
2. A. Modesty doesn't become me.
B. I am essentially a modest person.
3. A. I would do almost anything on a dare.
B. I tend to be a fairly cautious person.
4. A. When people compliment me I sometimes get embarrassed.
B. I know that I am good because everybody keeps telling me so.
5. A. The thought of ruling the world frightens the hell out of me.
B. If I ruled the world it would be a better place.
6. A. I can usually talk my way out of anything.
B. I try to accept the consequences of my behavior.
7. A. I prefer to blend in with the crowd.
B. I like to be the center of attention.
8. A. I will be a success.
B. I am not too concerned about success.
9. A. I am no better or worse than most people.
B. I think I am a special person.
10. A. I am not sure if I would make a good leader.
B. I see myself as a good leader.
11. A. I am assertive.
B. I wish I were more assertive.
12. A. I like to have authority over other people.
B. I don't mind following orders.
13. A. I find it easy to manipulate people.
B. I don't like it when I find myself manipulating people.

14. A. I insist upon getting the respect that is due me.
B. I usually get the respect that I deserve.
15. A. I don't particularly like to show off my body.
B. I like to show off my body.
16. A. I can read people like a book.
B. People are sometimes hard to understand.
17. A. If I feel competent I am willing to take responsibility for making decisions.
B. I like to take responsibility for making decisions.
18. A. I just want to be reasonably happy.
B. I want to amount to something in the eyes of the world.
19. A. My body is nothing special.
B. I like to look at my body.
20. A. I try not to be a show off.
B. I will usually show off if I get the chance.
21. A. I always know what I am doing.
B. Sometimes I am not sure of what I am doing.
22. A. I sometimes depend on people to get things done.
B. I rarely depend on anyone else to get things done.
23. A. Sometimes I tell good stories.
B. Everybody likes to hear my stories.
24. A. I expect a great deal from other people.
B. I like to do things for other people.
25. A. I will never be satisfied until I get all that I deserve.
B. I take my satisfactions as they come.
26. A. Compliments embarrass me.
B. I like to be complimented.
27. A. I have a strong will to power.
B. Power for its own sake doesn't interest me.
28. A. I don't care about new fads and fashions.
B. I like to start new fads and fashions.
29. A. I like to look at myself in the mirror.
B. I am not particularly interested in looking at myself in the mirror.
30. A. I really like to be the center of attention.
B. It makes me uncomfortable to be the center of attention.
31. A. I can live my life in any way I want to.
B. People can't always live their lives in terms of what they want.
32. A. Being an authority doesn't mean that much to me.
B. People always seem to recognize my authority.
33. A. I would prefer to be a leader.
B. It makes little difference to me whether I am a leader or not.
34. A. I am going to be a great person.
B. I hope I am going to be successful.
35. A. People sometimes believe what I tell them.
B. I can make anybody believe anything I want them to.

- 36. A. I am a born leader.
B. Leadership is a quality that takes a long time to develop.
- 37. A. I wish somebody would someday write my biography.
B. I don't like people to pry into my life for any reason.
- 38. A. I get upset when people don't notice how I look when I go out in public.
B. I don't mind blending into the crowd when I go out in public.
- 39. A. I am more capable than other people.
B. There is a lot that I can learn from other people.
- 40. A. I am much like everybody else.
B. I am an extraordinary person.

Appendix P

HEXACO Personality Inventory-Revised (HEXACO-PI-R)

On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then write your response in the space next to the statement using the following scale:

- 5 = strongly agree
- 4 = agree
- 3 = neutral (neither agree nor disagree)
- 2 = disagree
- 1 = strongly disagree

Please answer every statement, even if you are not completely sure of your response.

| | |
|----|------------------------------------------------------------------------------------------------------------|
| 1 | I would be quite bored by a visit to an art gallery. |
| 2 | I clean my office or home quite frequently. |
| 3 | I rarely hold a grudge, even against people who have badly wronged me. |
| 4 | I feel reasonably satisfied with myself overall. |
| 5 | I would feel afraid if I had to travel in bad weather conditions. |
| 6 | If I want something from a person I dislike, I will act very nicely toward that person in order to get it. |
| 7 | I'm interested in learning about the history and politics of other countries. |
| 8 | When working, I often set ambitious goals for myself. |
| 9 | People sometimes tell me that I am too critical of others. |
| 10 | I rarely express my opinions in group meetings. |
| 11 | I sometimes can't help worrying about little things. |
| 12 | If I knew that I could never get caught, I would be willing to steal a million dollars. |
| 13 | I would like a job that requires following a routine rather than being creative. |
| 14 | I often check my work over repeatedly to find any mistakes. |
| 15 | People sometimes tell me that I'm too stubborn. |
| 16 | I avoid making "small talk" with people. |
| 17 | When I suffer from a painful experience, I need someone to make me feel comfortable. |
| 18 | Having a lot of money is not especially important to me. |
| 19 | I think that paying attention to radical ideas is a waste of time. |
| 20 | I make decisions based on the feeling of the moment rather than on careful thought. |
| 21 | People think of me as someone who has a quick temper. |
| 22 | I am energetic nearly all the time. |
| 23 | I feel like crying when I see other people crying. |
| 24 | I am an ordinary person who is no better than others. |
| 25 | I wouldn't spend my time reading a book of poetry. |

| | |
|----|--------------------------------------------------------------------------------------------------|
| 26 | I plan ahead and organize things, to avoid scrambling at the last minute. |
| 27 | My attitude toward people who have treated me badly is "forgive and forget". |
| 28 | I think that most people like some aspects of my personality. |
| 29 | I don't mind doing jobs that involve dangerous work. |
| 30 | I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed. |
| 31 | I enjoy looking at maps of different places. |
| 32 | I often push myself very hard when trying to achieve a goal. |
| 33 | I generally accept people's faults without complaining about them. |
| 34 | In social situations, I'm usually the one who makes the first move. |
| 35 | I worry a lot less than most people do. |
| 36 | I would be tempted to buy stolen property if I were financially tight. |
| 37 | I would enjoy creating a work of art, such as a novel, a song, or a painting. |
| 38 | When working on something, I don't pay much attention to small details. |
| 39 | I am usually quite flexible in my opinions when people disagree with me. |
| 40 | I enjoy having lots of people around to talk with. |
| 41 | I can handle difficult situations without needing emotional support from anyone else. |
| 42 | I would like to live in a very expensive, high-class neighborhood. |
| 43 | I like people who have unconventional views. |
| 44 | I make a lot of mistakes because I don't think before I act. |
| 45 | I rarely feel anger, even when people treat me quite badly. |
| 46 | On most days, I feel cheerful and optimistic. |
| 47 | When someone I know well is unhappy, I can almost feel that person's pain myself. |
| 48 | I wouldn't want people to treat me as though I were superior to them. |
| 49 | If I had the opportunity, I would like to attend a classical music concert. |
| 50 | People often joke with me about the messiness of my room or desk. |
| 51 | If someone has cheated me once, I will always feel suspicious of that person. |
| 52 | I feel that I am an unpopular person. |
| 53 | When it comes to physical danger, I am very fearful. |
| 54 | If I want something from someone, I will laugh at that person's worst jokes. |
| 55 | I would be very bored by a book about the history of science and technology. |
| 56 | Often when I set a goal, I end up quitting without having reached it. |
| 57 | I tend to be lenient in judging other people. |
| 58 | When I'm in a group of people, I'm often the one who speaks on behalf of the group. |
| 59 | I rarely, if ever, have trouble sleeping due to stress or anxiety. |
| 60 | I would never accept a bribe, even if it were very large. |
| 61 | People have often told me that I have a good imagination. |
| 62 | I always try to be accurate in my work, even at the expense of time. |
| 63 | When people tell me that I'm wrong, my first reaction is to argue with them. |
| 64 | I prefer jobs that involve active social interaction to those that involve working alone. |

| | |
|-----|------------------------------------------------------------------------------------------|
| 65 | Whenever I feel worried about something, I want to share my concern with another person. |
| 66 | I would like to be seen driving around in a very expensive car. |
| 67 | I think of myself as a somewhat eccentric person. |
| 68 | I don't allow my impulses to govern my behavior. |
| 69 | Most people tend to get angry more quickly than I do. |
| 70 | People often tell me that I should try to cheer up. |
| 71 | I feel strong emotions when someone close to me is going away for a long time. |
| 72 | I think that I am entitled to more respect than the average person is. |
| 73 | Sometimes I like to just watch the wind as it blows through the trees. |
| 74 | When working, I sometimes have difficulties due to being disorganized. |
| 75 | I find it hard to fully forgive someone who has done something mean to me. |
| 76 | I sometimes feel that I am a worthless person. |
| 77 | Even in an emergency I wouldn't feel like panicking. |
| 78 | I wouldn't pretend to like someone just to get that person to do favors for me. |
| 79 | I've never really enjoyed looking through an encyclopedia. |
| 80 | I do only the minimum amount of work needed to get by. |
| 81 | Even when people make a lot of mistakes, I rarely say anything negative. |
| 82 | I tend to feel quite self-conscious when speaking in front of a group of people. |
| 83 | I get very anxious when waiting to hear about an important decision. |
| 84 | I'd be tempted to use counterfeit money, if I were sure I could get away with it. |
| 85 | I don't think of myself as the artistic or creative type. |
| 86 | People often call me a perfectionist. |
| 87 | I find it hard to compromise with people when I really think I'm right. |
| 88 | The first thing that I always do in a new place is to make friends. |
| 89 | I rarely discuss my problems with other people. |
| 90 | I would get a lot of pleasure from owning expensive luxury goods. |
| 91 | I find it boring to discuss philosophy. |
| 92 | I prefer to do whatever comes to mind, rather than stick to a plan. |
| 93 | I find it hard to keep my temper when people insult me. |
| 94 | Most people are more upbeat and dynamic than I generally am. |
| 95 | I remain unemotional even in situations where most people get very sentimental. |
| 96 | I want people to know that I am an important person of high status. |
| 97 | I have sympathy for people who are less fortunate than I am. |
| 98 | I try to give generously to those in need. |
| 99 | It wouldn't bother me to harm someone I didn't like. |
| 100 | People see me as a hard-hearted person. |

Appendix Q
Norms - Study three

Questionnaire norms

Single sample t tests compared means for this sample with published norms for each of the individual difference measures for which norms were available⁶.

Table Q1

Comparison of HEXACO and dark triad scores with norms

| Trait | Sample mean (SD) | Norm (SD) | t | p |
|--------------------|-------------------------|------------------|----------|----------|
| Honesty-Humility | 3.29 (.66) | 3.19 (.62) | 2.428 | .016 |
| Emotionality* | 3.30 (.65) | 3.43 (.62) | -2.855 | .005 |
| Extraversion* | 3.09 (.59) | 3.50 (.57) | -10.689 | <.001 |
| Agreeableness | 2.99 (.57) | 2.94 (.58) | 1.342 | .181 |
| Conscientiousness* | 3.30 (.63) | 3.44 (.56) | -3.187 | .002 |
| Openness* | 3.24 (.64) | 3.41 (.60) | -3.876 | <.001 |
| Altruism* | 0.94 (.21) | 3.90 (.67) | -2.461 | .015 |
| Mach - IV | 57.64 (8.98) | 58.74 (6.59) | -1.476 | .142 |
| NPI | 12.32 (6.71) | 13.30 (8.51) | -1.773 | .078 |
| TripM | 62.32 (17.55) | 62.10 (15.67) | .148 | .883 |

Note: *Denotes significantly different from norm

^aNorm data was taken from the following sources: Mach IV – Open Psychometrics data from UK respondents (n = 5486)

<https://openpsychometrics.org>, NPI - Open Psychometrics data from all respondents (n = 11.243)

<https://openpsychometrics.org>, TriPM– Triarchic Psychopathy Measure: Preliminary Manual 2016 (n = 585)

<https://patricknslab.psy.fsu.edu/wiki/images/b/b2/TPMmanual.pdf>, HEXACO - Lee & Ashton (2019) sample of Canadian college students (n = 1126)

LIWC variables

Extensive norms are available for the linguistic characteristics (including written and spoken output). There were some categories where the sample diverged noticeably from LIWC category norms. A likely explanation for this is the nature of the task. Writing about autobiographical events logically produces more first-person pronouns and the written accounts provided were not addressed to a specific individual or known audience making second-person pronouns unnecessary. The within-subjects design of ensures that Participant' lies are compared with their own baseline truthful performance, so group-level differences from norms are not likely to impact findings.

Data quality²¹

To ensure high quality data, both process-based and preference-based exclusion criteria (Dewitt, Fischhoff, Davis, Broomell, Roberts & Hanmer, 2019) were included. Any Participant who failed two or more of the criteria below was considered to have unreliable data. While momentary inattention could account for one or two errors, the pattern of responding that would result in failing multiple checks is more likely to indicate sustained lack of engagement and/or 'satisficing' (Krosnick 1991; Simon, 1956) negatively impacting both reliability and validity of data (Dewitt et al., 2019; Hamby & Taylor, 2016). Each criterion is summarised below.

1. Catch questions/attention checks: These were two questions embedded within the usual HEXACO questions which asked for a specific response e.g. "For this statement, please respond *Strongly Agree*." Failing one or more (out of two) of these questions meant a failure for this criterion.
2. Logical consistency checks: It is possible to mathematically determine suspect responses based on intraindividual consistency and inconsistency (Barends & de Vries, 2019). A very low overall rate of variation suggests a participant alternating between one or two responses, whereas very high variation within an individual factor scale after reverse scoring, suggests a lack of logical consistency. For example, it would be unlikely for someone to indicate agreement to both the following items "I wouldn't pretend to like someone just to get that person to do favors for me" and "If I want something from a person I dislike, I will act very nicely toward that person in order to get it." The two statistical tests specified by Lee and Ashton (2018) to identify such response patterns were used. Response overuse (standard deviation of 0.70 or lower for all answers before reverse scoring) and Response Incoherence (average standard deviation of 1.60 or greater across the six domain factor scales after reverse scoring). Failing either or both checks meant a failure for this criterion.
3. Speed of completion: To avoid the risk of excluding unusually rapid but genuine responses or those recorded by participants who had paused while completing the study, this was not calculated based on standard deviations. Rather by calculating the fastest possible plausible speed at which these items could be completed. Five highly literate volunteers with extensive experience reading and evaluating information rapidly (two lawyers, two academics and one business entrepreneur) were asked to complete the questionnaires as fast as they could while still reading each question in its entirety and providing a genuine answer to each one. The fastest speed recorded by these individuals (duration of 480 seconds) was taken as the fastest possible speed for realistic completion of the questionnaires. There was no upper limit for

²¹ Thirteen Participants were identified based on these checks. Twelve were from the paid Platform 'Prolific' which meant that their data was rejected in full – they did not continue with subsequent time points and were not paid, therefore no data could be retained to be included in the study. One was an unpaid volunteer who had completed all four time points. In this case only the HEXACO data was excluded from analysis as detailed checks suggested the data for the other tasks was valid.

completed questionnaires. Submissions completed faster than 480 seconds were considered to fail this criterion.

Appendix R

Study three - Significance testing between truth and lie conditions

Table R1

Time one - results of comparing Truth versus Lie across LIWC categories

| LIWC Category | Truth | | Lie | | t(262) | p | Cohen's d |
|---------------|-------|-------|-------|-------|--------|------|-----------|
| | M | SD | M | SD | | | |
| Authenticity | 83.48 | 20.92 | 82.88 | 19.84 | .346 | .730 | .02 |
| Word Count | 35.73 | 7.53 | 36.64 | 9.56 | -1.914 | .057 | -.118 |
| Sentences | 28.90 | 12.22 | 31.31 | 15.94 | -3.114 | .002 | -.192 |
| Content words | 8.88 | 1.55 | 9.10 | 1.60 | -1.862 | .064 | -.115 |
| Perceptual | 2.70 | 1.72 | 2.80 | 1.87 | -.704 | .482 | -.043 |
| Cognitive | 9.65 | 3.37 | 9.92 | 3.63 | -1.039 | .300 | -.064 |

Table R2

Time two - results of comparing Truth versus Lie across LIWC categories

| LIWC Category | Truth | | Lie | | t(202) | p | Cohen's d |
|---------------|-------|-------|-------|-------|--------|------|-----------|
| | M | SD | M | SD | | | |
| Authenticity | 84.54 | 19.68 | 87.78 | 14.52 | -1.952 | .052 | -.137 |
| Word Count | 36.84 | 8.95 | 37.76 | 9.80 | -1.441 | .151 | -.101 |
| Sentences | 31.32 | 11.74 | 32.65 | 13.65 | -1.882 | .061 | -.132 |
| Content words | 9.01 | 1.49 | 9.07 | 1.36 | -.935 | .351 | -.066 |
| Perceptual | 2.40 | 1.54 | 2.83 | 1.80 | -2.754 | .006 | -.193 |
| Cognitive | 9.77 | 3.74 | 9.84 | 3.77 | -.350 | .727 | -.025 |

Table R3

Time three - results of comparing Truth versus Lie across LIWC categories

| LIWC Category | Truth | | Lie | | t(166) | p | Cohen's d |
|---------------|-------|-------|-------|-------|--------|------|-----------|
| | M | SD | M | SD | | | |
| Authenticity | 83.31 | 21.32 | 84.53 | 16.57 | -.614 | .540 | -.048 |
| Word Count | 40.07 | 10.95 | 39.78 | 10.51 | .118 | .906 | .009 |
| Sentences | 33.63 | 14.20 | 34.69 | 15.83 | -1.134 | .258 | -.088 |
| Content words | 9.32 | 1.58 | 9.34 | 1.34 | -.378 | .706 | -.029 |
| Perceptual | 2.28 | 1.56 | 2.83 | 1.64 | -3.443 | .001 | -.266 |
| Cognitive | 9.93 | 3.35 | 10.65 | 3.56 | -2.208 | .029 | -.171 |

Table R4*Time four - results of comparing Truth versus Lie across LIWC categories*

| LIWC Category | Truth | | Lie | | <i>t</i> (150) | <i>p</i> | Cohen's <i>d</i> |
|---------------|----------|-----------|----------|-----------|----------------|----------|------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Authenticity | 84.11 | 19.21 | 86.01 | 16.80 | -.920 | .359 | -.075 |
| Word Count | 38.89 | 8.52 | 40.13 | 10.15 | -1.852 | .006 | -.151 |
| Sentences | 33.17 | 12.84 | 34.91 | 12.21 | -1.715 | .088 | -.140 |
| Content words | 9.21 | 1.38 | 9.39 | 1.42 | -.923 | .357 | -.075 |
| Perceptual | 2.57 | 1.70 | 2.52 | 1.50 | .272 | .786 | .022 |
| Cognitive | 10.33 | 3.59 | 10.96 | 3.37 | -1.485 | .140 | -.121 |

Table R5*Combined results of comparing Truth versus Lie across LIWC categories*

| LIWC Category | Truth | | Lie | | <i>t</i> (783) | <i>p</i> | Cohen's <i>d</i> |
|---------------|----------|-----------|----------|-----------|----------------|----------|------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Authenticity | 83.97 | 20.34 | 85.63 | 17.37 | -1.360 | .174 | -.049 |
| Word Count | 37.93 | 9.05 | 38.71 | 10.04 | -2.480 | .013 | -.089 |
| Sentences | 31.68 | 12.79 | 33.41 | 14.62 | -4.031 | <.001 | -.144 |
| Content words | 9.08 | 1.52 | 9.21 | 1.45 | -2.151 | .032 | -.077 |
| Perceptual | 2.44 | 1.64 | 2.76 | 1.74 | -3.304 | .001 | -.118 |
| Cognitive | 9.87 | 3.51 | 10.31 | 3.59 | -2.409 | .016 | -.086 |

Appendix S

Multiple regression model tables – study three

Coefficient of Variation (CV) was entered as the outcome variable in separate multiple regression models for each LIWC variable and an overall combined measure

Table S1

Regression Analysis: Coefficient of Variation (CV) for LIWC_{Authenticity}

| Effect | Estimate | SE | 95% CI | | p |
|--------------------------|----------|------|--------|------|------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | -.113 | .523 | -1.151 | .925 | .829 |
| Total self-reported lies | .008 | .010 | -.012 | .028 | .429 |
| Honesty - Humility | .001 | .005 | -.008 | .011 | .750 |
| Extraversion | .014 | .005 | .004 | .024 | .005 |
| MACH-IV | .006 | .006 | -.006 | .018 | .310 |
| Narcissism | -.010 | .007 | -.025 | .005 | .191 |
| Psychopathy | .000 | .003 | -.006 | .006 | .949 |

Note. N = 160. CI = confidence interval; LL = lower limit; UL = upper limit.

Table S2

Regression Analysis: Coefficient of Variation (CV) for LIWC_{Wordcount}

| Effect | Estimate | SE | 95% CI | | p |
|--------------------------|----------|------|--------|------|------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | .485 | .454 | .041 | .198 | .288 |
| Total self-reported lies | .097 | .028 | .042 | .153 | .862 |
| Honesty - Humility | .004 | .004 | -.004 | .012 | .328 |
| Extraversion | -.001 | .004 | -.009 | .008 | .857 |
| MACH-IV | .006 | .005 | -.005 | .016 | .271 |
| Narcissism | .007 | .007 | -.006 | .021 | .282 |
| Psychopathy | -.003 | .003 | -.008 | .003 | .316 |

Note. N = 160. CI = confidence interval; LL = lower limit; UL = upper limit.

Table S3*Regression Analysis: Coefficient of Variation (CV) for LIWC_{Sentences}*

| Effect | Estimate | SE | 95% CI | | p |
|--------------------------|----------|------|--------|-------|------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | .593 | .641 | -.684 | 1.869 | .358 |
| Total self-reported lies | .009 | .015 | -.021 | .040 | .547 |
| Honesty - Humility | .002 | .006 | -.009 | .013 | .343 |
| Extraversion | -.002 | .006 | -.014 | .001 | .796 |
| MACH-IV | .003 | .007 | -.008 | .018 | .658 |
| Narcissism | .002 | .010 | -.017 | .022 | .805 |
| Psychopathy | <.000 | .004 | -.008 | .008 | .997 |

Note. N = 160. CI = confidence interval; LL = lower limit; UL = upper limit.

Table S4*Regression Analysis: Coefficient of Variation (CV) for LIWC_{Content}*

| Effect | Estimate | SE | 95% CI | | p |
|--------------------------|----------|------|--------|-------|------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | .894 | .427 | .043 | 1.745 | .040 |
| Total self-reported lies | -.013 | .010 | -.034 | .007 | .197 |
| Honesty - Humility | -.004 | .004 | -.011 | .004 | .313 |
| Extraversion | .002 | .004 | -.006 | .010 | .635 |
| MACH-IV | -.002 | .005 | -.012 | .008 | .704 |
| Narcissism | .001 | .006 | -.012 | .014 | .850 |
| Psychopathy | -.001 | .003 | -.006 | .004 | .689 |

Note. N = 160. CI = confidence interval; LL = lower limit; UL = upper limit.

Table S5*Regression Analysis: Coefficient of Variation (CV) for LIWC_{Perceptual}*

| Effect | Estimate | SE | 95% CI | | <i>p</i> |
|--------------------------|----------|------|--------|-------|----------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | .734 | .442 | -.107 | 1.575 | .086 |
| Total self-reported lies | -.004 | .010 | -.024 | .016 | .714 |
| Honesty - Humility | .001 | .004 | -.006 | .009 | .746 |
| Extraversion | .000 | .004 | -.008 | .008 | .908 |
| MACH-IV | -.002 | .005 | -.012 | .008 | .691 |
| Narcissism | -.007 | .006 | -.020 | .005 | .264 |
| Psychopathy | .003 | .003 | -.003 | .008 | .344 |

Note. *N* = 160. CI = confidence interval; LL = lower limit; UL = upper limit.**Table S6***Regression Analysis: Coefficient of Variation (CV) for LIWC_{Cognitive}*

| Effect | Estimate | SE | 95% CI | | <i>p</i> |
|--------------------------|----------|------|--------|------|----------|
| | | | LL | UL | |
| Fixed effects | | | | | |
| Intercept | -.234 | .473 | -1.177 | .708 | .622 |
| Total self-reported lies | -.007 | .011 | -.030 | .015 | .517 |
| Honesty - Humility | .002 | .004 | -.006 | .010 | .631 |
| Extraversion | .007 | .005 | -.002 | .016 | .136 |
| MACH-IV | .008 | .005 | -.002 | .019 | .128 |
| Narcissism | .000 | .007 | -.014 | .014 | .991 |
| Psychopathy | -.002 | .003 | -.008 | .004 | .571 |

Note. *N* = 160. CI = confidence interval; LL = lower limit; UL = upper limit.

Table S7*Regression Analysis: Coefficient of Variation (CV) for LIWC_{Total}*

| Effect | Estimate | SE | 95% CI | | <i>p</i> |
|---------------------------------------------|----------|------|-----------|-----------|----------|
| | | | <i>LL</i> | <i>UL</i> | |
| Fixed effects | | | | | |
| Intercept | .117 | .302 | -.483 | .718 | .699 |
| Total self-reported lies^a | .003 | .007 | -.012 | .017 | .716 |
| Honesty - Humility | .006 | .003 | .000 | .011 | .032 |
| Extraversion | .000 | .003 | -.006 | .005 | .929 |
| MACH-IV | .002 | .003 | -.005 | .009 | .499 |
| Narcissism | .010 | .005 | .001 | .019 | .039 |
| Psychopathy | -.001 | .002 | -.005 | .003 | .635 |

Note. *N* = 160. CI = confidence interval; *LL* = lower limit; *UL* = upper limit

Appendix T

Study three - full output of Fisher's Z test comparing correlations

Spearman's Rho at each time point between self-rated ability and actual performance
(measured by total difference score)

T1 $r(262) = -.006$, $p = .922$

T2 $r(203) = .016$, $p = .817$

T3 $r(167) = .021$, $p = .785$

T4 $r(157) = .063$, $p = .431$

Table T1

Fisher's Z test results comparing correlations at each time point

| Correlations compared | Z | p |
|-----------------------|--------|------|
| Time 1 – Time 2 | -0.401 | .344 |
| Time 1 – Time 3 | -1.165 | .122 |
| Time 1 – Time 4 | -1.134 | .128 |
| Time 2 – Time 3 | -0.452 | .326 |
| Time 2 – Time 4 | -0.728 | .233 |
| Time 3 - Time 4 | -0.273 | .392 |

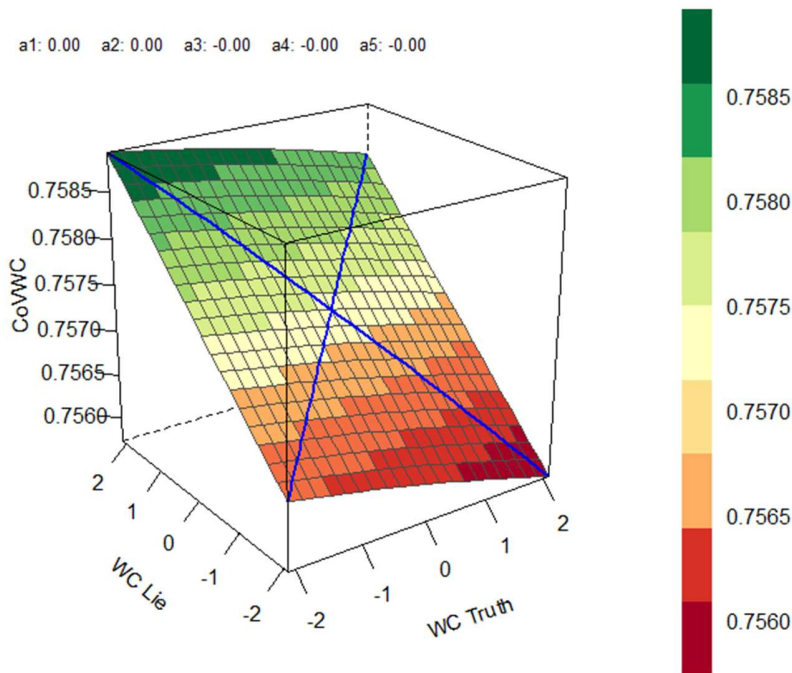
Appendix U

RSA Results for all CV's

Response surface analysis (including polynomial regression) for *LIWC_{Wordcount}* Coefficient of Variation (CV) as outcome variable

Residual standard error: 0.3338 on 159 degrees of freedom
 Multiple R-squared: 0.03935, Adjusted R-squared: 0.009139
 F-statistic: 1.303 on 5 and 159 DF, p-value: 0.2655

| | estimate | SE | t.value | p.value |
|----|--------------|--------------|-------------|-----------|
| a1 | 4.49200e-04 | 1.208898e-03 | 0.37157803 | 0.7107017 |
| a2 | 3.17700e-07 | 1.227682e-05 | 0.02587804 | 0.9793871 |
| a3 | -7.53400e-04 | 2.112441e-03 | -0.35664909 | 0.7218274 |
| a4 | -1.85483e-05 | 2.409258e-05 | -0.76987605 | 0.4425157 |
| a5 | -1.10847e-05 | 1.257043e-05 | -0.88180768 | 0.3792119 |

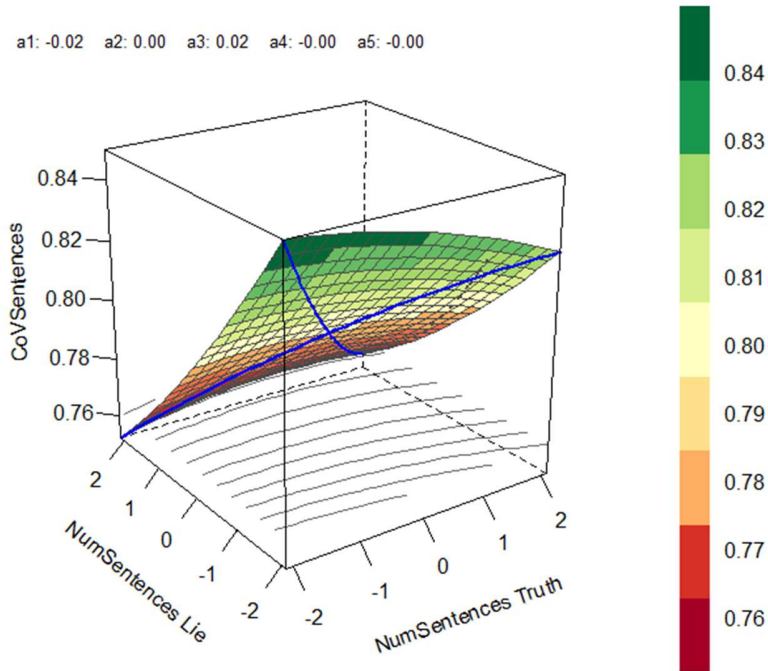


Response surface analysis (including polynomial regression) for *LIWC_{Sentences}* Coefficient of Variation (CV) as outcome variable

Residual standard error: 0.3764 on 159 degrees of freedom
 Multiple R-squared: 0.03523, Adjusted R-squared: 0.004889
 F-statistic: 1.161 on 5 and 159 DF, p-value: 0.3307

| | estimate | SE | t.value | p.value |
|----|------------|-------------|------------|------------|
| a1 | -0.0220203 | 0.011178409 | -1.9698957 | 0.05058745 |

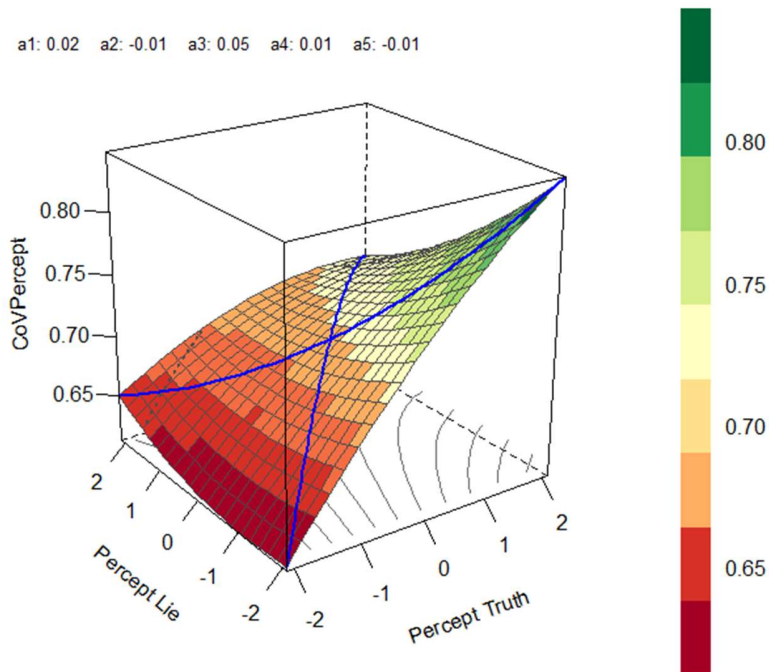
| | | | | |
|----|------------|-------------|------------|------------|
| a2 | 0.0020379 | 0.001694149 | 1.2029046 | 0.23080136 |
| a3 | 0.0175611 | 0.026132210 | 0.6720097 | 0.50255279 |
| a4 | -0.0012517 | 0.006167388 | -0.2029546 | 0.83942997 |
| a5 | -0.0022489 | 0.002367879 | -0.9497531 | 0.34367910 |



Response surface analysis (including polynomial regression) for *LIWC_{Perceptual}* Coefficient of Variation (CV) as outcome variable

Residual standard error: 0.3468 on 159 degrees of freedom
 Multiple R-squared: 0.03378, Adjusted R-squared: 0.003398
 F-statistic: 1.112 on 5 and 159 DF, p-value: 0.3563

| | estimate | SE | t.value | p.value |
|----|-----------|-------------|------------|------------|
| a1 | 0.023993 | 0.022108279 | 1.0852496 | 0.27945384 |
| a2 | -0.010309 | 0.010428224 | -0.9885671 | 0.32437695 |
| a3 | 0.046849 | 0.027405666 | 1.7094640 | 0.08931593 |
| a4 | 0.008427 | 0.015423504 | 0.5463739 | 0.58557481 |
| a5 | -0.008123 | 0.009525066 | -0.8528025 | 0.39505164 |

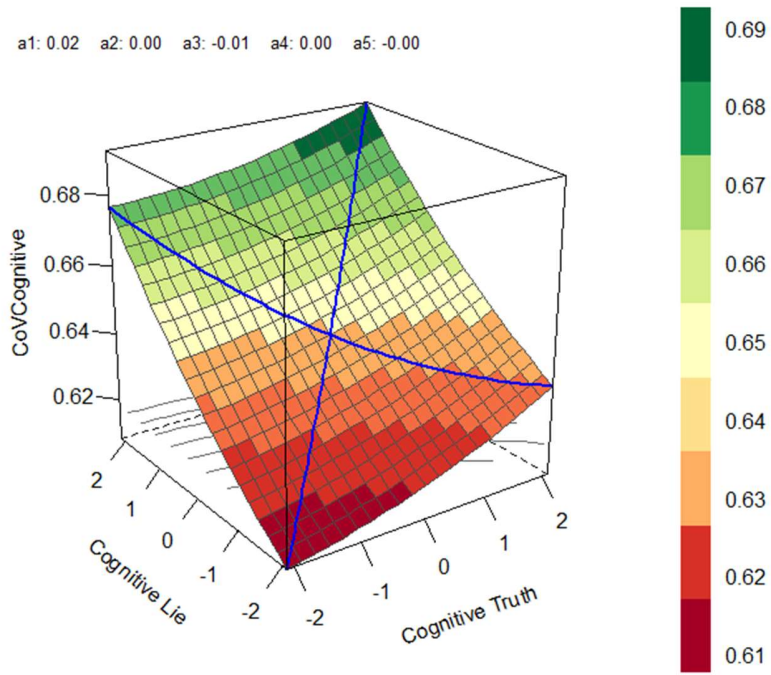


Response surface analysis (including polynomial regression) for $LIWC_{Cognitive}$ Coefficient of Variation (CV) as outcome variable

Residual standard error: 0.3191 on 159 degrees of freedom
 Multiple R-squared: 0.04673, Adjusted R-squared: 0.01675
 F-statistic: 1.559 on 5 and 159 DF, p-value: 0.1747

| | estimate | SE | t.value | p.value |
|----|------------|-------------|------------|------------|
| a1 | 0.0202136 | 0.010112446 | 1.9988833 | 0.04732507 |
| a2 | 0.0013293 | 0.002467784 | 0.5386614 | 0.59087386 |
| a3 | -0.0101724 | 0.012178238 | -0.8352932 | 0.40480601 |
| a4 | 0.0025303 | 0.003922682 | 0.6450433 | 0.51982875 |
| a5 | -0.0003530 | 0.002254823 | -0.1565533 | 0.87579552 |

a1: 0.02 a2: 0.00 a3: -0.01 a4: 0.00 a5: -0.00



Appendix V

Norms – study four

Questionnaire norms

Means for several of the HEXACO traits in this sample differed significantly from the published norms. Narcissism scores were also significantly lower in this sample.

Table V2

Comparison of HEXACO and dark triad scores with norms

| Trait | Sample mean (SD) | Norm (SD) | <i>t</i> | <i>p</i> |
|--------------------|------------------|---------------|----------|----------|
| Honesty-Humility* | 3.34 (.65) | 3.19 (.62) | 3.03 | = .003 |
| Emotionality* | 3.36 (.69) | 3.43 (.62) | -1.23 | = .221 |
| Extraversion* | 3.01 (.72) | 3.50 (.57) | -8.78 | <.001 |
| Agreeableness | 2.92 (.59) | 2.94 (.58) | -0.45 | = .657 |
| Conscientiousness* | 3.43 (.62) | 3.44 (.56) | -0.2 | = .843 |
| Openness* | 3.31 (.73) | 3.41 (.60) | -1.71 | = .089 |
| Altruism* | 3.66 (.94) | 3.90 (.67) | -3.26 | = .001 |
| Mach - IV | 59.69 (6.69) | 58.74 (6.59) | 0.69 | =.501 |
| NPI* | 10.56 (5.04) | 13.30 (8.51) | -2.60 | =.016 |
| TripM | 60.39 (13.41) | 62.10 (15.67) | -0.61 | =.547 |

Note: *Denotes significantly different from norm

^aNorm data was taken from the following sources: Mach IV – Open Psychometrics data from UK respondents (n = 5486)

<https://openpsychometrics.org>, NPI - Open Psychometrics data from all respondents (n = 11,243)

<https://openpsychometrics.org>, TriPM– Triarchic Psychopathy Measure: Preliminary Manual 2016 (n = 585)

<https://patricknslab.psy.fsu.edu/wiki/images/b/b2/TPMmanual.pdf>, HEXACO - Lee & Ashton (2019) sample of Canadian college students (n = 1126)

Data quality

Tests carried out as described for study three.

LIWC norms

There were some categories where this sample diverged noticeably from LIWC category norms. Participants had more than two and a half times as many first-person plural pronouns (M = 1.89) as the LIWC norms (M = 0.72) and more than twice as many past focused words (M = 10.15 M = 4.64). There were 87% less second-person pronouns in this sample (M= 0.21) than the published norms (M = 1.70). Writing about autobiographical events naturally results in more first-person pronouns and the written accounts provided were not addressed to a specific individual or known audience making second-person pronouns unnecessary. The nature of recalling an experienced or invented event would also cause a higher rate of past focused

language. However there were far less anger related words present in this sample ($M = 0.25$) than the LIWC norms ($M = 0.54$) which cannot be explained by task demands. The within-subjects design of this study ensures that Participant' lies are compared with their own baseline truthful performance, so group-level differences from norms are not likely to impact findings.

Table V1

Comparison of LIWC scores with norms

| Trait | Sample mean (SD) | Norm (SD) | <i>t</i> | <i>p</i> |
|------------------|------------------|---------------|----------|----------|
| Authenticity* | 49.17 (20.92) | 82.95 (20.35) | 59.24 | <.001 |
| Pronouns* | 9.95 (3.02) | 11.94 (3.09) | 23.05 | <.001 |
| Differentiation* | 2.99 (1.18) | 2.78(1.51) | -4.99 | <.001 |
| Negemo* | 1.84 (1.09) | 1.74 (1.36) | -2.75 | =.006 |
| Motion verbs* | 2.15 (1.03) | 3.39 (1.81) | 24.52 | <.001 |

Note: *Denotes significantly different from norm

^aNorm data was taken from the LIWC2015 Psychometric Manual ($n > 77,689$)

<https://www.liwc.app/static/documents/LIWC2015%20Manual%20-%20Development%20and%20Psychometrics.pdf>

Appendix W

Study four - Significance testing between truth and lie conditions

Table W1

Time one - results of comparing Truth versus Lie across LIWC categories

| LIWC Category | Truth | | Lie | | <i>t</i> (162) | <i>p</i> | Cohen's <i>d</i> |
|-------------------|----------|-----------|----------|-----------|----------------|----------|------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Authenticity | 82.58 | 22.70 | 82.10 | 20.45 | .208 | .835 | .016 |
| Personal Pronouns | 11.85 | 3.37 | 11.42 | 2.92 | 1.379 | .170 | .108 |
| Differentiation | 2.89 | 1.75 | 2.69 | 1.48 | 1.222 | .223 | .096 |
| Negative Emotions | 1.92 | 1.45 | 1.81 | 1.28 | .801 | .424 | .063 |
| Verbs | 17.56 | 3.58 | 17.31 | 2.90 | .828 | .409 | .065 |

Table W2

Time two - results of comparing Truth versus Lie across LIWC categories

| LIWC Category | Truth | | Lie | | <i>t</i> (158) | <i>p</i> | Cohen's <i>d</i> |
|-------------------|----------|-----------|----------|-----------|----------------|----------|------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Authenticity | 83.96 | 21.21 | 84.50 | 18.56 | -.270 | .787 | -.021 |
| Personal Pronouns | 12.09 | 2.97 | 11.94 | 3.12 | -.498 | .619 | .040 |
| Differentiation | 2.91 | 1.54 | 2.86 | 1.48 | .357 | .721 | .028 |
| Negative Emotions | 1.76 | 1.40 | 1.86 | 1.34 | -.672 | .503 | -.053 |
| Verbs | 17.53 | 3.03 | 17.80 | 2.92 | -.906 | .366 | -.072 |

Table W3*Time three - results of comparing Truth versus Lie across LIWC categories*

| LIWC Category | Truth | | Lie | | t(159) | p | Cohen's d |
|-------------------|-------|-------|-------|-------|--------|------|-----------|
| | M | SD | M | SD | | | |
| Authenticity | 82.65 | 19.95 | 83.86 | 20.20 | -.590 | .556 | -.047 |
| Personal Pronouns | 12.17 | 3.23 | 12.35 | 3.07 | -.575 | .556 | -.045 |
| Differentiation | 2.66 | 1.47 | 2.75 | 1.41 | -.593 | .554 | -.047 |
| Negative Emotions | 1.60 | 1.33 | 1.73 | 1.48 | -.820 | .414 | -.065 |
| Verbs | 17.32 | 3.12 | 17.71 | 3.07 | -1.280 | .202 | -.101 |

Table W4*Time four - results of comparing Truth versus Lie across LIWC categories*

| LIWC Category | Truth | | Lie | | t(151) | p | Cohen's d |
|-------------------|-------|-------|-------|-------|--------|------|-----------|
| | M | SD | M | SD | | | |
| Authenticity | 82.24 | 19.56 | 81.28 | 20.20 | .458 | .648 | .037 |
| Personal Pronouns | 11.90 | 3.13 | 11.79 | 2.83 | .352 | .725 | .029 |
| Differentiation | 2.68 | 1.55 | 2.79 | 1.41 | -.755 | .451 | -.061 |
| Negative Emotions | 1.52 | 1.19 | 1.61 | 1.26 | -.661 | .509 | -.054 |
| Verbs | 17.55 | 2.89 | 17.63 | 2.92 | -.275 | .783 | -.022 |

Table W5*Combined results of comparing Truth versus Lie across LIWC categories*

| LIWC Category | Truth | | Lie | | <i>t</i> (633) | <i>p</i> | Cohen's <i>d</i> |
|-------------------|----------|-----------|----------|-----------|----------------|----------|------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Authenticity | 82.86 | 20.88 | 82.95 | 19.86 | -.083 | .934 | -.003 |
| Personal Pronouns | 12.00 | 3.17 | 11.88 | 3.00 | .829 | .408 | .033 |
| Differentiation | 2.79 | 1.58 | 2.77 | 1.44 | .180 | .857 | .007 |
| Negative Emotions | 1.70 | 1.36 | 1.75 | 1.34 | -.683 | .495 | -.027 |
| Verbs | 17.49 | 3.16 | 17.61 | 2.95 | -.790 | .430 | -.031 |

Appendix X

Full output of Multiple regression models – study four

Linear multiple regression models were fit separately for each of the variables.

Table X1

Regression Analysis: Reliable change in LIWC_{Pronouns} at Time three

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | .912 | 1.220 | .456 |
| Total self-reported lies | .008 | .038 | .833 |
| Self-assessment of ability | -.014 | .038 | .707 |
| Honesty - Humility | -.203 | .171 | .237 |
| Extraversion | -.089 | .155 | .565 |
| LIWCAuthenticity score | .001 | .009 | .933 |

Note. N = 160.

Table X2

Regression Analysis: Reliable change in LIWC_{Pronouns} at Time four

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | -.626 | 1.334 | .639 |
| Total self-reported lies | -.002 | .039 | .969 |
| Self-assessment of ability | -.045 | .039 | .248 |
| Honesty - Humility | .057 | .179 | .752 |
| Extraversion | .100 | .159 | .532 |
| LIWCAuthenticity score | .008 | .010 | .453 |

Note. N = 160.

Table X3*Regression Analysis: Reliable change in LIWCDifferentiation at Time three*

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | .701 | 2.058 | .734 |
| Total self-reported lies | -.004 | .064 | .953 |
| Self-assessment of ability | -.052 | .063 | .413 |
| Honesty - Humility | -.333 | .288 | .250 |
| Extraversion | .219 | .261 | .403 |
| LIWCAuthenticity score | .008 | .016 | .625 |

*Note. N = 160.***Table X4***Regression Analysis: Reliable change in LIWCDifferentiation at Time four*

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | .630 | 2.455 | .798 |
| Total self-reported lies | -.072 | .073 | .325 |
| Self-assessment of ability | .080 | .071 | .263 |
| Honesty - Humility | -.035 | .330 | .917 |
| Extraversion | .062 | .293 | .833 |
| LIWCAuthenticity score | -.020 | .019 | .291 |

Note. N = 160.

Table X5*Regression Analysis: Reliable change in LIWC_{Negemo} at Time three*

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | .477 | 1.606 | .767 |
| Total self-reported lies | -.022 | .050 | .667 |
| Self-assessment of ability | -.047 | .049 | .346 |
| Honesty - Humility | .071 | .225 | .754 |
| Extraversion | -.130 | .203 | .525 |
| LIWCAuthenticity score | .007 | .012 | .579 |

*Note. N = 160.***Table X6***Regression Analysis: Reliable change in LIWC_{Negemo} at Time four*

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | .827 | 1.678 | .623 |
| Total self-reported lies | .006 | .050 | .899 |
| Self-assessment of ability | -.017 | .049 | .729 |
| Honesty - Humility | -.183 | .225 | .418 |
| Extraversion | -.123 | .200 | .539 |
| LIWCAuthenticity score | .008 | .013 | .554 |

*Note. N = 160.***Table X7**

Regression Analysis: Reliable change in LIWC_{Verbs} at Time three

| Effect | Estimate | SE | p |
|----------------------------|----------|------|------|
| Fixed effects | | | |
| Intercept | -.068 | .883 | .939 |
| Total self-reported lies | -.023 | .027 | .403 |
| Self-assessment of ability | .041 | .027 | .129 |
| Honesty - Humility | .002 | .124 | .984 |
| Extraversion | -.135 | .112 | .230 |
| LIWCAuthenticity score | .000 | .007 | .948 |

Note. N = 160.

Table X8

Regression Analysis: Reliable change in LIWC_{Verbs} at Time four

| Effect | Estimate | SE | p |
|----------------------------|----------|-------|------|
| Fixed effects | | | |
| Intercept | 1.937 | 1.021 | .060 |
| Total self-reported lies | .015 | .030 | .630 |
| Self-assessment of ability | -.026 | .030 | .380 |
| Honesty - Humility | -.045 | .137 | .744 |
| Extraversion | -.078 | .122 | .525 |
| LIWCAuthenticity score | -.014 | .008 | .082 |

Note. N = 160.

Appendix Y

Full output of Fisher's Z test comparing correlations – study three

Spearman's correlations to compare self-rated ability and actual performance ($LIWC_{Authenticity}$ score when lying) at each time point

Time one $r(161) = -.11, p = .178$

Time two $r(156) = .05, p = .547$

Time three $r(156) = .08, p = .341$

Time four $r(146) = -.07, p = .371$

Table W1

Fisher's Z test results comparing correlations at each time point

| Correlations compared | Z | p |
|-----------------------|-------|--------|
| Time 1 – Time 2 | -1.42 | 0.1556 |
| Time 1 – Time 3 | -1.69 | 0.091 |
| Time 1 – Time 4 | -0.35 | 0.7263 |
| Time 2 – Time 3 | -0.27 | 0.7872 |
| Time 2 – Time 4 | 1.04 | 0.2983 |
| Time 3 - Time 4 | 1.3 | 0.1936 |

Appendix Z

Qualitative interview schedule and prompts

Semi-structured interview prompts

Thinking back to the time when you did the study, I'm really interested in what it was like and how you experienced it.

How do you remember it? What do you remember most?

Immediately before you arrived - Can you tell me about what you thought it would involve? Did you do any prep? how did you feel? Why do you think that was?

Once you had been briefed – how did you feel? What were you thinking? Did you make a plan?

During the task - what were you feeling? What were you thinking? What were you focused on? (meaning – did you concentrate on the task itself or were you thinking ahead to the interview part?)

Before the interview – how did you feel? What were you expecting?

During the interview – what was that like? how did you feel? What were you focused on?

Afterwards – how did you feel? what did you think? did you wish you'd done anything differently?

Think-aloud-type prompts for GoPro footage

BEFORE

We're going to watch the videos together and what I want you to do is try to say out loud as we're watching what was happening inside your head at the time. So, for example if I was doing it for myself, I might be saying "ok, has she got water? Make sure the recording equipment is working, don't take too long setting it up or you'll draw attention to it and make her self-conscious. Right make sure you've got an open body language, don't talk too fast." that kind of thing. Almost like you're David Attenborough and you're narrating a documentary of yourself.

We'll start with your Go-Pro footage and obviously I wasn't here for that part, so I need you to help me understand your experience. I might ask questions but as much as possible I want you to talk the whole time. We can pause the video at any point or rewind if you'd like to see something again.

DURING (if required) what was happening here?

What were you thinking?

Can you remember this part?

Was this easy/difficult?

Video-stimulated interview prompts

BEFORE

This is similar to what we just did but this time it will be with the interview footage which we are both in. So we can both watch ourselves! The main thing that I'm interested in is what was going on inside your head that I couldn't possibly have known about while the study was going on. So, I need you to do two things at once...the first is looking at the video and telling me what you were thinking and feeling at that time. But also, I need current <name> to tell me what you think about past <name> with the benefit of seeing it now from this different perspective. So we're looking for like running commentary of, "this is what I was thinking", "this is what I was doing"

DURING (if required)

I notice that you're doing..... were you aware of that at the time? Why do you think that was?

How did you feel it was going?

AFTER

You've done a good job with the live commentary. Now that we've seen all the footage and hopefully jogged your memory a bit, I want to know your general impressions of how you think you did.

Is the footage how you remember the day? If not how is it different?

Is that how you thought you came across?

Do you think you were convincing? Why or why not?

Were you better or worse than you thought you were?

Did it go how you wanted/planned?

What might you change if you could do it again?

Appendix AA

Qualitative interview transcripts

Transcripts for all interviews were created manually by one research assistant and checked by a second before being reviewed again by the author. This process was based on the Baylor University Institute for Oral History transcription guide (2018) adjusted to ensure each record was as verbatim as possible.

The transcription procedure should be regarded as an important phase of data analysis (Bird, 2003; Lapadat & Lindsay, 1999) because attempting to create an accurate and meaningful record of what was said and how involves decisions on the part of the researcher of what to include and leave out and how to represent the voices of all involved. This means that “transcription itself is an interpretive process” (Kvale, 1996, pg. 160) rather than a mechanical one. Additional reflexivity is required when the researcher was also a communicant in the original source material being transcribed as is the case in this research. Thoughts are stored in complex abstract networks and therefore verbalising them is an exercise in translation and transformation for the participant, rather than simply reproducing stored content in a different modality. This process inevitably involves some loss of meaning and that is compounded by further transforming verbally expressed words captured during dynamic interaction into an immutable written document. A careful balance must be maintained between the requirements of analysis and creating a representation of participants’ communication that they would recognise. For this reason, the qualitative interviews in study four differed from the Baylor guide by including all coughs, pauses, ‘crutch words’ such as “um” and “ah”, feedback words and silences so that their meaning could be included in analysis.

| Interviewer (I) Participant (P) | Transcript - Lisa |
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| I | Cool! Um...shall we shut the door? There are people trying to study out there... Awesome! So, let me go over um kind of how it's all supposed to work |
| P | Okay |
| I | The reason that I'm doing these interviews, is because um you remember doing the task for me a year ago? |
| | Yeah |
| | So I've got all these videos of people telling the truth and lying um and there's loads and loads of literature about how you're supposed to interpret that, and how you can tell when people are lying and whatever else. But something that not many people do is to just ask people what they were thinking |
| | Mmm hmm |
| | and what they were doing, um and what's really interesting is I might look at the video and be like "oh! That person's fidgeting a lot, that must mean..." and then, this happened to me, one of the people I was interviewing was like "oh yeah I was really hot because I'd been running around, so I was like pulling at my top because I was all sweaty" and I was like "oh!". (laughs) |
| P | (laughs) |
| I | Well that was completely the wrong interpretation! But if I don't ask people then I never get that information. |
| P | Yeah, no. Exactly. |
| I | So kind of the whole idea of this part is to really figure out from the horse's mouth what was, what was happening. Specifically, what I'm really interested in is what was happening inside your head, so in the lead up to everything and then in the interview what were you thinking about, what were you trying to do, that kind of stuff. So what we'll do first is just to ask a couple of kind of general questions |
| P | Mmm hmm |
| I | about the task, then we'll have a look at, well some of, the GoPro footage that you filmed. Um, so just like the first five minutes and the last five minutes. And you can kind of do some David Attenborough style laughs |

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| | narration and tell me what was happening in Lucy's head while she was doing this! And then we can watch the video of the actual interview, um which is just as awkward for me as it is for you because I'm in it as well and I have to listen to the sound of my own voice! And then, yeah, You just kind of tell me how you think it all went. |
| P | Okay! |
| I | So, if we go back in time to when you did the study. Um, start with...how did you find out about it? |
| P | Um it was through the like participation scheme, cause I was first year so it was like for credits. |
| I | Cool! Um, and why did you decide to do it, because you knew you were– |
| P | It just seemed like a fun one, and yeah I think cause it had because it was a longer study it had the most credits! (laughs) |
| I | Yes (laughs). |
| P | That I could get in like a short amount of time (laughs). |
| I | So it wasn't anything like, you saw the poster and went "oh yeah I'm awesome at lying, I'll do that one!" |
| P | So, I mean like I am good at lying and that was kind of like oh yeah I'd be like– |
| I | Oh cool! |
| P | I was kinda like interested in the yeah the... |
| I | "I'll test myself"? |
| P | (laughs) |
| I | Um, when you think back to the study, what do you remember about it? |
| P | I remember being like very cautious of the GoPro, because it was kind of like strapped to you isn't it? Mmm hmm And being like oh my god people can see me and they're gonna think I'm recording them! Um... And then... I-I just remember like walking around. I remember I bought a Ribena in the shop. Um... and was trying to like conspicuously take a photo of it without looking like odd. Um (laughs). I actually remember in the interview, I didn't realise when I was meant to be telling and the truth and lying, so I think I lied the entire time. |
| I | Interesting! |

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| P | Yeah (laughs). So... |
| I | We can check that! (laughs) |
| P | (laughs) |
| I | Um, and so do you remember whether you found it easy or hard or? |
| P | I think it was pretty easy...Yeah, I think the hardest bit was like, directionally, trying to find where I was meant to go. But that's just...because I'm not good at directions around campus! (laughs) |
| I | Cool, So...what we did, we brought you in, showed you a little video with your instructions, and then kind of sent you on your way. At that point, once you'd watched the video and you had the little instruction sheet, did you like make a plan of what you were going to do? |
| P | Yeah! I did! |
| I | —Or did you freestyle it? |
| P | Yeah, I think I was just trying to like look as normal as possible, and just do things that would be...as if I would just have done them anyway. Yep Um... And that's all I can really remember doing yeah. |
| I | And what about for the interview part? Did you—were you thinking ahead to the point where you were going to be interviewed at the end? Or were you— |
| P | I was...Yeah, I was kind of like oh what could I say, instead of this. Um, so I had like a rough plan in my mind. Because they say it's always good to, when you're lying like stick to the truth as much as possible, then it's not as obvious. So I think I was trying to do that. |
| I | Yeah, cool... Um, and do you remember...afterwards, you finished everything, signed the form, you're kind of walking away...how did you think it had gone? |
| P | I think it went well, apart from the fact I'm pretty sure I fudged the interview a little bit... Um...but yeah that's that's it... I was kind of concerned, like are they even going to be able to use like footage, cause I didn't like—I lied every single question. |
| I | Cool...Okay! So, we have here the video (laughs) um, so it is quite difficult to do, but as much as possible I want you to kind of talk the whole time. So kind of, everything that was inside your head at the time...if you can! It might be that you look at it and go, oh that's weird I don't remember doing that at all!... It's really slow!... This is my old laptop! |

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| P | Oh yeah, it's Beats Audio they don't make them anymore. |
| I | (laughs) Okay, this is the very start! |
| P | Okay, I'm pretty sure I'm probably holding something in front of the camera most of the time... Oh yeah conspicuous like scarf over the lens... |
| I | And you're off...At at speed! Like you're moving pretty quick. |
| P | Yeah! |
| I | Do you remember– |
| P | I think I was quite hungry and I think I just wanted to go and get something from the shop. Um, cause I think I'd been late and missed breakfast or whatever (laughs)... Yeah I was definitely really nervous every time I came across a person, I think the actual viewpoint goes because I was like scarf across lens... |
| I | This is quite soothing just listening to you |
| P | Yeah, just a lot of footsteps. |
| I | (laughs). With tiny, sneaky bits of... |
| P | (laughs). Yeah this is probably when I'm going from like the Whitehead Building to like RHB. [inaudible] Oh no I'm still... |
| I | Cool, it's nice and sunny! |
| P | Yeah!... I remember like thinking that if I act as like normal as possible then nothing's happening, no one will look at the camera (laughs). |
| I | Yeah! (laughs) So it sounds like you were mostly quite self-conscious about the camera and not so much– |
| P | Yeah, yeah, yeah! Mainly because I didn't want like other people to be like feel uncomfortable um...yeah, I think I just my first idea was to do the where you take the photo, so I headed to the student shop I think? Um... We'll see, maybe not... |
| I | Cause you're not like stopping still at any time to gather your thoughts or– |
| P | No, no. Just on the way to a destination, I think kinda one-track mind. |
| I | Were you conscious of the time? In the moment? |

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| P | Yeah, cause there was—um...that might be why I'm walking fast? I honestly can't 100% remember the instructions. Was there like a time limit? |
| I | There was, so it was like half an hour in total um and there was 15 minutes to create your cover story, and 15 minutes to do the mission/task. It could've been either order, cause you can flip them round for different people. |
| P | Yeah, I did the cover story first I think... |
| I | It seemed like a lot of time. |
| P | Yeah (laughs) |
| I | When I set it up. But then quite a few people were like "do you know how long it takes to get places?" (laughs)... Right. You are on a mission! |
| P | Actually I might have done the mission part first. |
| I | Oh yeah, maybe! |
| P | Yeah think I must have done. And then I, like I did that quite quick and then I just chilled for a bit... Yeah I must be, cause I'm going round to where the... |
| I | To the other side. |
| P | ...the poster or whatever the thing was... Yeah I think was just very determined (laughs) |
| I | Yeah, I'm getting that from your pace! It's interesting how much kind of information you can get with from so little input, but yeah you're marching along! Little bit slower now... |
| | |
| P | I think this was me like trying to figure out where the thing was probably |
| I | Yeah [inaudible/whisper] |
| P | Yeah I don't think I spotted it straight away I'm not the most observant |
| I | You must have it now you're going outside... Cool, that is the first 5 minutes, so if we go to the last part....the video files are super annoying and have cut themselves in half |

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| P | Oh |
| I | [inaudible/whisper] See now you're not moving...are you? |
| P | I don't think so... I think I was just like...waiting out the rest of the time cos I yeah I did it quite quick...actually this... ummmm I'm not sure |
| P | Yeah this might be really dull |
| I | Laughs.. It's definitely a contrast to the high-speed high movement |
| P | Yeah |
| I | So if at this point you've kind of done all of the stuff that you had been instructed to do and you were kind of sitting here creating a cover story. Were you using that time to plan? or think? Or... |
| P | Yeah yeah I was just trying to think what's like the most normal thing I can say where it's like not obvious that I'm lying |
| I | What is the most normal thing? |
| P | I think it was just like thinking of stuff I usually do round campus like day-to-day like... going to the library or like the shop or something like that |
| I | Yeah...not something super weird |
| P | No! Yeah I'm just literally...sat (laughs) |
| I | You're going to move at some point... oh you're up! So I guess now you must be heading back... |
| P | Yeah...oh yeah cos I'm heading back I'm way more like....comfortable with the fact the camera's on show I'm just like... |
| I | So how would you say you were feeling about...like at this point about going into the interview? |
| P | I was nervous about the interview yeah just mainly cos I wasn't sure... I hadn't like 100% formed what I was going to say um so it was quite like just thinking on my feet although I had like certain ideas obviously I didn't really know what the questions were going to be. |
| P | Yeah oh you've stopped... or slowed down |
| I | I oh yeah it was hot and I was wearing a lot of layers and this building is always warm |

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| P | And there's stairs. See and that's interesting cos if I was watching by myself I might think 'oh she's very slow maybe she's nervous' but |
| | Well I mean like I was a little bit so yeah |
| I | But also.. It's just quite hot |
| P | Yeah (laughs) I think I was just trying to like stretch the time out quite a bit cos I wasn't as long as I thought I would be |
| I | Cool, so now we get to the fun part. Which is the actual interview |
| P | Yeah this one I can't really remember to be honest |
| I | So this'll be fun then! This is where your job gets a little bit harder |
| | ok |
| I | Cos I need you to do two things at once...the first thing is looking at the video using your memory telling me what you were thinking and feeling at that time |
| P | Yeah |
| I | But also, I need current **** to tell me what she thinks about past **** so it's kind of 'oh I was doing this or I was thinking about this' but then if anything occurs to you now where you're like 'oh my god why did I do that? Or 'oh actually that was really good look how clever I am' then kind of |
| P | Yeah yeah yeah ok (laughs) |
| I | Then kind of two layers of self-narration which I realise is not the easiest job in the world |
| I | Also we can press pause and rewind any time you want if you're like "what was I doing there?" |
| P | ok |
| I | The audio is quite terrible... |
| P | Ok |
| I | no matter how loud we put it, it's very difficult to hear without headphones um but we'll do our best. |

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| P | Yeah I'm a little bit nervous cos I'm like wiping my hands on my like.. Leggings. Like I get really clammy hands when I'm nervous [sound of original interview playing through speakers] |
| P | Ok this is me like trying to look comfortable but I don't think I do, I think like my face looks uncomfortable (laughs) |
| I | But what does looking comfortable mean? |
| P | Like ahh in terms of like body language like sat back like facing you like engaging |
| I | Yeah...and so that was something you were conscious of...doing |
| P | Like open body language Yeah [sound of interview recording] |
| P | I never have friends on campus that's the biggest lie ever |
| I | But do you think you were convincing? |
| P | No cos I can like I can see myself think like I'm thinking of what I'm going to say rather than it being like a natural answer |
| I | How do you know? |
| P | Cos my eyes go like up like and I usually do that when I'm thinking |
| I | Oh ok yeah cos you kinda look up here a bit |
| P | Yeah |
| I | So this is the second one. Yeah I have no idea why they split themselves and if I had better video editing skills I could knit them back together... but |
| P | Oh it's fine |
| P | [sound of interview recording] Actually I think I was doing that, I think that is kinda true. Maybe I did tell the truth after all. |
| I | laughs |

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| P | Yeah I think most of the time I was just walking around on my phone as like part of the thing to make me look normal as well |
| P | Yeah I remember being nervous like what was the next question... I think I like laugh more than when I'm...like nervous laugh |
| P | Yeah it's like...variations of the truth |
| I | Yeah? |
| P | So like I think I did sit down on the outside bit by the... but I definitely didn't call anyone (laughs) mainly because I didn't want it to be recorded! It would be me like having a go |
| I | So do you remember, had you planned to say that you'd made that phone call? Or did that just come to you? |
| P | I think so, I think yeah because it was stuff like I had to do that day |
| I | Cos I'm looking at like how...smoothly that comes out. [inaudible] So you've just told me now that was a lie but like in the moment there it just kind of was like 'yeah ok' |
| P | Yeah yeah yeah cos it was something that was going on at the time so it was like something I had to do so it was like...just easy to say and I am quite good at telling lies, if there's no like bad consequences to it |
| I | What makes you good? Like what do you do? |
| P | I think I just trust people's reactions like no..I no one's going to turn around and really be like 'you're lying' cos how would they know? |
| I | Cos...what's interesting to me is you're very very still...when you're not talking |
| P | Yeah I was conscious of fidgeting cos I know that that's like a thing. So I was like I'm not going to fidget and I know like as well eye contact? |
| I | Oh ok...so you actively tried... |
| P | So I was actively like monitoring my body language |
| I | Cos you do <i>little</i> movements with your legs... |
| P | Yeah yeah little ones |
| I | like little muscle tenses there but otherwise you don't really move at all. But when you're talking you're quite animated so...that's interesting that you were doing that... so you were deliberately trying not to fidget? |

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| P | Mmmm hmmm |
| I | And what were you saying about eye contact? That you were trying...? |
| P | Like maintain it and make it just be natural rather than..cos I know a lot of people when they lie they like look away or um like... I've forgotten what it is but blink or...something like that....so I was just conscious of that |
| I | Sweaty hands again |
| P | Yeah (laughs) |
| P | Yeah tell tale sign I was nervous |
| I | And see what's interesting there is that you don't speak |
| P | Yeah |
| I | So I don't think that that's a truthful response...but it...but you're only lying by shaking your head |
| P | By shaking my head yeah |
| I | so I'm like 'did you go into any other building?' and you don't say anything. You're looking straight at me and shaking your head but you don't... |
| P | Actually I think that's the truth cos I don't think I did |
| I | Ok that's interesting! cos I would think "oh she must be lying and she doesn't want to commit to the lie" |
| P | yeah |
| I | But if that's actually true...yeah and it doesn't look like you went anywhere else from that footage |
| I | Sometimes these are my favourite bits... when I walk out obviously then you're kind of by yourself being more... sculling the water! |
| P | Sculling the water! |
| I | I don't know whether maybe you were just genuinely thirsty or that was |
| P | Yeah I think I was cos I'd been like walking around and always I remember this building every time I come in with like a coat on I'm just boiling and yeah... water! (laughs) |
| | It's super warm and we're back in this room now and it's quite a little room it heats up quite quickly |

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| | Yeah...yeah |
| I | So having looked at that now, how would you assess your performance? Do you think you were convincing? |
| P | I think I was yeah...especially if you didn't know....well actually anyone else I think yeah they they would think it was convincing. It's only because like I know myself |
| I | And because you know... what things do you pick up on that only you would know like what kind of stuff jumps out to you? |
| P | Ummm so mainly like the sweaty hands and just trying to like subtly (laughs) like wipe on my trousers |
| I | Laughs... yeah |
| P | Umm the eye thing when I'm thinking um and the fact I was so still cos I don't think I am normally when I'm like sitting there. Like that was definitely more like of a conscious thing than would be in like a normal conversation |
| I | Yeah... And in the moment like while you were in the interview |
| P | Yep |
| I | How did you feel it was going? |
| P | I was worried that you were like going to figure out that I was lying. But I...I felt pretty confident in the fact that you wouldn't say 'oh you're lying' But I was kinda like does she notice? (laughs) um but I think I was kinda like gauge your reactions? |
| I | How do you do that though? Like yeah trying to figure out, trying to gauge someone's reaction what were you looking for? |
| P | Just trying to see...yeah it's really difficult I think I was just I don't know like...little cues that I would hopefully understand if they came up (laughs) I don't think I necessarily really knew what I was looking for just...that I would know when I saw it kind of thing |
| I | Yeah or that..how it would make you feel |
| P | Yeah...guilty! |
| I | So there's no specific like things that come to mind that I could have done that would have made you think 'ohhh no' |
| P | No I think it would have been just like more facial cues |

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| I | Yep |
| P | Umm like a quizzical look or something like that um but I don't think I got that |
| I | Yeah if I suddenly started staring right at you...like 'really ****? Really?' |
| P | Yeah oh my god! (laughs) |
| I | And so would there be anything verbal from me that you would be watching out for? Or would it mostly be body language? |
| P | No I don't think so...yeah mainly mainly body language and face yeah cos um I know most of the time like it's ahh like reading from a script or like rather than going off topic so I kinda was just trusting that. |
| I | Cool. So if you could change anything about what you did |
| P | Mmm hmm |
| I | Would you change anything? Or you reckon |
| P | Probably not. Yeah I think it was alright |
| I | I think it was good! |
| P | Yeah the only thing was like maybe move my scarf a little bit so the footage would be better but other than that yeah |
| I | interesting |
| I | Going back to this bit [sound of interview audio] so lots of movement and playing with your hair |
| P | Yeah...I think I was...that was what I was doing when I was sat down |
| I | And then that's true you were on your phone. And then as soon as you stop talking. It's like somebody's cast a spell. You're completely still |
| I | Is that how you normally sit? Pretty much... |
| P | Yeah (laughs) |
| I | Cool....so. Now thinking kind of more generally about you and how good you are at lying. So not necessarily with me in that situation but in a general sense |

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| P | yeah |
| I | How do you know that somebody believes you? So if you're in a situation where you have to lie to somebody |
| P | If they don't question it. I think for the most part like I am a good liar and I think I can get people to believe me. Umm but it's... I don't.. it's usually like white lies so it's not anything big. Um... yeah I think I just like trust people's reactions and like I trust people trusting me. |
| I | Yeah |
| P | To tell the truth. So... yeah |
| | Yeah you trust your own performance |
| | Yeah (laughs) um and if I like assume that they're not gonna see that then I just go with it and I don't feel uncomfortable cos it's gonna be ok |
| I | So do you think that's where it goes wrong? Like if you started if you started to feel uncomfortable.... |
| P | Yeah then 100% it would like be way more noticeable I think. Yeah umm....yeah definitely |
| I | And what happens if you're uncomfortable and the wheels start to fall off how does that manifest itself, like what happens? |
| P | I usually I usually like straight away because I know it's obvious it's usually like with family members or something I will just stop and be like 'yeah ok' and just say it cos I hate...like.... I just don't like that discomfort like I would rather just be like transparent about everything so |
| I | And so you can...can tell? |
| P | Yeah |
| I | Straight away you're like "oh no" |
| | I think I'm pretty good at being able to like yeah like clock only really with people I'm really close to um yeah like strangers probably not so much |
| | Um and so that's the thing so we ask people, I ask people a lot...who is it absolutely hardest to lie to? |
| P | This is really funny actually because even like I have a twin, and we're super close and she can't tell when I'm lying loads of the time. So...like there's been times where...like so like so her cat died or something and I had to like she came home and I had to pretend everything was fine that I hadn't just been crying and like digging a grave and I |

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| | was like telling jokes and totally cool. She was like...she could kinda tell that my Mum was a bit off but with me she was like 'I would never have been able to tell' |
| I | Wow you are good (laughs) so do you reckon you could lie to her about bigger stuff? |
| P | Yeah definitely yep |
| I | So is there anyone that you'd be like 'nope, not even worth trying' someone who can always see through you? |
| P | I think....no it's more what the lie is. So like if it was like a big thing like if I was lying about like cheating on someone I don't think I could do that because I would feel guilty I think if it's...has like consequences where it could like hurt someone's feelings or like morally be slightly wrong then I would have I just wouldn't do it. I'd have a problem with it but um...but otherwise |
| I | So then you need to be in that confident space |
| P | Yeah |
| I | Where you feel good about...or you don't feel guilty about it so you're 'yeah this is cool I can trust my abilities here' |
| P | yeah |
| I | So anything that falls into that category doesn't really matter who the...who it the person is |
| P | Who it is...yeah then it's fine |
| I | Oh that's interesting. So again, well another thing that I ask people is... is there any one particular person or any type of person that you would find it really hard to lie to...but maybe that wouldn't apply to you either |
| P | My Mum. Just because I've never really been able to lie to her like you know when you're younger and you like sneak out to parties or whatever I could never do that because she would like call their parents and tell them so I just I think I'm terrified to lie to her because like she will always find out so I just don't |
| I | So is that like she'll know you're lying or just she'll do the detective work to find out and then it will come back on you |
| P | Yeah basically the detective work (laughs) |
| I | Mums...they do they always find out |
| P | Yeah literally she knows always |

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| I | Interesting... so can... is...is your sister good at lying to you? Do you reckon she could fool you just as easily as you can fool her? Or....? |
| P | She can with certain things but most of the time I know when she's lying...um....like mainly because I think I observe her more than she does me. So she had like um....like depression and stuff and I was like looking after her for a while so I had to just know when she was lying about like hurting herself and stuff like that |
| I | Yeah |
| P | So I'm pretty good like any time and I'll just be like 'yeah you're you're lying like' yeah |
| I | And so is it the level of detail of what you're observing about her |
| P | Yeah I...I think so I think it's just because I know what to look out for and what she does whereas I don't think she could know what to look for with me |
| I | Cos maybe she hasn't had the practise |
| P | Yeah exactly yeah yeah so she hasn't really had a reason to so (laughs) |
| I | So this is interesting cos a lot of what you've talked about is kind of like just a general feeling of confidence not really a specific thing |
| P | Yeah |
| I | Are there specific things that you try and concentrate on if you're going into a situation you know you're going to have to lie to someone and have to be convincing do you think about the words that you say or what you do with your body or? |
| P | Yeah so like obviously it depends like the kind of lie but usually like always have open body language, always sound confident so that you're not doubting what you're saying umm |
| I | What does that mean? How do you sound confident like... |
| P | Just like self-assured I guess? Like certain of what you're saying so that if I don't doubt myself then no one else is going to |
| I | Yep |
| P | Ummm and then yeah I think if I'm like calling in sick to work I'll use more like sympathetic language to like evoke a response cause I don't feel as bad because if they're like this sounds so bad but if they're feeling sorry for me that I'm sick then I don't have to feel bad that I'm like letting them down if that makes sense? Cos they're just like 'ok no worries' |

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| I | Well they're not... they'd be quite horrible to make to try and make you feel bad |
| P | Yeah exactly and I think if you elicit like sympathy from someone then they're highly unlikely to then turn around and be like 'you're lying' because that would make them feel bad to say that. Um so it's basically yeah like just trusting people's reactions and trying to foresee what... how they'll react |
| I | And so and physically is there anything that you try and do with your body like when we were watching the video we were talking about open body language and you tried not to fidget. |
| P | Yeah and like not fidgeting and stuff. I think |
| I | Do you..? Were.. Is that something that like consciously in your head? Or...yeah |
| P | Yeah yeah yeah definitely um I think I'd probably be a bit more fidgety if I like... didn't think about it |
| I | If you let yourself? |
| P | Yeah definitely |
| I | Interesting. |
| I | So if you had to, if you knew in advance that you had to tell a big lie |
| P | Yeah |
| I | like something somebody might get in a lot of trouble for... |
| P | Mmmm hmmm |
| I | Kind of somebody might lose their job....kind of big scale and you had half a day or whatever to prepare. What would you do? What would you need to prepare to make you feel confident that you were going to do it successfully? |
| P | I probably wouldn't need that much time to prepare as as long as I like figured out like a good enough lie like a good enough excuse |
| I | ok! Oh just give me 10 minutes I'm fine! (laughs) |
| P | And I probably wouldn't need to because yeah I think I can go into that head space like quite quickly I would just....as long as I feel comfortable enough in what I'm saying then yeah it would be ok I think |
| I | That's interesting no well because it's sort of what you did in the video there |

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| P | Yeah |
| I | It was right...make the decision, commit to it |
| P | Yeah and then just go |
| I | And then you wouldn't need a lot of...thinking time you're just like |
| P | Yeah just go |
| I | Right this is what I'm going to do |
| I | Interesting. Um and when we said right at the beginning you were like 'oh yeah I reckon I'm pretty good at lying' how do you know? Like did you figure that out when you were really little? Is it something that you just know? |
| P | I think it's just something that just over time I've done or had to do with certain things and it's only ever been like white lies but like sometimes you kinda have to um there's been like you with like family things like 'oh don't tell the other side of the family this' |
| I | Yep |
| P | And stuff like that so I've just yeah it's almost like a natural ability |
| I | Yeah |
| P | Umm where I don't really have to think too much about it. It's ...yeah as long as as long as the...there's no like big moral consequences then I'm totally fine doing it...yeah |
| I | And because that...as soon as there's big consequences then you start to feel the emotions that make you less confident? |
| P | Yeah like I have a really bad like guilty conscience and I would like avoid having that feeling at all costs (laughs) so I'd rather just tell the truth like for myself like self-preservation yeah so...yeah |
| I | That's interesting... you're very all or nothing right? |
| P | Yeah! |
| I | So it's either yeah I'm definitely gonna tell this lie and I'm going to be awesome at it or just 'forget it' |
| P | Yeah nothing at all. yeah literally because I think it just gets complicated like you can spiral into more and more lies and then you can't get yourself out so |

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| I | This would be very interesting in a police interview it'd be like ok sure no no no absolutely she's totally confident 'yeah but we've got the CCTV footage...' 'ok fine, yeah I did it!' (laughs) It's one or the other. |
| P | But to be fair in a police interview I'd probably be different be...just because in terms of...like legal system...although they have the evidence...if your witness statement differs slightly then it's inconsistencies and then they're less likely to prosecute |
| I | Ok so you're saying it's a different kind of.. |
| P | I think it's just knowledge of certain things so if I know how things are going to go then I'm ok to kind of like... play it a bit (laughs) |
| I | Yeah so you'd have maybe a different strategy if it was something like that...ok |
| P | Yeah |
| I | ...so if this is a police interview maybe they don't necessarily have enough physical evidence... so it all hangs on this interview |
| P | and because obviously like doing psychology I know how the police like the cognitive interview or whatever work I think yeah I'd be quite good at it. |
| I | Nice |
| I | Cool, I'm going to check all my questions now and make sure I've asked you everything that I need to ask...oh yeah I always forget that one Um so before you watched the video, you had an idea in your head of what you were like |
| P | Yeah |
| I | Was...were there any surprises? were you how you thought you were? |
| P | No not really actually that's kind of like how I assumed I would be yeah...it's kind of just the the only interesting to see what I was doing like a year ago or whatever |
| I | It's weird how some parts you totally remember.... and then some... |
| P | And then some.... gone yeah. Yeah cos like the order of how I did things was different to what I remembered. Um like I thought I'd done the cover story first but it was actually the other way around |
| I | See what would have been interesting if I had thought further in advance, several years in advance would be to bring people back in now and re-do the interview now and be like 'soo....on the 3 rd february 2018 what did you do for half an hour' |
| P | Oh my gosh completely different answers...yeah |

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| I | Then it really would all be a lie! |
| P | Yeah cos like my lies were very like situational to what was going on then. So...yeah |
| I | But there.. I mean what was interesting is that that might be a little bit more realistic because the police don't pick up their witnesses or their suspects immediately there's usually a lot of time |
| P | Afterwards like retrospect yeah |
| I | And so yeah the kind of more realistic way would be 'so **** if you can just cast your mind back 9 and a half months...' (laughs) 'to a Wednesday afternoon what were you doing then? And were you fidgeting at the time?' |
| I | Cool, that is pretty much everything that I wanted to ask you about. |
| P | Ok cool |
| | Is there anything else you want to tell me that's going to help me understand what that whole thing was like for you? |
| P | I don't think so I think the main thing is probably because like it does help that I study psychology and that I like read a lot in my own time...so I think I am more aware than like the average person would be in terms of lying in general and just my knowledge I guess on the subject and how to kind of play it um so yeah that could be like....a difference but that's probably it |
| I | There's a difference between knowing about it and being to do it though |
| P | Yeah that's true! Yeah yeah |
| I | Cos lots of people know...it's been funny people watching their videos and some will say 'oh I had really open body language...no I didn't!' |
| P | (laughs) that's funny! I think I'm just quite self-aware so I think it's like...an easy thing to do. Like I I'm aware of like yeah like how I'm responded to or whatever or like how I am in my space |
| I | So then it's easier to tweak the details of it if you need to |
| P | Yeah yeah. |
| I | Cool, we're done. |

| Interviewer (I) Participant (P) | Transcription - Farrah |
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| I | It's going? It's working. Cool, um so first of all let me try and explain kind of why I'm doing this, what I'm trying to do and then we can crack on with it. Um, one of the first things to say is that there's no trick! So I think when you do like deception research people often think that there's like a secret thing – or you're gonna... |
| P | (laughs) Okay |
| I | I swear! We are just talking (laughs). Um, so I did the first study that you participated in...um...and got loads of people to tell me some lies and tell me the truth, and then kind of analysed what they said using some linguistic– |
| P | Yeah |
| I | forensic linguistic techniques and stuff like that. And then realised that a lot of the time when I'm looking at video footage and like coding non-verbal behaviour and stuff, but I'm kind of guessing what's actually happening - |
| P | Yep |
| I | in people's heads. So you look at someone and you're like "oh they're fidgeting a lot, maybe it's because they were nervous", and then when you actually ask the person they're like "no I was really hot and sweaty" |
| P | (laughs) yeah! |
| I | or "I just didn't like that shirt, it was really uncomfortable". |
| P | Oh yeah |
| I | So, sometimes the best way to find out what's happening is to literally to ask people... |
| P | Ok |
| I | "what were you doing? What were you thinking?" (laughs). Um, so the main thing that I'm interested in is what was going on inside your head that I couldn't possibly have known about while the study was going on. |
| P | Ok |
| I | Um, so what we'll do is ask you a couple of questions just kind of general ones about how much you remember it and what you think you were thinking about – |
| P | I forgot what the lie was about! |

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| I | You probably yeah, most people do! Um and then we'll go and have a look at the video footage |
| P | Ok |
| I | ... of the interview, and we've got a little bit, like, I think only 5 seconds of the GoPro footage that you filmed because I think the battery died or something. |
| P | Ok |
| | Um But kind of try and get your memory back into - |
| | Ok |
| I | that place and be like ok now what do you remember? So if we start from like a complete blank, and you think back to probably about a year ago now - |
| P | Yeah |
| I | When you did the study, what do you remember? |
| P | Um... I remember wearing the GoPro and walking around and we had to pick up envelopes I think along the way. And then we came back and we did an interview... |
| I | Mmm hmm |
| P | That's literally all I remember right now! |
| I | That's more than a lot of people remember (laughs) |
| P | (laughs) |
| I | Um... And do you remember really basic stuff, do you remember why you decided to do it? The study? Was it just cause it was on the- |
| P | I think it was the credits yeah (laughs) |
| I | Yeah the credits were on the research participation scheme. Some people saw the poster and they were like "oh, I'd be really good at that" but, I think most people it was just... |
| P | Yeah |
| I | I need the credits! (laughs) Um...and once you'd come in, and sat down and um I think we'd got you to watch Like a Mission Impossible video telling you like, |
| P | Yeah |
| I | what the task was going to be. So you had your instructions, what were you thinking at that point? Do you remember? |
| P | Um, I wasn't really thinking anything. I was just going with it! |
| I | Yeah! So...um...do you think-did you have any kind of plan in place? or was it just in the moment? |

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| P | It was just in the moment. It's not something I've done before, so it's just like, I was just seeing how I would do at it... |
| I | Yeah! |
| P | I didn't think I'd be so great at it (laughs). |
| I | Oh why not? |
| P | I don't know, I just—like I could just feel myself not being myself. |
| I | Oh really? |
| P | Yeah so, I didn't think I'd be that great at it. |
| I | Oh... Why do you think that was? |
| P | I weren't too sure, I wouldn't be able to pinpoint it. |
| I | Like are you normally, if—well, it's a weird question. But normally if you had to lie to someone would you be fairly confident that you could get away with it? Or is it something that would normally make you feel— |
| P | I'm—I've got a very big thing against lying so...it's something that ticks me off (laughs) |
| I | Yeah! |
| P | So I don't normally lie like, it's not so—to know I was going to lie and I had to like put on that false act, I think like I knew I wouldn't be good at it. |
| I | And was there anyway that it kind of felt a little bit better because you knew that you were supposed to, like we were asking you? |
| P | Yeah... |
| I | So it's not quite like a real lie? |
| P | Yeah (laughs) |
| I | Um...and what do you remember about the actual running around and collecting the envelope and that kind of stuff? Do you have any memories of that? |
| P | I do remember just walking around, but people like looking weirdly because I had a GoPro on me (laughs). But that's it. |
| I | And did you feel weird? Or was it like self-conscious? |
| P | No I felt...alright (laughs). |
| I | Yeah. Um so then you go out, collect the envelope, you spend some time creating a cover story, then you're coming back here and just before you came in to be interviewed, so it would've been here I think—yeah, it would have been in this room, do you remember how you felt or what you were thinking at that point. Like right before the interview? |

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| P | No, but from these questions, I'm getting some memories back. I do remember now. |
| I | Yeah? |
| P | I remember going to the library and taking the photos whilst I was pretending to study, |
| I | Yep |
| P | Yeah I do remember that now. |
| I | Slowly comes back (laughs). I reckon once you watch the video you'll be "oh yeah! Now I get it" (laughs). |
| P | Yeah (laughs) |
| I | Cool, so...to try and remind you, does that look familiar? That's what the instruction sheets looked like. |
| P | Yeah I do remember this now (laughs) |
| I | Yeah (laughs)... So literally the GoPro footage, we've only got a couple of seconds, um...of yours. So it may not actually give you very much memory... Some people have been able to watch sort of 5 or 10 minutes of theirs and they get-brings it all back a bit. But... Is this you? |
| P | Mm. |
| I | So you've got your phone, got your instructions (laughs) that's it, we've literally only got 5 seconds. |
| P | Oh, is that it? |
| I | Looks like you're moving quite fast though? Like you had a mission, you had a plan, you knew where you were going. |
| P | Yeah, I guess I was just trying to work the instructions like as quick as I could. Cause it did say we only had 15 minutes, so I think I was just like trying to work through it... I was kind of eager to know what was in the envelope as well... |
| I | Yeah? |
| P | Or the relevance of it... |
| I | Nothing was in the envelope (laughs) we just had to send you somewhere and make you do some stuff... So, this is the more interesting part so what I've got here is the video of your interview – |
| P | Oh right... |
| I | Um, so we're both in that, we can both feel awkward together (laughs). Listening to the sound of our own voices and feeling weird! What I want you to do, if you can, is kind of—as we're watching it...kind of give me like a narrator perspective of what you can remember about you were thinking while it was happening. |
| P | Oh, okay. |
| I | Um... So like, you're David Attenborough and we're watching a wildlife documentary about you, and you're like well this is what's happening here and that's what's happening there. Um, but also, just to make it a bit more |

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| | complicated, try and remember what you were thinking at the time and also, now that you look back on it, what does it make you think. |
| P | Yeah |
| I | So, if you're a bit like "oh why did I do that?" or "gee I was better than I thought at this", |
| P | Ok |
| I | all the things in your head come out of your mouth |
| P | Ok |
| I | so that I can try and understand... For some reason it has decided to split the interview into two, one is 3 and a half minutes and the other is in another file. But...this is you! |
| P | (laughs) With my stuff all over the floor. |
| I | Did you know what you were expecting at this point? You were kind of by yourself in the room making– |
| P | No, but it seems like I'm doing stuff in like a hurry. As if like, from my own body language I can tell that's my nervous body language. |
| I | Really? |
| P | Yeah, I get really like fidgety and quick, otherwise normally I move really slow... But I'm just trying to wrap everything up and put it away. |
| I | So, to you it looks like you were in a bit of a panic... |
| P | Like, honestly I never move that fast (laughs). |
| P | See the way I'm playing with my boots and my hair? it just goes to show that I was nervous. I always do that, everyone says that to me as well, that I start touching things when I'm nervous. |
| I | Yeah?... What do you think you're nervous about? |
| P | I'm not too sure, I'm just not like—as in at school I was so—like rubbish at drama, like that was my worst subject, so I feel like just being in that situation— |
| I | And is that what that felt like—like acting? |
| P | Yeah— |
| I | Cause you had to pretend something... |
| P | You see I'm still touching my boots (laughs) |
| I | You are... You sound calm, to me you sounded like completely chilled. |
| P | But when I'm comfortable, I'm a lot louder than this. |
| I | Oh, okay... |
| P | Just in my general voice and, in the tone as well just sort of a lot more like lively than this (laughs). |

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| I | So while you were—you were telling this lie, something you knew that wasn't true. Did you think that I believed you while it was happening? Do you remember having any sense of how it was going? |
| P | I didn't believe myself, |
| I | Oh! |
| P | so I wasn't too sure if you would. But then, because I knew that you didn't know me as a person, you wouldn't be able to quite tell. |
| I | So did you kind of have slightly more confidence because I didn't know you? |
| P | Yeah— |
| I | Cause I wouldn't know that you're normally still or... You are moving a lot! |
| P | I'm just looking at the way my foot is moving, it's just not stopped all this time. |
| I | (laughs). Did you know that was happening at the time? |
| P | No, I had no idea! (laughs) |
| I | Was it something—like did you have any ideas going in about—thinking about controlling your body language? Or were you mostly thinking about what you were saying? |
| P | No, I was mostly thinking about what I was saying, that's why I didn't pay attention to my body language at all. |
| I | Now you're still! |
| P | My foot is still shaking (laughs) |
| I | So is that what most of your thinking was, like what am I going to say? |
| P | Yeah, I think I was at this point I was kind of thinking what are you writing? |
| I | Oh yeah?... Okay so now we'll have a look at the next one, this one's much shorter because we're almost at the end... Cause we know that you, because of the order that you did the tasks you were mostly lying first, and then telling the truth second. |
| P | Yeah... |
| I | I wonder if you can see any changes in yourself at the point at which you're telling the truth? How, maybe, different... There goes that foot again! |
| P | (laughs) |
| P | I'm a lot more still in this one I'd say. |
| I | Do you remember feeling any different as the interview went on? Or was it all kind of the same? |
| P | I—I felt the same really, I'd say yeah. |

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| I | And then after those bits, it's all done and you're out and you're walking away. What were you kind of thinking at that point? |
| P | I think I was kind of relieved (laughs) yeah... Because I'm not good in interview situations so it felt like an interview, and then on top of that I was lying as well at some point. So it felt like it was a lot of pressure on me, so I was kind of relieved when it was done and I was walking away. |
| I | When you say it felt like an interview, like a job interview? Or like a... |
| P | Yeah like a job interview, kind of cause it's just one on one and you're asking the questions and...I was just answering them. |
| I | And did you have any sense of...of whether you were believable? As you were walking away, did you kind of think "oh yeah I did that, she believed me" or... |
| P | Yeah-yeah I thought you would because-because of the reason you don't know me again, so you wouldn't be able to tell when I'm lying or when I'm not, so I thought for that reason you would believe me. |
| I | And could you tell anything about the way that I behaved or anything that I did that gave you any clues about whether I believed you or not? |
| P | You couldn't tell at all- |
| I | Were you looking for anything? |
| P | Like I-I... I don't-like I looked at your face as in for clues of-like-you know like if you knew I was lying maybe you would smile or something but you were consistent throughout both... |
| I | Interesting... Yeah how would you-what would I have done if I didn't believe you? what do you think I would have... |
| P | Like your facial expressions would have changed a little bit, maybe like a smirk or something, like you know when you know someone's lying...? But it was none of that, you was just consistent throughout the whole thing... |
| I | Yeah... And would-would you be able to tell by the kinds of questions I asked, whether I believed you or not? Do you think it would mostly be by like how I looked and how I behaved? |
| P | Um... It could be in the questions... But, I'd say again it would be like your tone of voice and...the words you kind of use. So if you were like to ask me questions-you know there's like questions that interrogate you? and then there's other questions that you're just curious- |
| I | Yes |
| P | There's a difference! |
| I | Yeah... Definitely... |
| P | And you'd be able to tell in the way it's worded... |

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| I | It's so funny, cause when I'm looking at the videos I—mostly all I was thinking was “I hope the recording equipment's working” and “I hope I'm talking loud enough” and “have I written everything down?”. And so I'm so busy thinking about what I'm doing, that...like I didn't—when we were doing the interview I didn't notice that your foot was moving so much at all— |
| P | Yeah, I didn't notice right until now! |
| I | Now we're looking at it I was like “wow! You really are swinging that foot!” (laughs) |
| P | (laughs) |
| I | So going back to the start... |
| P | Like, sitting here my foot hasn't moved at once (laughs) |
| I | No! Well as soon as you said that where you were like “normally I'm very still”, like you really are, you basically aren't moving at all right now... This part is interesting to me, because this is obviously before I even got in the room. So this is like you kind of- |
| P | I was kind of like mentally preparing myself (laughs) |
| I | Well, how did you do that? What were you thinking to prepare? |
| P | Like, I was just putting everything away and I was just like kind of planning it out in my head like what I was going to say. |
| I | And was this the first time that you did that planning? Or were you planning like while you were out? |
| P | Whilst I was sat in the library I did plan a bit. Because I did have 15 minutes in there, so I was just sitting thinking about what I was going to say. I might have even have written notes... |
| I | Oooh! Interesting! |
| P | I remember thinking like I've got 15 minutes and I'm not doing anything, just sitting there in the library. |
| I | And when you were planning, what kind of stuff were you thinking about? |
| P | Um, like what I was going to say... It—it was literally just about what I was going to say, not like oh I'm gonna sit like this so that I'm not lying or anything, it was just the words I was gonna use. I didn't think about tone of voice or anything, it was literally just the words... |
| I | And when you look at this now, if you didn't know you, would you think that you were quite believable? Or would you think that it was obvious that you were lying? |
| P | I think that I would believe... |
| I | Yeah? |
| P | Yeah (laughs). Now, looking at it... |
| I | What was it about...you that makes you believe you (laughs) this is getting crazy! |

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| P | I think it's like, you know just the way that like I just made like a small joke and I laughed about it, and it seemed like I was just being myself. Whereas if I—for me if it was someone was obviously lying they'd be a lot more serious...like quite stern in what they were saying, whereas with me I wasn't exactly like—just answering the questions, I was adding little bits here and there... |
| I | And you're smiling and laughing and... |
| P | Whereas I'd say like if I was to be like lying, if I was to look at me and say I'm lying I'd be more like...stern and just focused on what I'm saying rather than just moving around and...like laughing and... |
| I | And what about if it was someone who did know you, like if I showed this to your mum, would she say no you're lying or would she— |
| P | Yeah, I think she would because she'd say that I'd normally not laugh or make jokes in serious situations like this. Like if it was, for example, a job interview, and I lied about something, I wouldn't laugh—I wouldn't make a joke about something. So she'd know that it's a lie. She'd be like you're not being yourself. |
| I | Why do you think you were kind of laughing and joking? |
| P | I think it was kind of like to...get my own attention off the fact that I'm lying. So I think it seemed a bit more like believable to myself... |
| I | Oh interesting, so that wasn't like, to try and make me believe you, it was to make yourself— |
| P | I think it was more for myself. |
| I | Did it work? |
| P | I think it did! Like it eased me in more to lie... |
| I | Yeah? |
| P | Yeah, I'd say so. |
| I | It's annoying that it cuts itself off... That's also quite interesting because the camera isn't separate (mumbling) |
| I | So you're still until you speak. |
| P | Yeah (laughs) there is that. |
| I | When you're not talking, you're quite still, and then as soon as you have to say something the foot goes (laughs) |
| P | I've never, ever noticed that on me that my foot moves like that (laughs) |
| I | Maybe it doesn't normally happen! You don't normally get followed round by a camera! |
| P | (laughs) |
| I | So if you had a chance to do the whole thing again, having watched your performance now, is there anything that you would change about what you did? |

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| P | Um... I'm not too sure... Like the more I watch it, we've watched it twice now, I feel like it's a bit more believable. So I'm not sure I would change anything, maybe the foot! (laughs) Maybe I would not move the foot as much. |
| I | You'd try and keep the foot still and then the hand would go or something (laughs) |
| P | (laughs) |
| I | Interesting... Cause people, quite a few people say to me could you—could I tell during the interview when people were lying to me. Often not at all, there was one person I was pretty sure I could tell because she just stopped talking... |
| P | (laughs) |
| I | And she froze for a good couple of minutes! But everyone else, I was thinking about what I had to do and thinking about what they were saying and thinking—so I almost never had a clue, like I'm clearly not very good at this, everybody fools me! |
| P | Especially people that you don't know personally, I think it's much harder to tell. |
| I | Well cause a lot of people were very chatty and friendly, and laughing and talking, um...and then when they watch it back they're like "ah that's such a fake laugh" and I'm like "oh really?", you know I thought that was a nice laugh! So you said earlier that you've got quite a thing against lying. Um, does that mean you never ever do it or is that sometimes you have to do it— |
| P | Everybody says a little white lie once in a while, as in about big things or things that follow a principle I would never lie about that, I have a big thing about that. But little white lies everyone tells (laughs) |
| I | Um...and so do you think that might be part of why you don't feel very confident doing it? |
| P | Yeah—yeah I weren't confident at all with like doing it, but looking back at it, it seemed as if I was! |
| I | Interesting (laughs)... So say you knew, like in your real life, say you did had to tell a really big lie for some very good reason. Like so you knew tomorrow at 12 o'clock you were gonna have to lie, how do you think you'd prepare for that? What would you do? |
| P | Right now I'd probably write notes on it, like with me it's like, stuff I put down on paper sticks with me so, I'd probably write notes on it yeah. I'd probably go to sleep thinking about, wake up thinking about how I'm gonna get it right. |
| I | And when you say get it right, like making notes, would that be about what to say? |
| P | Yeah like what to say and how to make it believable... And now watching back like this footage, I'd probably think more about my body language, my tone of voice as well as what I'm gonna say. Whereas before it would have been just what I'm gonna say. But when you know—when you see yourself lying like you notice what to do. |

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| I | And when other people are—well you think someone’s lying to you, how do you—what kind of things do you use to try and figure it out? |
| P | I just keep asking questions, and I’d bring up the same question I asked like a few minutes ago. Because if they give me a different answer, which they probably will because they won’t remember what—because I’ve been asking so many questions under that pressure, they might just say something different to the same question I asked a while ago. |
| I | And then be like... |
| P | And then I’d be like yeah... |
| I | I gotcha! (laughs) |
| P | (laughs) |
| I | Interesting! Let me see what else from my list of questions... So, now that we have looked at the footage, you—I think you said, let me check, that you think you did better than you thought you had? |
| P | Yeah! |
| I | Yeah... So does that change, in general, how you feel—do you now think like “oh I’m quite good at lying!”, or do you still probably feel the same? |
| P | I think I feel like I’m a bit better than I thought, so maybe I am good at it! (laughs) |
| I | (laughs) Interesting! Cool... Um... Is that everything? I think that’s everything... Is there anything else that you think I need to know to help me understand like what it was like and what you were thinking about? |
| P | Um... As in you as—as a questioning? |
| I | Yeah! |
| P | Um... No... I don’t know... I think maybe like if you were to—you know like, you were quite serious, it looked like you were quite stern and you were just asking questions. But if you were like a bit more relaxed then maybe they would have like slipped up a bit more, as in me the person lying would’ve slipped up a bit more because they would’ve got comfortable. Whereas when you’re not comfortable you’re more on like what you’re saying and what you’re doing... Whereas when you’re comfortable there will be little slips. |
| I | So you reckon if I acted less suspicious then people kind of would’ve let their guard down and more likely to make mistakes? |
| P | Yeah. |
| I | Interesting! Cool! Okay... Oh! I forgot! I have got one final question! Um, have you ever, even when you were a little kid, have you ever been caught out telling a lie? |
| P | Mm... I don’t know if I can pinpoint it... |

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| I | Right, so you don't have one massive memory of this one time you got busted or? |
| P | Nah, I'm trying to think... |
| I | You'd probably know if it had! |
| P | I don't know... I can't think of like a big situation... Or even of any, I'm not sure what's wrong with my memory today! (laughs) |
| I | That's alright (laughs)! It's a weird question that you probably weren't expecting! |
| P | Like you're—you wouldn't normally think about so.. Um, yeah I don't really. Can't really think of any. |
| I | Awesome! Well we're done. |

| Interviewer (I) or Participant (P) | Transcription - Diane |
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| I | Because this is the bit that's recorded I always want to say again "thanks for coming" even though I swear I've already said that (laughs) Thank you for coming in. So what I want... is if you can cast your mind back to when you did study one. Which was probably about a year ago and much less pleasant weather! Erm, and just kinda tell me your general impressions of your memory of it. What do you think about when you remember it? |
| P | Erm... I remember... walking from the Whitehead building over to RHB, and thinking okay this is fun (laughing)! Um Also, I think... I remember thinking I've got a terrible memory – I really do have a shockingly bad memory (laughing) so how do I lie? What do I say that- because that was one of the criteria. So I continued following my instructions with a mind to look for a space where I could remember where I would be able to lie. |
| I | Oh so you were like planning it from the start. Kind of... well conscious you were gonna have to do it. |
| P | I was gonna have to do I yeah. |
| I | Yeah. Interesting. |
| P | I think opportunity... |

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| I | And when you think back to the interview-part of it, how do you remember that? Do you have any strong impressions or... |
| P | Erm, I remember feeling flustered. I remember thinking... I have to lie now, and that's that's that's hard (laughing). How do I lie convincingly? Erm... and... yeah I just remember it being very easy, yeah it was... once the process had been had, it was (expels air) a release. So obviously there was a cognitive load coming in. Because I said I'm terrible with erm cognitive load – maybe not so much memory, maybe cognitive load, that stress of... yeah |
| I | Having a lot of things in mind simultaneously. |
| P | Yeah. |
| I | Erm... and this is a slightly odd question because I'm aware that the obvious answer is "because I needed the credits" um but why did you agree to do it? |
| P | It wasn't because I needed the credits. |
| I | Ahh excellent. Different from everyone else (laughing)! |
| P | Erm I think because I was asked... directly. |
| I | Yeah. And did you have any sense in- before you did it- that it would be something that you would be good at or bad at or... |
| P | No, which is why my plan formulated along the way rather than (laughing). |
| I | So we get into a few more specifics now. After... well once you'd agreed to do it, but before you'd actually started, did you have any idea what it would involve, or what you thought it would? |
| P | Erm... |
| I | Because it was pretty vague. |
| P | It was very vague. No. I didn't know what it would involve. |
| I | Erm and so then you come in and you met with Lexi, probably, um and you watched the video that gives you your instructions. So at that point, once you knew what was coming, what was the sort of thing foremost in your mind? What were you focussed on? |
| P | Um Initially I was focused on... figuring out the route and... then I think it was a case of like trying to find a different direction for the lying part of the criteria. Yeah. So the route initially. |
| I | Yeah, just get the task done (laughing). Erm, and so how much of a sort of pre-plan did you make at that stage? Did you... did you know when you left this building to start the task, did you know exactly what you were gonna do or was it a bit kinda off the cuff? |
| P | I knew what I was exactly going to do because I was going to follow the plan initially... and then it was off the cuff. |

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| I | Because part of it was very directed. You had to go here and you had to do this. And then half of it was do whatever you like! So did you have a plan for the kinda do whatever you like part? Or was that... |
| P | No because I didn't know what was expected so it was kind of... |
| I | Yeah we deliberately made it difficult (both laughing)! So once you were started, once you were following the plan and doing the task... what were you thinking and what were you feeling, if you can remember? |
| P | Erm... I do remember thinking initially, okay, this is fun. I've been sent off on this expedition. Erm I remember feeling... pumped... initially... and then getting half-way through and thinking oh no (laughing)! This is all me now! Erm but still... still quite pumped, feeling... focused. Yeah. |
| I | Yeah, and once you'd finished all of the kind of active task part and you're coming back in to actually start the interview, what were you thinking at that point? |
| P | What was I thinking? What was I supposed to do (laughing)? And... what did I have to hold in mind? |
| I | So then, once you were actually in the interview, what was that like? |
| P | Erm again a sense of (expels air)... which I'm feeling right now actually (laughing)! Trying to remember, yeah. Erm I hate getting things wrong, so it was important to me that I did it in a way that was perceived as right. Although what was required was wrong. So it had to be right to be wrong (laughing)! |
| I | Erm so to make sure I understand what you mean there, what was required was wrong, as in just lying in general is wrong, so it was to do a bad thing well. |
| P | Yeah! |
| I | Interesting! And I think also – well I hope – that the way we kind of constructed the experiment, was to not give a lot of information about what the interview would be like, until it happened. And so some people thought it was going to be really... like TV... and police interviews, where somebody would be slamming the table and yelling at you, and kind of that sort of style. So what did you- did you have any apprehension about it or were you pretty confident that it would just be... |
| P | Erm no I wasn't apprehensive about coming in and speaking to anybody. Erm... no I don't think that was- I was probably too inwardly focused for that! |
| I | Yeah so just kinda thinking of your desire to get it right, to do a good job, rather than what was on the other side of the door! |
| P | Yeah I assumed that people that had been in came out fine, so I (both laughing). |
| I | Yes excellent. Some good advertising – nobody came out crying, it was okay! Erm and do you remember what was going through your mind while the interview was happening? |

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| P | Erm... again I think I was flustered because again I don't think I'm very good at erm the whole- I'm chronologically challenged, which is the only way I can, can sort of- so. Actually it probably would've been a good thing for the interview just to let it flow because I probably would've got it backwards anyway so (laughing) that would be great! Erm... but yeah just the apprehension maybe. |
| I | Yeah. And if you know that you struggle with the chronology of things then that whole interview which was tell me, in order, what you've done in the last half hour. It's a whole extra piece of load. And then afterwards, how did you feel? So you finished everything, you're walking out the door... |
| P | Relieved, yeah, I did what was asked of me in a way that was helpful, I hope. So yeah, relieved. I don't know why, because it's not something that- it wasn't like a major interrogation, but yeah it still feels... quite real when you're talking to somebody, and you have to qualify... what you've been asked to do or in a certain way. |
| I | What do you think it was that made it feel real? |
| P | Erm... good question. Erm (laughing). This. The interaction. It was... erm... it was done really well. It was done really well. I can only say that... sometimes... when you erm... when you do some studies... people don't always- especially since we all know each other as well- it doesn't always run as smoothly, or- not professionally, that's not- that's not right but... we're psychologists so you second guess what goes on, but I did not guess what was going to happen, so that was kind of- that was what made it feel a little bit more... ecologically valid. |
| I | It's interesting I was reading something on twitter this morning and they reckon that when you use psychology students for your research, which we often do, that about 80% of their brain power is given over to trying to look for the trick (laughing). But yeah what's really happening?! But where's the trick?! Like I promise there isn't one, I just want you to talk to me (laughing)! Awesome, so now we get to have a look at your GoPro footage. Erm it's half an hour of footage and so we're not going to watch the whole thing. But we will do maybe the first five and the last five minutes, and you get to be David Attenborough basically (laughing), you're narrating. Particularly for this bit, because I wasn't there, right. So only you know, erm, what was going through your head at that time. |
| P | Okay. I know I stopped to speak to somebody as well. I had a good ole' chat on the way. I forgot I had the camera (laughs). |
| I | So we're looking for like running commentary of, "this is what I was thinking", "this is what I was doing". Unless of course you get somewhere and think "why on earth was I doing that!" |
| P | Yes that's a possibility! |
| | *Break* |

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| | <conversation about the dog on the screen and pets in general> |
| I | If I can stop myself, I'm going to try very hard to not talk very much, so that you can do all the lovely voice-over work on this. |
| P | I'll try. |
| I | I might leap in with questions but it's all you. |
| P | Yeah, this was the initial... vacating the building. No it wasn't! It's the computer lab! Oh, I was looking for participants I thought I would include. |
| I | Well you've got to walk around everywhere anyway. |
| P | Hopefully I got nobody's numbers on there... actually showing... (whispers) because of GDPR. |
| I | You can't see that screen |
| P | I'd forgotten that. I'd forgotten I did that. |
| I | Interesting |
| P | Yeah. |
| I | So because at this point, you were quite naturally interacting with somebody about something completely unrelated to the task. So I'm kinda wondering was your brain split between what you needed to do and also doing this, or were you completely in the moment with this and like "deal with that later"? |
| P | I think... erm... part of the criteria, or part of what was requested was a certain time-scale... and... this was a way of killing time. |
| I | Um-hum. So because it would've been 15 minutes to build up your cover story and another 15 to do the task, erm and some people were told to do one first and the other second or the other way round. So it looks like you were doing you're building the cover story first. |
| P | (whispers) That I remember. Now you've said it. |
| P | Oh they were very good. Actually, face-to-face helps. People buy people first. So yeah, that's quite possibly why I was doing that – building the cover story! |
| P | That must've been interesting for whoever watched. I'm so sorry! |
| P | I didn't realise it was so... erm... in view of my phone (laughing)! Which has been attached to me for the past 3 years. |
| P | Ah now at that point I was concentrating on whatever she tells me to do I think. |
| I | Because it's yeah, I mean if it seems, for an outsider looking at it, like you're almost completely unaware that anything else is happening. |
| P | Yeah ermm |

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| I | You seem very relaxed |
| P | Yeah I think I was, I was mindful that I had a certain amount to do. I was mindful that I had a certain amount of time to kill. Erm... unfortunate choice of words but... erm... and, and actually I don't know whether I actually said that in the interview, but having... having that in mind, having spoken to somebody and having that solid memory helped. Yeah. |
| I | And you had wanted that because you were conscious that you wanted a couple of things to pin your memory on. So at this point you've spoken to someone, you've got their email, you've sent them an email, there's a whole little interaction. |
| P | Yeah. Which is obviously taking me forever and a day (laughing)! |
| I | It's interesting that you're staying still for so long. A lot of the footage that we're looking at, people are moving constantly. So you're.... you're everything seems very chilled. Did you feel very relaxed at this point? Can you remember? |
| P | I remember thinking... erm... I was practising trying not to feel overwhelmed at that point. I won't bore you with what was going on but... erm... so practising being... doing one thing was very much of my life at that point. |
| I | So in general, that was something that you were focussed on trying to do. That might be why you do it so well then (laughing)! I'm gonna skip now to... the video has helpfully split itself into two, that's what it keeps doing, so to get the final file we might have to look at...this one. |
| | *Break looking for the footage* |
| P | Petra! Tula! (Laughing) |
| I | Okay so we're talking to people! |
| P | Ah! At this point, yeah, I think what was in my mind was how do I anchor myself in the memory and actually talking to people is a nice way to erm... especially since I was looking for participants, and that's a good cover story too so. |
| P | (Laughing) immortalised forever! (Laughing) Oh dear! |
| P | Yeah so I think that was part of the criteria as well, was to walk a certain way through- If I remember correctly. Erm... don't know whether I looked at the time at this point |
| I | You seem to be very sure of where you're going, what you're doing. You're walking with some purpose here! |
| P | Yeah, yeah. Plus, there was nobody else around- there was no point in hanging around because... whatever- whatever I could or could not say wouldn't be anchored in my head because it is just go from A to B- okay let's get that done. |

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| P | Oh and I do get distracted by talking a lot! |
| P | Ah the brazenness of it (laughing)! |
| P | Ah yes, this was where I had to go and look at a pinboard..? |
| I | Yes... I know this noticeboard well. So what are you thinking now? |
| P | I think there was something pinned to the board that I had to... yeah I was just reading if that was what I had to do. Erm, and what I had to do with that next... now became my focus. So again, it's kind of... I now have an A to B point so... erm... moving through that was easier than trying to think how do I, how- well I suppose I didn't really think about how I was going to lie at this point. I just wanted to get it done to see whether I could find a way around manipulating what I was going to have to say. So at this point it wasn't in my head that I was going to lie. |
| I | Yeah. Why do you think that is? |
| P | I don't know. I, I ge-... I'm not very good at lying. I didn't think I was very good at lying... which is probably why I stick to the truth a lot. And then... if I need to I can bend it where I see an opportunity. Good grief you learn a lot about yourself! |
| P | That was the cinema... ooo! I found this shortcut, I'd been here for years and I didn't realise you could go straight through – that was interesting. |
| P | I was gonna say there should've been a green button but no there was a card. And this is where I walked around the corner and there was the guy standing in the corner. I know where I was going – Ben Pimlott. |
| I | So kinda in terms of time, this is getting closer and closer to the point where you're gonna head back and do your interview, which is going to involve lying, and yet what you said earlier is that you're weren't thinking about having to lie at this point. So we're down to the last 30 seconds, does it start to come into your mind or are you still just... |
| P | I think... yeah. Not yet, but as I go over to Ben Pimlott. Because I was so set on making a route, yeah, I suppose it never entered my head that, that- I would have to lie about what I'd just done, but I knew I had to do something. And I can't remember what I lied about, but I know I lied about something and I think it was about putting the envelope in the bin. |
| I | Let's find out! I've got the interview! |
| P | Oh dear! Although, like I say, I'm terrible... just shocking memory- although not shocking memory- cognitive load! Yeah. |
| I | But this gets better because now we can share the awkwardness because we're both in this video. So we both have that weird feeling of looking at ourselves thinking "why did you- why are you wearing that", "what was going |

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| | on"? I've had to watch lots of videos of myself repeatedly in this exercise and realise that I hate my own voice and various other things. |
| P | Can I ask wheth- did everybody else walk around really fast? Was everybody dashing about? |
| I | Really interesting, some people... are on high-speed and then have loads of time to kill, and clearly just zig-zag kinda aimlessly. Some people seem very relaxed the whole time. Quite a few people stop... and stand still, it's almost, erm- I haven't spoken to all of them yet, but you can kind of see them thinking about what they're gonna do. Loads of different responses to it. |
| P | Ah okay! So... okay. Pin-pointing at what point you're going to... lie. So making a plan beforehand. |
| I | Maybe or maybe not. That what one of the things that's really interesting for me – is... erm... if we did our job right, if everybody had the same task and the same requirements and the difference is in how they carried it out, it was on purpose, we left it really nice and open cause then people do have the freedom to do kinda what they would naturally do. Erm some people were just as active in the cover story period as they were in the task, running around from A to B. A couple of people just sat down and read a book. I've just got 15 minutes of footage of pages turning and so it's very very personal for each person – what they do, how did they integrate it... but without asking them, like we're doing now, you don't know. And I could look at it for hours and think "oh she's doing this because of this", "oh she's walking faster now because- it could be because she's anxious, it could be because she's in a hurry, could be because she needs the bathroom"! You know, and if you don't ask! |
| P | Could be because I'm running out of time! Which I think I might have been at one point. |
| I | And then you start to speed it up. So this is your interview. Erm... so you will have done the task, 15 minutes of which was your criminal activity, 15 minutes of which was the cover story. Erm, and I didn't know what you'd done. The way that was set up was that I had no idea what was on the back of the envelope, so I didn't know which building you'd been sent to, and I didn't know whether you'd be asked to do the cover story first or second. So my job in the interview is "tell me everything that's happened in the last half hour". Obviously I know that at some point you're gonna lie, but I don't know which part is the lie. So... this is you convincing me everything you say is true. |
| P | I hope I lied! Oh dear life! |
| I | So just like previously – except this is slightly harder as there's two things I want from you at this point: there's the "what was ****, at that point, thinking and feeling", but there's also "what does Donna now think about that ****"! So you're kind of "oh well I said that to you because that" or you know "I moved my body because that's what I was thinking". But also there's the kind of part of you that says "oh why did I do that?" or "ooo I'm better at this than I thought I am"! So if you can try and say all of the thoughts inside your head. If you want to rewind |

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| | anything or pause anything, or be like “let me look closer at that” then let me know because we can absolutely do that. |
| P | All I can think is that I’ve lost 4 stone and does it show? |
| I | Now what was it... some of the audio is not brilliant....(indistinct talk)...Where it’s hard to hear, just go with what you can see. |
| P | Okay. I’ll come closer! |
| P | I know I was thinking “okay... I know I’m supposed to lie. How am I going to lie?” (laughing) |
| I | So at this point you’re telling the truth. |
| P | Yeah, yeah. I remember thinking where do I start, and I’ve got to speak, so how do I start? So start with what happened. That’s a... and then it just starts to feel like (expels air in relief and laughs). |
| P | I do talk with my hands. |
| I | And was that something you were thinking about doing, or thinking about controlling, or was that just happening naturally? |
| P | I do tend to talk with my hands yeah (laughs). Wait until I get excited, woah!! Erm... yeah. |
| I | You’re making jokes, you seem quite relaxed to me watching it. You know you, does that look...? |
| P | Erm... I think again, at this point, I’m trying to think of what to say...and... I can’t just sit in front of you and go completely blank, so it was easier to keep to the truth because I couldn’t think of a way to lie. Erm, I think I was also conscious of my bangles believe it or not. |
| I | That was a lot of detail there. The grass getting on the bottom of your trousers, talking to people and walking on the wet grass. |
| P | I think it’s ...erm... If I was recounting the situation- I was trying so hard to remember, so I was picking on things that were coming to mind as I was moving, and stepping on the grass was something that- or, or having it on my trousers was because I was conscious of how long my trousers were. And it was something else to anchor. |
| I | And at this point, when you were up to this point, did you have any sense of whether I was believing you, or was your focus mostly on yourself? |
| P | Erm... I think... I don’t actually know what I was thinking at this point. |
| P | I think at that point, there was no- without eye contact, I had no feedback. So...erm...it helped when you smiled. It helped to have that. |
| I | Yeah so how ye- how would you normally receive feedback? Eye-contact? |

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| P | I guess yeah. Yeah. I think I...erm... gauge the situation by... yeah that connection, that... However, trying to remember, I can't do that by looking at you. I know I can't because I can't do that in everyday, it's not something... |
| I | So when you're looking up here, that's... |
| P | That's me trying to tell [overlap between voices] |
| I | So when you look back at me, that's you actually communicating. |
| P | Yeah. |
| I | So you've got this very, lovely open body language, was that intentional? Was that something you were conscious of? |
| P | [Overlap] That was intentional. |
| I | Okay. |
| P | That was intentional. I'm very conscious of body language on a just general day-to-day. It's, it's more of a habit than it is intentional, but I... when I feel that I have to focus, I have to be relaxed, otherwise I know that I'm just gonna be like a pocket-rocket. So... |
| I | So again, was that the kind of tendency of that body language for your own benefit? To know that you could find focus? |
| P | Yes. Yeah. |
| I | Because I'm looking at the effect that it had on me, or on the interview, and it's like oh well someone who's very open is probably being very honest. So erm when you said it was intentional, I was like oh so you were trying to show me you were honest. But no it was intentional as in I needed to position myself!! |
| P | Yeah. |
| I | Fascinating. |
| P | It's funny the stories that are in our heads! And how easy it is to misinterpret, I guess. |
| I | This is why... I'm gonna get all evangelical here, but this is why I am such a big fan of qualitative research, because it's so easy to think you know what someone say, what someone means, even when they're in the room telling you something. You think oh I know what that means, and then you realise you still didn't so! You're much more animated now, your hands are going, you're... |
| P | Okay this... |
| I | And we know because we know that we did this in chronological order, that the second half is you probably lying. |
| P | Yeah. |
| I | Interesting. |

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| P | Or did I? I don't know. Again, I get flustered. I do get flustered. |
| I | [Inaudible] |
| P | Yes! (laughs) |
| P | And I think at this point I was thinking how do I lie? How do I lie (laughing)? How do you lie?! I don't know, I can't remember! |
| P | Again I think that was true. |
| P | The jovialness has gone hasn't it (laughing)?! I'm really thinking now (laughs)! |
| I | Is that what that means? You're more serious. |
| P | I think so. |
| I | You must be thinking hard. Do you remember what you were thinking? |
| P | Erm... I remember thinking how I've got to lie at some point. I do remember thinking that was err... a requirement. And if I'm not mistaken, I start to (expels air) yeah. Even the thought of trying to deviate from the pattern I had in my head was making me anxious. |
| I | Interesting |
| P | Did you not see that (laughing)?! |
| I | Let's rewind it! Show me, show me! So you can see exactly where you start to... |
| P | Can you see I'm sure... it's this, it's er... |
| I | You start to bring your hands in and touch your face a lot more. |
| P | Yeah. Yeah. And I'm thinking that's heavy, that for me was heavy. And at this point, my emotions were very much tied to my bodily functions. So anything, literally anything, would start off a hot flush. |
| I | Ah okay. |
| P | And I was gone. Because I knew that I had to do something th- that felt unnatural. So...yeah. |
| I | And to you, knowing that you needed to lie, meant that you had to actively lie. Rather than, by just not saying that, that was already lying. It seems that you felt that you had to actually come up with- create a lie., rather than just omit something. |
| P | Yeah. Yeah. I think that was the other reason I was so detailed as well. |
| I | Because yeah- you've picked that up, because there was a stage in there where you'd started to look a lot less comfortable - physically. Now there's a lot more movement. Your legs moving now! (laughs) |
| P | Yeah (laughs)! And again, I think... I'm thinking of how do I do this. I think the other thing is, or, or have I already done it – I don't know, but I think you start to see it in my eyes as well. Like I start to feel exhausted. |
| I | So really... something that required effort from you. |

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| P | Yeah. |
| I | Now this is interesting. So I'd left the room (both laugh). What was that?! |
| P | That was... |
| I | So I clearly can't see you anymore! Oh I love this. And you're watching me go, nice big smile... |
| P | Oh that was me! Did I do okay! Oh my God, did I lie enough, did I not lie enough?! Was it helpful? Did I meet the criteria? Did I do the brief? And I think it was just, I had to find a way through it, knowing that I had this thing to do. Did I do enough? Because I knew you were recording it. I knew at some point you were gonna look back. Did I lie? I can't remember whether I lied or not! (laughs) |
| I | It comes back to what you said at the start about really wanting to get it right, about doing the right thing. Most people chose to lie by stretching the time line. |
| P | Oh okay. |
| I | Very few people told the truth about their cover story and then blatantly lied about the task. A lot of people just pretended they were doing the cover story part the whole time. That was the most common lie. |
| P | Okay |
| I | Like a lie of omission. Which is pretty much what you did. Ermm you were almost very honest and it was like you admitted that you were in the Ben Pimlott building and you just obscured the detail of what you did when... when you went there, and what you were there to do, and what you did when you were there. And that's a lie to me. And it's interesting that it seemed like it was enough of a lie to cause you some tension! Some mental work, there, in the moment! Erm... you look, to the outside, you look quite relieved at the end that it's over. |
| P | Yeah. Yeah. Because for some reason, although as I say I wasn't- I wasn't apprehensive about, about doing it initially. Erm the novelty of it I guess is err... it keeps you going as well. Erm, but this, last year this I found very hard. Doing any sort of real interaction. Erm so it was outside of my comfort zone anyway. |
| I | Interesting. Okay. |
| P | Erm but... Yeah I err... I just, I remember thinking wow that was heavy. And it shouldn't have been! It was so easy! It was just an experiment, it wasn't anything you know woah (exhales). Yeah exactly (laughs). |
| I | Interesting. Erm something that you said earlier, which makes me wonder whether lying is outside your comfort zone as well, was when you said that you didn't think you were very good at it, so you try to just not do it. Erm, so was this difficult because you don't often lie and you knew you'd kinda have to or? |
| P | I don't out and out... I've not got that good memory. And I know we do- we do white lies. That's kind of the social lubricant of day-to-day. Erm but I find it very hard to out and out lie. Always have done. So, I guess my strategy is to keep it as much to the truth as possible, because as I said I'm no- remembering is one thing. And our memories |

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| | are malleable, and you know we can, we can mess about with that all day long. But there are certain things which I'm very conscious of and anchoring memories is something that I guess I have to do... to keep things current. Erm and I like to oblige. I'm that person. I am that person. So yeah. Is that helpful? |
| I | Yeah that's really interesting. |
| P | And I don't recognise myself from that person there. |
| I | So when you look back on that whole sequence, how well do you think you lied? |
| P | Erm |
| I | Do you think you did well? Do you think you were convincing? |
| P | I... I think, I think I was animated at the point to where I was uncomfortable. I think that's something you can see. That I can see anyway. Erm and as I say, my emotions were very much tied to the hot flushes that I was getting, so that was huge. And that can be, that can be off-putting whether I'm lying or whether I'm telling the truth to be quite honest so. Err yeah. (laughs) Oh dear. But, but, for most of it... for most of it I think erm... yeah trying to hold it all in mind was a heavy load for me. Yeah, I did find that... |
| I | And so you were mostly thinking about what you were saying? |
| P | I was mostly thinking about what I was saying... to tell a story. So... the interview is me telling you a story. So I have to tell you that story in the best way that I can possibly do it. And that for me was, was... that's what held that erm, that load. That's what made it erm hard for me to get outside of. Yeah, I remember thinking wow, how do I keep this going (laughing)?! Detail, detail (clicks fingers). |
| I | So erm we gave the same instructions to everyone, which was give as much detail as possible. Erm and very few people were able to do that the way you did. |
| P | Oh okay! |
| I | A lot of people think they're giving detail, and they say "and then I saw a guy", and I go "and what did he look like?", erm "it was a white guy". Oh okay! And pretty much unprompted, you gave detail... like a, like a GoPro playback! This happened, and this happened and this person with the wheelie suitcase, and two women here and two women there, and she was blonde and he was older and she was younger, and your level of detail was impressive. |
| P | Oh thank you (laughs)! |
| I | Erm and I'm wondering, now that I've had more insight, it's maybe just that you heard that as a requirement, so you delivered that because you seemed very focus on doing what was asked of you. So we asked for detail and you gave the detail (both laugh)! Are you always detailed in that way? |

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| P | I think... over the past few years, doing the studies that we do here, and trying to assimilate what I'm learning, I have to pay attention to detail. I also have an awful lot in my own personal life that I have to pay attention to, so it's like – especially then – that my whole system was on alert already. Erm, not just because of you know, I had stuff going on that I couldn't switch off too. I daren't switch off too. It's, it, it did me a favour in one way because I mean (laughs). Yeah, I still, I still have that heightened erm... kind of response. It knackers me out. I seriously get very, very tired from it. Erm but it is, yeah, it is something that I er probably take with me. But also, because it was highlighted, yes I was that much more engaged I guess. |
| I | And was it, did you come in with any kind of ideas on ways to be a good liar? Was there anything that you were trying to do at any point, that you thought okay, I know this, or I think this on how to do a better job of lying? |
| P | Yeah, ermm.... Don't judge me (laughs) but I don't think I did. I don't think I did, because... erm... there was a task... and there was a lot of components to that task, which was important. At least that was important because I could read it was important. And it was a reminder to, or what is? I don't know if I read it, or whether it was told to me. However it was given to me, I think it just prioritised in my brain. Erm... and this is what happens. I lose my train of what I was thinking. Could you say that again? What was the question? |
| I | The reason I ask – I'm going to ignore my own question – when we were watching this, you said a couple of times that what you were thinking was "how do I lie?". Like it was kinda in the moment, coming fresh to you. So I wondered whether you had any kind of, you know... your own catalogue of, when I need to lie this is what I need to do? Were there any pre-existing strategies that you had? |
| P | No (laughs) |
| I | Okay in the past this has worked or this hasn't worked or- Did you have anything to fall back on, or were you in that moment just trying to think from a blank start, oh my God how do I lie (laughing)?! |
| P | I, I did myself a disservice in the fact that I was in the moment going how the hell do I lie (laughing)?! That's not something that- obviously it was something that was asked of me, but it's not, it doesn't come naturally. So it's not something that I focused on, on the way through, and yet I think I was still able to put it in, by the sounds of it. Yeah, yeah. |
| I | I wonder if maybe that part of it being so exhausting for you was that there wasn't a kind of pre-set mode to fall back on, that you kind of go, you know... what do I do when I need to lie? What do I do when I need to be charming? What do I do when I need to be assertive? So you kinda have those models in mind, but it's almost like you didn't have one for that. |
| P | And that's why I say to you my memory's shocking. Because I have to go au naturale (laughs). Freestyle all the time! Erm...yeah...And I think that transcends into my everyday life. Erm...I, I just... trying to contrive something, I |

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| | think you'd see it. In fact, I know you'd see it. I had a point in my personal life where I was saying to somebody, "oh hey, how you doing?". You know. And I said to somebody "oh how you doing?" and they looked at me like you just repeated jus- and I was like "I'm on auto-pilot, I'm so sorry. I'm just trying to find a way through stuff going on". But it was picked up like that (snaps fingers). So it's not something that I'm very good- |
| I | So you're conscious of that, that when you try... to misrepresent something, it doesn't work. |
| P | Yeah. |
| I | Yeah, and therefore just better to go with... yeah. Interesting. See I love this! I wish I could do this all day! Just video people and ask them about it for the rest of my life (both laugh)! |
| P | Although like I say, I must've done something to include that, and as you say, admitting... admitting is easier than making complete lies out of nothing. So... although, I will tell you I have since started to lie to my children (laughing)! |
| I | Excellent (laughs)! |
| P | And I'm sure they know I'm lying! |
| I | How old are your children? |
| P | Nineteen and eighteen now. |
| I | Okay. I was picturing slightly younger and thinking I'm sure they don't but maybe... |
| P | No they do! I've told them that I'm working in the mornings, just so I can come in and work at university because they are just constantly "Mum, can you help me with this? Mum, can you do this?" |
| I | Well you are working. |
| P | I am. I am... do you see what I mean? I have to keep it really close and so dressing the part to come and in staying serious. |
| I | Yeah. So if you were in the position of, for some reason – I can't even think of a convincing hypothetical – but if you knew that you absolutely had to tell a big lie... not a white lie, but like something that had some repercussions to it potentially, what would you try and do? |
| P | Erm at this stage of my life, that really does depend on whether I get incarcerated or not (laughs)! |
| I | Right, okay. Erm... let's say not quite that level of high stakes, but kind of, someone might lose their job over this. Not necessarily you but... I can't think of anything (laughs). Erm... so erm yeah, someone's gonna come and ask you something and you're definitely going to have to lie about it. How might you prepare for that? What would you be aiming to do? |

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| P | [Whispering] Oh I don't know! Erm... given time before an interview, then possibly I would be ruminating like mad, erm on every possible scenario, beating myself up for doing something that was possibly going to cause other people harm as well so that would be... yeah that would be awful. |
| I | Interesting. I need to be better at thinking of hypothetical scenarios! Like you saw someone do something that they shouldn't have done, and if anybody found out they'd get in trouble, but you really like that person and therefore you've decided that you want to lie for them. Maybe... is that convincing? So you have to try and construct... |
| P | Ooo. I'd find that, I'd find that hard. It depends... again everything is in context... |
| I | Yeah but what does it depend on? |
| P | It depends on... okay for me, it depends on... erm... how hurt people will get. I mean if, if there's repercussions... and... I mean if you knew someone had murdered somebody else, clearly that's not something I would be able to. Oh I don't know! Say one of my kids murdered somebody else, what would I do? And there's a hypothetical. Erm... I would, I'd, I don't know, and that's the honest truth. I don't know, there's... see it just got real (laughs)! It just got real. So... don't know. I hope to God I'm never in that position, but if it was slightly less... erm... |
| I | What if it was money, or something else that was at stake, rather than... |
| P | Then that would, that side of it, I would feel a responsibility, because if you see something that's not quite right, you... I'd feel a responsibility. And at that point, it's a case of... erm. I'll give you a hypothetical, that erm a friend of mine and her husband, who was caught out with somebody else, where I would say you need to go and talk to your wife or I will. So that's not on me, that's on them. And you know... or... I saw you take that £20, so either you put it back and figure out a way to say sorry, or... do you know what I mean? It's, it's kind of erm... it, it becomes my responsibility- |
| I | As soon as you know. |
| P | As soon as you know, yeah. But then, yeah, that responsibility doesn't mean I need to ruin somebody's life. That means that they have a responsibility to own it. And, erm... if that's, you know... most people woul- I say most people, I don't know. Erm, but... I'm no saint, so if you get caught out in a lie, it's kind of. Well I was I always told best policy. Erm, if you own it and there's nothing insurmountable, there's nothing that's not changeable so... yeah. Gosh! |
| I | It's tough though. |
| P | Yeah. |
| I | For some people also, how difficult it is, depends on who they're lying to. |
| P | Yeah. |

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| I | So some people are easier and some people are harder. Erm... do you have... if you were to kind of imagine the easiest possible person to lie to and the worst possible person too lie to, is there like a little picture in your head of who or what that person might be like? Erm or is everyone equally difficult? |
| P | Erm, no. I think there is circumstances. Erm... obviously someone in a position of power... erm or someone in a position of power over you. Erm... and somebody that looks like me Dad (laughs)! Just saying! |
| I | Yep (both laugh)! |
| P | Erm, and... would it be easier to lie to somebody I didn't know, that I didn't think would possibly find my lie out? Or even if they did, whether it would be offensive. Would that be easier to lie to? Possibly. Possibly... because I couldn't see any repercussion from it. |
| I | Yes so less risk. |
| P | Yeah. Yeah the risk assessment is lower. |
| I | It's so interesting that you mention your Dad. Pretty much everyone I ever talk to about this mentions at some point one of their parents. |
| P | Really (laughing)?! |
| I | Yeah. Erm so it's kinda like who is it just not even worth trying to lie to because they'll always know. So it's like my Mum or yeah my Dad! Just don't even try, walk in the door like I might as well just start telling you now (laughing)! |
| P | Exactly! |
| I | Which is interesting and one of the ways that you kinda framed that was kinda someone that has power and when someone's your parent, they always have that power forever. They're the grown up, always. |
| P | Still to this day. And when my Dad passed, but my mums still around, and erm, yeah still to this day. Sometimes I just have to go okay Mum, alright. (laughs) |
| I | Yep (laughs)! Interesting, and erm my final question... erm... is, if you could do it again, would you change anything about what you did? |
| P | Erm... would I change anything? Er, given some of the ways that people lied, I think that's... that's a good idea. |
| I | To stretch timelines! Alright (both laugh)! |
| P | Yeah that's a good idea! But... would I change anything? I think... I think I did okay. I think I did okay. For what it was and how, and how I manoeuvred through it. I don't look like I'm going to walk out and burst into tears, so it's all good, yeah! (laughs) |
| I | Happy with that?! Okay. Interesting performance review of yourself lying. "I think I did okay"! Erm it's interesting because quite a few people have asked whether I could tell in the interview. In almost none of the interviews |

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| | could I tell anything at all. Erm I'd set them up so I didn't know, I dint have any actual knowledge. And then I'm so busy, making sure I'm writing everything down, is the camera working, am I looking at them enough, is the room too hot? There's so much going on in everyone's head, that having any change to actually, you know, did she talk too much, did she look flustered? It never happens. And even watching some of them back, I'm like... no idea! |
| P | Really there's no... |
| I | That could be true, that could be true! Some, some of them maybe. Yours was very interesting at the end when you go and clearly make that face as I'm leaving the room, and it's kinda like phew. But again, until I asked you, I didn't know whether that was just general relief that the whole thing was over, or you were like oh no something happened, or, or, what does that face mean? So yeah. And I wouldn't have seen that in the actual interview. I walked out of almost every interview going well great! I had no idea! Did they even lie?! Clearly I don't have a future in this! |
| P | If you have a [indistinct] study, how, how are people supposed to do chat-downs and you know? How is that supposed to come over? How are you supposed to pick up that somebody's not quite... |
| I | Erm I have a very, very favourite quote, from a very experienced police officer that I love, and he says 'I'm a really good lie detector. Do you know how I do it? I go and check what they've told me'. |
| P | Oh superb! Yeah! |
| I | That's what they do! Tell me everything. Okay. Then you pick ten things that they've said and go, right, have we got any CCTV that backs that up, did they actually... And as soon as a few things start to be non-verifiable, then maybe you start to get an idea of it. But if they've said okay here I've got them on camera, what do you call it? ANPR? The number plate camera? |
| P | Yeah. |
| I | Okay then they definitely did go to work at that time, so and so saw them there, they used their credit card there. Then probably... |
| P | It's more likely that they're... |
| I | It seems like it's more likely to be true. |
| P | Yeah. |
| I | Yeah. Um, I mean there are so many TV programmes and things where people always seem to be able to just look at someone and know, but some people are just anxious anyway about life, about all kinds of things. Somebody sitting opposite you and talking about what they did or didn't see happening in the casino that night, and thinking about cheating on their husband, and that might make them... dilate their pupils and breathe faster and do all of these things that may indicate lying, but may also indicate a really bad day! |

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| P | Yeah exactly! |
| I | You just don't know. And there are huge cultural factors and that's one of my big [indistinct]. There's huge misunderstandings that often happen in New Zealand, where I'm from, where the police who are majority white nationality, will persist in saying that these young Polynesian guys that they arrest, wouldn't make eye-contact with them. In Polynesian culture, it's a sign of respect to drop your gaze when somebody is in higher power than you. If you're a cop and he's eighteen years old, the first thing he does is look at the floor, because that's respectful, and you interpret that as he's lying, and the pair of you are already at crossed purposes for the whole of the interview. |
| P | Wow. |
| I | Simple, simple stuff like that... so... |
| P | Crickey. |
| I | Yeah check. That's how you find out whether someone's lying, go and check! |
| P | Go and check! Mental note to self (laughs)! |
| I | So if I wanted to know if you were lying, I'd have to go and find a CCTV camera inside Ben Pimlott and then go aha (both laugh)! I knew it! Is there anything else you think I should know which will help me understand? |
| P | Erm... no I think... it's kinda painful watching (laughs)! It was fun to do. It was fun to do. Erm and actually thinking back, I guess it depends how seriously you take things. |
| I | You're clearly quite conscientious. |
| P | Yeah, yeah. Again, I'm that person. I'm a people-pleaser so, er yeah. It's a... no there's nothing else that I can think of. |
| I | Cool. I'm gonna switch this off then. |
| END | |

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| Interviewer (I) or Participant (P) | Transcription - Harry |
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| I | Erm, so it was mostly hopefully covered in the consent form, but I will go over again sort of the whole reason why you're here. Erm... is because I'd like to understand what was happening inside your brain whilst you were doing the task. Erm there's loads of literature, there's loads of assumptions, there's loads of inferences we can make... erm and they often turn out to actually be wrong which I find quite fascinating. |
| P | Well I don't know any of the literature about it and I think that's probably a good thing going into it. |
| I | Probably, yes. Erm but one thing that's come out of a previous interview that I did is that I was looking at a video of somebody and they kept, what I would call fidgeting and pulling at their clothes and things, and I thought oh yeah, I know what that is. It's supposed to be a sign that they're uncomfortable or that they're anxious. Then we sat down, and we watched the video together and he said, "oh I hate that t-shirt, it's really uncomfortable". So actually, not what we thought it was at all. Erm and some people when we looked at their videos, I though they just seemed so relaxed and so comfortable, but then when we watched it together they say to me "actually my heart was pounding, I was terrified"! So the only way I'm gonna know what was happening inside your brain is to ask you. But also, you may not necessarily remember. |
| P | I remember doing it. It was prett- it was a pretty weird task, so it really stuck in my head |
| I | It stuck, brilliant. |
| P | So when I saw this I went "yeah, I know exactly- I remember the exact thing what I did. I really did remember the whole thing... pretty clearly. |
| I | Interesting! Cool, so what we're going to do... I'll ask you some general questions about the whole thing, then we'll watch together maybe 10 minutes – so the first five and last five of your GoPro footage, and see if maybe you can talk me through, sort of David Attenborough style, so you can be the vocal narrator of what was going on, what was Henry thinking, what was Henry doing? Then we'll watch all of the interview component and kinda go, so what was going on, what were you doing, what were you trying to do? Erm, any questions at any point stop me, we can rewind stuff, we can re-watch stuff, it's all entirely possible. |
| P | Absolutely, if that's totally fine. |
| I | Cool. So thinking back to when you did the study, what are your main memories of it? What can you remember? |
| P | Yeah, yeah. So... the brief was the brief of the study, which was explain what to do – that's what a brief does. Erm and so I kinda thought like "okay I know what I'm gonna do". Basically like put a little plan together in my head of wha- where I'm gonna go, where I'm gonna be. Like where I'm gonna sit, what I'm gonna do there. And then the time frame of what I'm doing. So it was like we had half a- was it half an hour or an hour? |
| I | Half an hour. |

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| P | Half an hour. Yeah, so within that half an hour I was going “okay, I’m gonna do this for ten minutes, at this interval I need to go and do this because this could take this much time”. Just getting like a plan in my head of what I’m going to do, which just kinda yeah. So by the tim- when the GoPro was on, when it was like “go”, I knew exactly what I was doing. |
| I | And did you stick to the plan that you had? |
| P | Yep. Which was [inaudible]. It wasn’t a great plan, but it was kind of an experiment. I don’t think- I don’t think I was very convincing either because I put too much effort into it because I was like, “oh it’s a study, let’s make it like more of a like acting role thing, rather than actual deception”. So I don’t think I was very convincing in the like video... |
| I | Interesting. |
| P | ...because I put too much effort into it, which is often the case....with deception, where doing something simple is easier than going like “well I was doing all of these things and thought about all this” and that’s the reason why I did what I did, like when I’m lying basically you can tell that it’s not true because it’s too much information. |
| I | Ah okay! Yeah. |
| P | Well that’s what I thought. |
| I | So that yeah, that was going to be one of my questions, how well do you think you did? |
| P | So not, not very well because I remember drawing something. I should’ve just drawn it and left it, and instead let, let – I think it was you interviewing – let you push for that rather than going like “and I drew this, here’s the proof that I was doing it” because that just seems weird. But I was going “yeah I have proof, here it is”! |
| I | I mean it was kind of an artificial setting anyway... |
| P | Yeah that’s very much it where... I had a big plan in my mind, but I knew that it was like a research projec- it was an experiment, where, so it, so the stakes are very low on it. It was just recor- and I didn’t even know that people would be seeing it afterwards as well I don’t think, I think the brief was just erm using it within, like for research, like within the erm researchers, rather than using it for anything else than was in the debrief then. Which was fair enough. I read the debrief and was like “oh, okay well... whoops”! (laughs) |
| I | Erm I mean most of the reason for the GoPro was... erm because I can be quite naïve and I was like, we’ll give people a task and then we’ll get them to do something else for 15 minutes, and Adrian Scott, a lecturer said “what are you gonna do if they just go to Pizza Hut for half an hour?” and I was like “oh well they won’t do that”! Then he said “but you won’t know”! So the whole point was have the GoPro so that people will be kind of accountable. But since we had the footage we thought, eh, we might as well review it! |

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| I | Erm and I think probably, you've already kind of touched on this, but did it feel like a real lie or did you have a sense that it was kind of more of a game, or it was not real? |
| P | Both. I think it can be a game and it can erm... it can be a game and you can be telling a real lie. Erm and the lie can be very... I think the actual lie can be very real, but because the stakes are so low, it comes across like a game and its maybe not as well thought out or a little, like I was a definitely over-eager in the interview to kind of say what I was doing, which is- which wasn't a good thing. So in a real life setting, much more... like if I'd actually done something like that... |
| I | Yeah. |
| P | Much more er like reclusive about the information and only give what's asked and not give extra information. Which is very, like seems very reasonable but forgot that when you're doing it because it's like 'oh it's such a fun experiment um this is what I decided to do to try and fool you ha ha!' |
| I | Yep ... interesting. Is that everything? Have I asked all my questions? |
| I | So you came in, watched the briefing, had quite a concrete plan |
| P | Yeah |
| I | Carried out the plan... did you have a plan for how the interview would go as well? |
| P | No cos I think very much I think of the whole thing the interview is the part I took least seriously. I think by the time I got to the interview I was like 'oh let me tell you about this plan I had' rather than just kind of in...going into the interview and trying to be a bit more formal |
| I | Yeah. And when you finished the interview, walking out of the building, what, at that point how did you think it had gone? |
| P | I felt I felt very satisfied um through that I... you know it was a bit of fun um thought it was interesting thought it was exciting experiment compared to a lot of the experiments you do, thought it was quite...very very interesting Um was very happy with it until I found one of my my flatmates said oh I did an experiment and I saw a video of you lying like oh a video of you and we had to answer whether you were lying or not and I was like...'oh what did you think?' and they were like oh I don't remember exactly what I put it was like a couple of videos that I saw oh fair enough but then I thought back to it and I thought I probably didn't do very well on that all in all.... |
| I | Oh ok |
| P | Cos I thought about it again and went 'no, don't think that went well' |
| I | So what's different between kind of then and now is it just a year's worth of experience that you look back and think 'oh no if I was doing it again I'd hold back more'? |

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| P | Um it's in the moment I think I just got very carried away with fun experiment like, like I said it's the acting kind of part of it like oh I did something |
| I | But you're an actor right like you do musicals and acting? |
| | Yeah I do as a hobby I do yeah yeah |
| I | Yeah so is that just a kind of a you thing that you'd animated |
| P | Yeah but in a... if I was... yeah I was very playing I was very much playing a role and then lying so it was a real lie but in the role of someone in the role of someone who had done something wrong rather than me in my day-to-day life lying is very similar but the stakes are a lot higher obviously just cos it's real life. So um... so things like over sharing don't do things like um....umm...I can't think of anything off the top of my head it's you know it's very much just like natural stuff that you can do. |
| I | Yeah |
| P | Or that I do when I'm lying that's just...makes it...makes it more relaxed and like believable. |
| I | Interesting... cool so let's watch some go-pro footage |
| P | Yeah I even remember my plan to be honest cos I can lit I can literally tell you what I did I went and sat in café thirty-five for 20 minutes, drew something took a picture time stamped it, drew something, took a picture, waited, did the task, dropping off in the bin, re-time stamped the picture so it had a time stamp of when I was um in the Professor Stuart hall building. Then I went back, finished it off, time stamped it again, ummm then did the interview. So what I was time stamp time stamp time stamp 5 minutes apart or 7 minutes apart I think |
| I | Yep |
| P | Something like that |
| I | So that covered the entire period? |
| P | Exactly So I said I went there and did the drawing and here's the proof of it |
| I | I wasn't even aware that you could re timestamp something |
| P | Um it was on it was on snapchat like took a picture of it and then just left it, left it on my phone so then I opened it up again when I was just leaving the professor stuart hall then swiped to get the time stamp and it just does the current time but the picture was taken three or four minutes ago |
| I | A that's super elaborate b you have crystal clear memory of it. One of the people that I've done these interviews with sat down, we've been looking at that person's footage and she went 'oh did I go there...no still not coming back to me' like even while we were watching the video she was like 'oh don't even remember wearing that coat...don't even' |

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| P | No ..I don't remember what I was wearing but I know exactly like I went straight from here, café thirty- five, sat down, think I spoke to some people went 'I'm doing an experiment I need to get going with this I need to start this drawing otherwise it's never going to be close to do... as elaborate as I want it so I could be like 'yeah I was drawing for 25 minutes' |
| I | That is a lot of planning. Ok...we won't watch the whole half hour... |
| | Yeah the problem is I'm bad at drawing, that's the first problem is I'm bad at drawing so not a great idea um in fu...ah in future |
| | Why did you choose drawing? |
| P | Because it's the first thing that came to my head and it was fake al... like a false setting so I was like 'it'll do and then like yeah' |
| P | In in future it'd probably be like a...something else I don't know what though, so drawing is a very easy one to be like |
| I | Eating. Full plate... empty plate.. |
| P | Yeah exactly |
| I | We'll go the first 5 and the last 5 your job is to be the narrator, so kind of talk me through |
| P | There was something else as well I just remembered I had a..bag of crisps from before and the extra 5 minutes at the end I said I went and bought a bag of crisps from the café and I actually already had them but that was just convenient cos I wanted to eat them so I was like cool |
| I | Using what you had |
| P | I just found them and I was like 'sick I found them and there's 5 minutes left I'm gonna eat these and head over to the interview' so that's extra bit. |
| I | It all came together beautifully |
| P | It did yeah |
| I | So have a think about what mostly what you were thinking at the time if you can um...excuse me |
| P | So I again I by this point I'd already known the whole plan, I knew exactly what I was going to do so I was just heading over there thinking about what to draw cos I don't draw I don't know anything about drawing.... so |
| I | Did anything go wrong? Was there anything that didn't go according to plan? It all fell how it should have done? |
| P | No... no oh yeah I spoke to some people and I was like, I spoke to them briefly and then ummm said bye I we.. I think if anything I went down to the fire exit accidentally here I always do that... |
| I | Oh so you've gone too many floors? |
| P | I...I al...I think so then I get oh wait or did I just go out there? |

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| I | No, you're out! |
| P | Oh I just went out. Wow |
| I | I didn't know that's where that staircase lead |
| P | Yeah you're not meant to go out there... |
| I | But that didn't seem to stop you at all this is all still moving with purpose moving with pace. |
| P | Cos I knew what I had to do so just... following through with it um yeah I don't know I don't I'm not the kind of person who finds lying very difficult so... |
| I | So that's a that element of it didn't preoccupy you in any sense it was all just part of the plan |
| P | No no you said you have to lie and do this, do this task and find a way to make it look like you didn't and I was like ok... plan and just go through with it. Nothing there was nothing super stressful about it |
| I | So in well in general you don't find it difficult do you know why that is? |
| P | Mmm just I feel like I'm not too bad at it. Like I'm not super bad at it I don't really get caught out in lies I don't really tell big lies unless I have to I don't try and like socially manipulate just because it's normally not worth it like it always blows up on people. People who do...always just blows up in their faces. |
| I | So you only use it...if you need to? |
| P | Yeah yeah exactly normally it's ahh thought out and an element like with enough truth to make it reasonable to certain people |
| I | To some people and not other people? |
| P | Oh absolutely yeah cos some people um see through the bullshit straight away and some people um...some people really don't and it's normally I normally don't lie to like close friends cos I'm just quite honest with them. But it's people I'm not super close with like acquaintances um yeah...trying to think of the last good lie I told but I don't really know to be honest. |
| I | We often have this thing where we talk to police interviewers and they say if we could just call in a suspect's Mum then we'd probably get the truth straight way because everyone's got someone and it is often a parent that you just it's not even worth trying because they always can see straight through you. |
| I | You've stopped |
| P | Yeah I'm trying to find the room where it was |
| I | Ah ok yeah cos it wasn't super specific just 'in this corridor' |
| P | Yep it was I remember where it was, it was up here to the right as far as I'm aware I think so |
| P | God knows what I'm doing um... |
| I | Well look there's the room number so you would probably be checking these rooms |

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| P | It took me a little while to find this but it's fine yeah but again the whole way through this I wasn't really thinking about like I was just trying to find the room and that was it because I knew what I was doing so stress free I was like find the room, when I find it then I'll go and start drawing |
| I | And how quickly did the plan come to you? Like was that all...? |
| P | Oh really really quickly like just |
| I | Bang |
| P | Basically yeah |
| I | And you were happy with it straight away, committed to it and then just... |
| P | Normally a gut feeling when that kind of thing is just is what to go for cos when you when you don't that when it gets over complicated. So it it wasn't a super complicated plan it's just I'm not a drawer so and then in the interview I was like oh yes and I was drawing here look at all these pictures and stuff that I shouldn't have...I kind of wanted to share because I was like for an experimental reason you need to know what I'm doing but for like an actual lying reason no not at all. For an actual lie you don't want to share any of that but for the reason cos it was an experiment I was like yes look I drew this and here's the three images that I used and here's the proof that you need to know like kind of you need to know as an experimenter what I was doing but for an actual lie not good at all |
| P | Do I get a coffee here or have I got coffee? Don't really remember |
| I | Cool so I'm gonna stop there |
| P | Again I was just pootling around and the plan started and then finished and... |
| I | There's not a lot of stopping and starting or kind of any signs of indecision So I cos I've watched a few of these and there are some where people stop and just literally stand still for 5 minutes and they're clearly trying to think about what to do or there's kind of general... um and you seem to be quite a steady pace |
| P | Yep cos I knew exactly where I was going um I trusted myself which is I think the most important thing when it comes to lying is trusting yourself because if you if you if you don't trust what you're saying no one else is going to trust what you're saying and if you don't trust what you're what you've decided to do no one else is going to buy it |
| I | Here you are taking pictures |
| P | Yep (laughs) time stamp it save it |
| I | Yeah there's really no hesitation in any of this |
| | Yeah cos I I it's all planned out stress free, not bothered by by what I'm doing at all because it's an experimental task but also because it like...cos lying doesn't really bother... aaaanyway it sounds like wait wait wait before I sound crazy |
| I | Everyone has said that and then everyone's been like 'not that that like I don't mean it in a bad way' |

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| P | I don't mean it in a bad way but yeah like some if you're lying you've just got to get on with it |
| I | It well it's an interesting point that you make that once you have decided to you kind of do have to commit to it or otherwise it's not going to work so... |
| P | And the task was make a convincing lie, fabricate a story so... just did it |
| P | I think that was me like slightly late here which is why I'm a bit fast |
| I | That's quite a cool angle |
| P | Yeah I know it's weird |
| P | Yeah that's why I'm drinking water I was thinking why am I like going (exhales) and drinking water and it's because I fast walked properly like proper fast walked to stuart hall and back to have enough time cos I'd got there checked my checked my like phone um half way there and I was like oh actually I need to be there like kinda now and should be going back now so I just walked faster so by the this point I was like woah to get back in time for the experiment... there we go |
| I | Crisps I can hear the crisps are happening |
| P | Yeah cos I said I I said ahh I first picture second picture bought a bag of crisps third picture which was why there was like just instead of 3 or 4 minutes between them there was 6 or 7 minutes and I was like yeah went and bought a bag of crisps which I am currently eating now. |
| P | Yeah so I think this this kind of lie that I kind of made was very much a like if there was a real crime committed and it was like a police interview and they're gonna go well what's your exact time scale what's your exact time line of everything that happened...cos otherwise you're going to go to jail for like 25 years this is the kind of thing that you that's more valuable. Where you're like I went to practise some drawing that's bad example for me but that's by the by you go I went and did this thing here's the proof here's what I was doing every I'm accounted for the whole way through which seems weird when it's not in a police setting and seems like a lie more of a lie when it's just kind of chatting 'what did you do what did you get up to?' |
| I | Then it is an odd sort of thing to say |
| P | Then it seems weird to say 'well actually I was completely accounted for between the hours of 4 and 5 so ' (laughs) it's like... |
| I | There's something slightly odd about that...for a chat |
| P | Which I think is what came across in the interview |
| I | It will be interesting for you to see what you think of your own performance in the interview |
| P | Oh god. But I remember feeling at this point very satisfied as well um very calm just because I was like I'd done what I wanted to do and it went well and I felt very like I said satisfied with my performance in the task |

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| I | And so there was no kind of sense of apprehension or anything about also getting through the interview part |
| P | No because... |
| I | The plan's already worked? |
| P | Yeah...the the interview was the easy part like...the doing this was the hard part but going into the interview and saying yeah I was accounted for and here's the proof is not difficult because it like here's the pictures that I was doing this I mean here I bought this bag THIS bag of crisps holding up the bag of crisps that I'm currently eating it's kind of like there's no you would then need further information like CCTV footage to be able to like argue against that cos it's quite foolproof but again comes across weird in interview but... |
| I | So at this point you feel pretty secure that you've given yourself enough of a back story cover story.... |
| P | Yeah and the checking the photos checking the zooming in checking there on |
| I | Done some checking ok nice... |
| P | Ready to pull them up as well, getting them open on my phone so I can unlock my phone and then they're right there just for...decent access |
| I | So now we have the interview. The audio is quite rubbish |
| P | That's probably for the best I hate I hate seeing myself on film so it's probably... |
| I | Oh I've had to watch myself repeatedly on film cos I'm in all the interviews thinking 'why was I wearing that?' |
| P | Oh I'm going to hate this so much |
| I | Umm..so interestingly you've got the first few seconds which is just you in the interview room all by yourself ahh |
| P | Wonderful ok |
| I | And then I come in. Un ok at this point I kinda need you to do two things at once |
| P | Yep go for it |
| I | The first is tell me what was going through your head at the time this was filmed. But also kind of give me **** of here and now what's your perspective looking at yourself, kind of how would you assess your performance, better or worse than you thought... |
| P | Shall we shall we do it where we watch it for a bit and either you can stop it or I'll say lets pause it there and then i can give you like a run down of something of what I was thinking or what I'm thinking now |
| P | So here was me trying to find my phone getting it out of my pocket all ready. I think but I could be doing anything, yep there we go found it |
| I | Got the phone |
| P | Crisps, relaxed open body posture |
| I | Was that something that you were conscious of? |

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| P | Oh yeah absolutely um...yeah yeah yeah definitely definitely um eating the crisps, chilling out. Eating's a really good way to seem relaxed like if you wanna have a serious chat with someone I always say go and eat go and have a coffee. Coffee and always get food because it's instantly like social animal lizard brain kicks in and you just feel more at ease when you're eating with someone. |
| I | And also gives an excuse as well it's really good like eye contact wise where you don't want too much like kind of pressure to build up within eye contact cos when you're forced to kind of sit there and stare at someone it can get weird |
| I | Yes |
| P | So having like a coffee or food or something in front of you that you can reach down for or look at um is just fantastic especially when you wanna avert your gaze and you really can't for any other reason. Having a bag of crisps that means you can look down pick it up eat a crisp, look up, look back down again like you're you're doing something else while they're talking to you so it you can look away and not... doesn't feel weird. |
| I | Having just heard that I'm now re-watching this bit with you eating |
| P | Yeah... eye contact, looking down checking my phone, putting it on the hook. Putting it just on the floor there, |
| P | Just fiddling around just cos...I was trying to find water. Eye contact then going away and drinking eye contact again to reply make a joke look away drink |
| I | Yep |
| P | I can't really hear it |
| P | But again like the stuff I'm talking about now isn't interview specific that's just talking to people and kind of I know I think makes a good rapport or rapport that I'm happy with between people that I want to talk to seriously as opposed to friends |
| I | Mmm and it would it be something that you're conscious of in the moment? so like the way you were calling it just then was like 'look down, look away' is that what's happening in your head while you're doing it or is it happening sort of...? |
| P | Oh no no no no absolutely very I think very much automatically but watching it go through I'm thinking what am I what do I do to try and dispel tension in the room? |
| I | Mmm hmm |
| P | And I'm watching it and going 'oh yeah well open body stance I'm drinking something I'm fiddling with my coat just to move it and then I'm finding the water I'm looking I'm answering making a joke, drinking again' and it's like watching it I can go yeah I'm doing those things. In the moment I'm just talking I'm just relaxed and talking |
| I | Yeah |

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| P | And it's what comes kinda comes out of it |
| P | They're the people I ran into. I did run into Clare and Delphine, just...wasn't part of the plan but ran into them so I thought I'd mention |
| I | yeah |
| P | Again I'm saying the hard part's gone so I'm just going through the plan I'm going what did I do? the plan is what what I actually did and then I'm what am I going to say ok I went to the café I drew, I took this picture I drew more I took this work in progress picture, I went and bought a bag of crisps I then drew the third pic I finished the picture off then I'm here it it's just going through it what I've planned to do I've already got all the evidence there |
| I | And would that be easier than if you hadn't had the chance to plan anything? If you'd just been grabbed off the street and then said |
| P | Yeah definitely |
| I | Lie about all of the last half hour |
| P | Definitely definitely that's yeah absolutely that's kind of like I don't know in interviews where they catch people they go but that doesn't make sense because you said this and then there's 10 minutes there where you're unaccounted for |
| I | Yeah |
| P | Or they say they're I'm in place A and then suddenly in place b and then in place a again like it doesn't make sense |
| I | Without superpowers |
| P | It's be..yeah it's because someone's just caught up with what they're doing and it's easier to do that especially when you haven't had the opportunity to um to do it. So like if the experiment was basically just drop the letter off then you come str..just 10 minutes you just drop the letter off then you come in and then then you go 'what were you doing?' lie like you have to make something up that's so much harder as well because you might not have ran into someone you you know no chance that you went and bought something you literally just went and did something and then have to |
| I | Yeah |
| P | You have to lie on the spot about what you did. way harder |
| I | Would you use the same strategy in terms of... that you talked about dispelling tension and kind of making a joke and that...do you reckon that would be the repertoire that you'd fall back on? |
| P | Yeah absolutely, yeah yeah yeah |
| P | I don't know what I'm talking about but... smiling laughing |
| I | You were saying that you've got lots of essays to do and the fact...giving up your time to do this experiment instead |

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| P | Making yeah that's a... that's another |
| I | Tugging on the heart strings |
| P | That's a really good one yeah making my time seem really valuable is is good um cos it makes it seem like what I'm doing is more important as well so when I'm saying like 'oh I'm going and drawing' makes that sound like... there's a reason behind it. It's like 'I'm busy but I'm still drawing because I care about it' which makes it seem more believable because there's a...I'm not, not just saying what I did there's not just a behaviour it's here's here's my reasoning and my thinking behind doing this behaviour |
| I | And so were you...kind of anticipating the question which might be why are you sitting there drawing? |
| P | Oh yeah yeah I was I was anticipating this interview to be way tougher, way more in depth, which is why I then over kind of over shared a lot because I'm just going like 'oh here's um |
| I | 'I prepared all this stuff and you're not asking!' |
| P | Yeah I prepared all this stuff and then which is.... yeah which is not good in a relaxed interview but is good in like a much more serious if it was fully in depth I could've should've... if I knew there was follow-up I wouldn't've um gone into any of it so now I kind of go 'yeah I prepared all this stuff that you didn't ask about but I had it all prepared and ready...so |
| I | There's your drawing |
| P | There's the drawing. I'm like it's bad but you know you have to.. It takes time to make art you know all that bullshit am I allowed to say that? |
| I | Yes, yes you are |
| P | I'm talking about like oh yeah this painting means a lot to me it's like the ahh the guy touching god and what's the name of it couldn't remember...pictures...making up some stuff behind why I drew what I drew |
| I | and you are very engaged here you're leaning forward and you are very offering very open very you know there's there's no sense of having to have it pulled out of you |
| P | And again I'm looking up and it looks weird to watch me looking up and looking back down again but I'm just....that... it.... I know is ahhh rapport...eye contact....makes it feel more personal as well and talking...to to kind of say something, eye contact, then you look down at whatever you're doing, eye contact, down, eye contact down makes it really really engaging |
| I | Yeah... and did you have any sense during the interview of how it was going? Whether you were being believed or whether I had any suspicions about you |
| P | Um no at the time I think it was going fine but there again the stakes were really low so it was kind of... if you...if you did realise I was lying it was like well...what's the worst that's gonna happen? It's not like a real situation |

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| I | If it... if the stakes had been higher if it had been a police interview would you have been more consciously attending to or being aware of my responses do you think? |
| P | No... I was still very aware of your responses but I kind of...not acting on it like.. You you seemed fine and I was like I'm not gonna I'm not gonna overthink and go like 'oh no what?' cos like cos again you should trust your gut in things like this otherwise um otherwise there's no there's no chance if you don't trust what as I kind of said before if you just trust your gut and lie how how you think you need to lie I don't know it works for me at least |
| I | Yeah |
| P | It always goes fine for me (laughs) |
| I | Um and so you said that it seemed like I was believing you. What would you have been expecting to see if I didn't believe you? What would sort of red flagged for you? |
| P | Um...so... it's...ok...let me think about this for a second....ummm |
| I | Cos we can see what I am doing (laughs) |
| P | Yeah and you're just sitting and writing which is totally reasonable. If you stopped writing for a second and then started again or like looked up at me and then or or or asked me to repeat a question ah to repeat an answer |
| I | Yeah |
| P | Um... things like that, things like that ah repeating a question. Eye contact is a weird one because sometimes eye contact can be like....you make the eye contact and then you're like 'ahhhh this isn't going well' |
| I | Yeah |
| P | And you can just tell straight away but I don't really know how to describe that |
| I | Well there are different types of eye contact I suppose |
| I | Yeah you can just tell |
| P | Yeah when I think you asked me to repeat something there and I just gave the answer back in as little detail as possible which is I think always a good one when you're, when you're lying cos you give the big long answer first and when someone goes can you tell me that again you yeah here's the basics, here's the basics of it um remember the details you said so you can repeat them but if you if you then go into it and say the whole thing again it seems weird, comes across as really odd |
| I | Yeah especially if it's exactly the same |
| P | Yeah yeah yeah |
| I | Do you have a fairly good memory? Would you say? |
| P | Um yeah it's alright. Stuff like... I I don't know why I remembered exactly what I was doing on this study it depends for what... some things stick and some things don't really |

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| I | And so you mentioned defusing tension and um and the idea of making a joke. |
| P | Yeah |
| I | Is that something that you would do or try and kind of consciously do if you knew you needed to deceive someone? |
| P | Noo cos trying to force it... it is even worse than just doing it. I think it's ver...it's very much just my personality anyway but it. It's just building rapport with a joke and that's- |
| I | Yeah |
| P | Ca...like you're making it casual which is just very much how I am anyway. But it works and... again it's weird to think about it objectively I'm kinda analysing my own behaviour and going 'hmmm what does that probably mean?' |
| I | 'What am I doing?' |
| P | 'What AM I doing?' yeah but no if it's a like a police interview or something unless it's that kind of environment don't! Do not try and make a joke, just give like....receive I don't know give what you've received so if it's very stern and very um like 'here's a question, here's a question, here's a question' don't try and make a joke cos it's just not going to come off well it'll just be weird |
| I | So rather than kind of specifically kind of 'oh I'm going to use humour to defuse tension' you're more about 'I'm gonna kind of match the tone of what I'm getting from this person'? |
| P | Yeah and I feel I'm.... |
| I | Which is often is humour in like a relaxed setting |
| P | Yeah yeah and I feel like I'm kind of socially able enough to kind of go with the flow of a conversation and realise what like is appropriate to say and what isn't appropriate to say. But yeah I definitely over shared in this cos I'm trying to kind of...like the interview kind of came to was coming to an end and I was like 'I need to show you all this stuff I prepared because it's an experiment and you need to know' |
| I | See that was interesting |
| P | What what was that? |
| I | You had a very natural kind of 'oh oh and here's something I forgot' watching it now I'm like 'oh that was convincing' |
| P | Cos cos again I'm watching it and I remember I I'm like totally relaxed like I...I'm not stressed at all I'm not like... my heart rate was probably up a little bit just cos I'm aware of I'm aware of what I'm doing but not |
| I | Because you look externally completely relaxed but obviously you know you a lot better so that... to you that still looks like you genuinely very chilled? |
| P | Exactly yeah yeah |

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| I | Visual aid |
| P | My prop - crisps |
| I | Hammers it home doesn't it? |
| P | Yeah it's like I bought crisps they're here, I drew this it's here. I'm drinking this water it's it's here so like what you you'd need then to go away and do something else to prove me wrong which is kind of the aim of this fabricated story...is to... |
| I | Yeah there's nothing to poke holes in |
| P | Yeah within itself it's a full fully thing but then you'd look at CCTV and you'd see me leave and you'd go oh he lied but that's that's not the point of the experiment so (laughs) |
| P | And then we're just we're talking about something else now talking about something completely different. |
| I | We are we're talking about the weather um I'm thinking that it's lovely that it's finally sunny and you're saying 'no I hate it when it's sunny' |
| P | Cos ah again we're talking at the end about something something else oh it's like cos every conversation you base it on the worst point at the end |
| I | Mmmm hmmm |
| P | It's like with the pain like ah pain research where it's always there's the highest peak and there's the end and then it's like the average of the whole thing |
| I | OK |
| P | So similar with conversation and and just with when you talk about something else you're going to leave and go cool he seemed like a a regular human being which is exactly what you want well that's what I want you to think |
| | Yep |
| | So you're not going oh he's a criminal and he's a murderer and he did all these things wrong you leave and go yeah he's just a regular guy |
| I | Ah this is our final image of you, holding your crisps drinking your drink looking utterly relaxed |
| P | Looking smug as well, which is horrible (laughs) looking really smug! |
| I | What about that says smug to you? |
| P | It it's cos I'm mid blink or something but my eyes are just narrowed o the side and going...like that |
| I | Oh ok |
| I | That's harsh self-assessment |
| P | (laughs) well...well yeah you have to be you have to be the harshest one on yourselves |

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| I | Well in that spirit then...having had a look at the video we already know that you would probably change how forthcoming you were. |
| P | Yeah |
| I | Is there anything else about anything body language what you said how you said it that you would tweak if you were in a time machine...go back |
| P | No I was I was really happy with that to be honest it's it's better than I thought much much better than I thought I came across as um...the small talk was great um if I have to analyse myself? |
| | Yeah go for it |
| | The small talk was great, body language was great like leaning in is good, being relaxed is good and go with your gut like you're in a normal conversation like the going 'oh a and this extra' is just so normal when you're talking to someone and you're trying to show them something you wanna you'd you'd see it you wanna say it don't think about oh if I say that what, what are the consequences will that seem weird? You've already missed the opportunity you shouldn't say it now. |
| I | Yep |
| P | Cos that's the worst thing is when someone goes back and then like a second like a good couple of seconds passed and they go 'oh and this' and you're like what did you just? What what decision? What happened in your brain that you needed the fan to come on and just go 'hmmmm' for a second to to work out what you're doing. |
| P | None of this is going to be quotable. Because ahh none of this is going to be quotable because of just because I ramble but the general like the general thing of like what I'm saying is there. |
| I | I get it |
| P | Yeah but I thought I was fine. Getting the picture out was a bit much, shouldn't have done that um...pictures were fine because I think you asked for them I think you prompted them. Eating was fine |
| I | And... |
| P | Right at the end sorry, right at the end picking them up and going 'and this' was a bit much but (laughs) it'll do it it's not great but it's not the worst. I'll allow it (laughs) |
| I | So you had a plan. You had an absolute, definite plan. But it seems like you also had some flexibility in there. You happened to run into some friends and so you were able to work them into the story |
| P | Absolutely yeah yeah yeah things things change but it's like being flexible enough to incorporate any new element in and like if my time had been cut in half being able to just reassess and go with it and have that gut feeling of what am I going to do? |
| I | Mmm hmm |

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| P | Just just comes to me and I do it and I'm like cool. There's not much there's not really much thinking involved it's very like kind of instant reaction |
| I | Yeah |
| I | So some final questions....were there any surprises for you in watching that? like you said that just then you said it was better than you thought it was were you expecting that you would have been not as convincing? |
| P | Yeah cos after my my flatmate Hannah said um she saw the video I was like 'oh that's probably quite bad then' I was like just the fact that she mentioned it and I thought back and went oh that probably didn't go too well. Just just because she had mentioned it and so I'm not really. Whereas watching it back I was like oh yeah It's fine. It's it's absolutely fine. |
| I | Um and so if I don't know next week in some bizarre and without any detail hypothetical situation you were in a situation where you absolutely did have to tell a proper big stakes serious lie....what would you do to prepare for it what would your kinda strategy be? |
| P | So if I've got an actual... how long do I have to prepare for it? |
| I | Couple of hours |
| P | Couple of hours so... |
| I | Police are going to come and pick you up at 3pm it's midday...going into an interview |
| P | So the time that they're going to ask me about I need to make sure I know what I'm doing or or because I know I haven't...yeah so I let's say I had done something wrong Um and so I need to find a way to say where I could have been. So if I so if I actually was doing something wrong if I was with someone else I'd phone them up and be like look this is happening XYZ's happening and this is our this is our story we were me and you were doing this instead. We were at mine instead we watched something um oh like something something that's recently watched on netflix so the first episode of the Madeleine Mccann documentary lets say we went and watched that but then we stopped because it was depressing and then we chatted for a bit. |
| I | Yeah |
| P | There's you know you can go on my netflix and go this was finished ye yesterday at this time if that's lets lets say that's when it finished like yesterday at probably what 7? 8? 7:30 8ish? So lets say that's when it was and go cool that's something that I've done let's leave it at that first episode I watched this and then as long as they just tell the same story you're fine but if it was just me on my own then just find something I did on my own so if I left left the house and um and went and committed a crime like I'd say no instead I went and walked up to like telegraph hill which is like 5 minutes walk from my place and just walked around it just to get out of the house. Because um xyz's happening in my life and like you you can give real personal reasons you can be like 'yeah I'm not doing too well at |

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| | the moment um like I'm quite sad this has happened that's happened like got this message form my ex and show them a message from my ex' |
| I | yep |
| P | So that I that I've received and gone like this made me upset so I went out for some fresh air for 5 –10 minutes just something that's believeable um and use everything so like use messages from like you can scroll back and go like what happened at that time? Find anything that happened at that time and use it or before and just and use it. Cos it's like especially when it comes to high stakes lying or lying in general you it doesn't it doesn't really matter the like the you can use anything is my kind of mindset towards it. Is really just use anything cos if you need to tell a lie you need to tell a lie. If you need it to be believed you need it to be believed. |
| I | Yep. And so then having gone through and got your story straight and all your background...walking into the room, proper serious interview. What at that point would you be focusing on? |
| P | Um...being... like this is going to sound so dumb being believable was what I was going to say but that's not really helpful |
| I | No no no |
| P | Um so.....things like things like the rapport kind of things that t no I don't think you should think about they're just natural like processes and then however however you build rapport is however you build rapport don't try and change that because you're lying because you're.... people notice.... it comes across weird um cos people are they're people are like you said the big pause when you can say they're tell that people are thinking and then when they start speaking and you're like I know I knew you were just thought that through and repeated it 3 or 4 times in your head to to make that sentence sound how you wanted it to sound. So it sounds weird now |
| I | Yes |
| P | So just go with how you feel and if that doesn't kind of carry you through it then...then that's fine but that's kind of good and bad liars in my opinion people who can just when they're lying can just carry themselves through it versus people who can't just relax and talk and lie |
| I | Awesome...so um I can't think of anything else that I want to ask |
| | Any other questions? If there's anything I touched on that you want me to go into more detail about go for it because I'll go into as much detail as you want. If you want me to reword something so it's more quotable go for it |
| I | (laughs) that would be poor ethics I just keep asking it until you said it the way I wanted it |
| P | That's better that's better |
| I | That's more ethical! (laughs) |
| I | Sorry **** did you mean to say.... |

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| P | Did you mean to say it like this? |
| I | Um in a general sense you said you're not massively bothered by lying. |
| P | Nope |
| I | Um as compared to the rest of the population would you say you're better than average? Worse than average? About average? |
| P | I'd say better than average |
| | Yeah? |
| P | Yeah yeah cos I'm not a I'm not a hugely emotional person. So um so I think lying is kind of very much like a people some people get very emotional when they lie or about lying and I don't really get that as much so I'd say probably better. Cos I don't know.... I've lied... like you can.... I don't know without going into detail and outing myself |
| I | Sure...absolutely |
| P | Yeah I I've you can...you can I can lie for a while and then go yeah I was actually thinking this and people go 'oh god like I had no idea' |
| I | So yeah this is something you know from experience? That when you want to pull them off |
| P | Yeah, yeah if I don't want someone to know something they're not going to know it. Like I mean they're not going to know it and the people I do tell things to are very very selective and It's it's kind of different things as well not even like consciously I just I'm aware like if I think about it what do people know? yeah these three people know this thing but they each know this one extra bit so if someone if someth..if I find oh I found out this about you I know exactly who it is |
| I | You know where it's come from! |
| P | I know exactly where it's come from I know where my leak is I know where my mole is |
| I | Like the CIA (laughs) just carefully put information out there |
| I | So I mean you you touched on it there but would you say that you think that when people are poor liars it's probably because of emotion coming into it? |
| P | Not always but the emotional response to doing it um is I think really affects some people um especially when they're like lying to a close friend or lying to like a boyfriend or something and then it's like the emotion behind it so might be able to say it fine and then 3 or 4 minutes later in the conversation it kind of starts... |
| I | Can't handle it |
| P | Yeah it starts kind of getting like oh what am I doing? |
| I | Yeah |

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| P | I think also when when you lie you sa.. The first kind of thing you say that's a lie you need to just stay calm and be aware of what you've said. And not not like try and back track cos that's just digging your own grave. |
| I | Yeah so the kind of the things that you've said that have come through to me quite strongly have been about whatever it is once you've picked it stick with it. |
| P | Yeah it's that kind of oh for me at last cos I kind of think I'm a good enough liar that I just go with my gut and that like that will get me through and trying to overthink it is when you start to make mistakes and when you start backtracking and when you start rethinking your plan ah midway through telling it...nah no no no you can't do that you just can't do that cos it's it's obvious |
| I | Yeah 'oh did I say that I meant...no...' |
| P | Oh yeah or when you say I was doing this up to this point and it makes sense especially in the thought behind like you can imagine you wanna tell so a lie that someone else can put themselves in your shoes and and agree with what you're doing |
| I | Yep |
| P | So when someone changes halfway through they might have this mindset that's going like with mine 'oh I want to draw so I'm going to go sit down get w water and crisps and draw' very reasonable thing to do. I'm very stressed with essays and I want to just let off some steam by just drawing in uni in a neutral environment surrounded by some people rather than in my flat on my own. A very reasonable thing to want to do. Then suddenly changing and going oh but then I decided to go out and play football instead makes no sense. You've you're going what what happened there? In your head that made you suddenly want to do something else and you can't answer that cos it's not true. |
| I | Yeah...so having the justification as well as the behaviour? |
| P | Yeah and you don't even have to say the justification just knowing that there's a mindset behind it makes it believable because when pe when someone tells you they did something and it just makes no sense like the logic behind why they did it just makes no sense you go 'why? that makes absolutely no like what are you doing?' And if it was in like a police interview setting that seems really suspicious where like 'I did this' why? I and you go why on earth would you want to do that? |
| I | Yes |
| P | It doesn't make any sense, why would I be doing that? |
| I | Like they asked Oscar Pistorious woke up in the middle of the night... he heard someone in the bathroom... he thought it might have been an intruder. |
| P | So he instantly shot instantly shot |

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| I | Why wasn't the first thing you do turn to your girlfriend? But before he even got out of bed why wouldn't you go 'honey did you hear that?' Or 'are you ok?' where was the logic of getting up and shooting? |
| P | Yeah of going someone's here immediately up bang! It makes no sense exactly. |
| I | I like it |
| P | So that's why you don't have to and if you say the reason that's like classic over sharing where you go 'and I did it because of this' and then you go 'cool I didn't ask' I've done that before where I've said 'I didn't ask' and people have just gone 'ahhh ' and you can see they go |
| I | Busted! |
| P | Yeah they go absolutely you've just caught them in their in their lie cos they've just weirdly explained themselves and you didn't ask and you don't need to know cos in regular conversation if you're telling the truth you don't explain yourself ever. You did it because you you you did it because it's what you did and there's a reason for it a reason behind it so you just you just do it |
| I | Oh I'm just making myself a cup of tea because I'm thirsty |
| P | Yeah because yeah because you know I'm thirsty. I get thirsty. Like you're obviously lying what are you doing? Rather than like oh a I went for a jog you'd go fair enough I I can imagine the reasons someone would want to go for a jog. That's all you need to make your lie convincing. |
| I | Ah so two final questions |
| P | Go for it |
| I | Both require a bit of imagination um if you could describe best possible person to lie to if you wanted to be believed and worst possible person. It could be an actual person that you know or just a a type of person or whatever. |
| P | Oh this is going to sound so bad oh....no I thought of something and I went 'yeah' and then I was like 'oh no' |
| I | Oh you have to tell me now! |
| P | Oh god....this is all anonymous so it's fine best person to lie to is a significant other. Someone you're romantically or sexually involved with |
| I | Yep |
| P | Um because you can really easily make trust you can really easily kind of say whatever and you can get away with it |
| I | Cos they're not going to be suspicious? The assumption is... |
| P | And and even if they are even if they are um it almost doesn't matter if you're romantically or sexually involved with them because there are like things you can do within a relationship not like not being like emotionally manipulative or whatever but you can just like I don't know this sounds this sounds terrible I'm aware of how bad this sounds so don't....(laughs) |

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| I | Judging so much judging! no come on... |
| P | Yeah like I'm not saying oh yeah you can emotionally manipulate your partner and lie to them but I'm saying if you want to lie that's the person to lie to because they're gonna believe you among above all else. |
| I | So you have that to draw on? You can say 'I know it sounds ridiculous but... it's me' |
| P | But but but whatever you want and they go like yeah I believe you because it's someone who you're close to and especially it's someone you're really close to and yeah...I'm trying to think of a...trying to think of an example |
| I | For worst person? |
| P | I'm not using me as an example that's my one thing think of an example that's not using me cos it's not ok! Yeah an acquaintance of mine... friend who lied through his teeth to a bunch of different people. And two different groups of people believed two different things. And it's only now when they then broke up and they got kicked out of both social groups for being a like an absolute arsehole now we're talking amongst the group and we're like 'oh I was told that like this person was gay this person was dating this person, this person's done xyz' and it's just none of it's true. And there's loads of stuff which is why you can't I think lie too much because when you start lying it's you're spinning too many plates and the web intertangles and it's way too complicated. So you have to kind of be smart about who you lie to and keep up the same lies with everyone. If you're going to lie about something that lie just has to be part of your life now. You can be aware it's not but you can't like you can tell one close friend that's my kind of one exception but it has to be someone who you trust absolutely. |
| I | Yeah |
| P | So like I have one friend who I'm really really honest with and then everyone else will have the same kind of outward lies to so that's that the easiest person to lie to someone you're which which sounds terrible! Oh my god (laughs) but it's true but it's true |
| I | And frequency data would suggest that those are the people who get told the most lies |
| P | Yeah not even like white lies as well like I think pretty big lies because you I think most well adjusted normal people want to believe someone that they're seeing or sleeping with or whatever is is like a trustworthy person, a good person cos you wanna believe that you've made the right choice and you're you're doing a g that you're not crazy. So I mean it makes it way easier to just accept whatever and overlook a lot things. Like in the example of my my friends or acquaintances where after they then broke up all the stuff came out that they'd been saying that just isn't true that the person had believed because it's like it's my boyfriend telling me. About someone that they've said they're good friends with |
| I | So why wouldn't it be true? |

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| P | Yeah they've gone I'm good friends with this person 'yeah alright there's no reason why wouldn't' like again the thinking behind it they seem funny they seem nice I haven't really spoken to them but that's it and I know they hang out more than me and them do they must be friends they've said they're friends why would they lie? |
| I | Yep |
| P | This person does xyz and you go that's weird and they go I know it's really weird I don't really hugely like them but I'll tolerate them because they did this weird thing and you go alright why wouldn't I believe that? That seems weird but never spoken to them before, they seem a friend it makes sense it's like a logical path of why it does and I think that's why it people don't go through that but it's like an automatic subconscious thing of cos when someone does something that doesn't make sense I'd immediately go like woah woah woah that doesn't make sense there why would that ? Or I'll think it and ask later 2 days 2 3 days later and cos then you can get a different response and you go 'ahhhhh ok ok ok ' or someone starts back tracking and you go 'alright alright I see what happened there' |
| P | Hardest person to lie to umm this is even worse actually the fact that I can't think of anyone is is even worse! (laughs) hmhhh.....the worst person to lie to is anyone while you're upset oh for me while you're emotional. |
| I | Yeah |
| | Is not when you can lie to people because it...just comes through and you can't keep track of everything as easily |
| I | So would it be more situational for you? If you were hugely emotional then pretty much anyone who came across you would be difficult to lie to? |
| P | No but that's that's not true yes I wanna think that but I don't think that it's true because if if you're quite upset and you're giving the upset body language or even if there's a few tears or whatever then like you you can use that so easily to make it even more trustworthy than normal |
| I | Mmm hmm |
| P | Than if you're just straight faced cos you're there with like a tear in your eye like upset. Visibly cos you're upset but you don't say 'I'm upset because this you go I'm upset because whatever you want people are going to go yeah fair enough as long as it makes some sort of sense |
| I | If you're actually crying yeah |
| P | Exactly...so I don't know |
| P | Maybe maybe again situationally if I'm really angry. For me anger is something that it's not...it's harder to kind of use in the same way that sadness is it's like you can be like I'm sad but here's the real reason ha ha! here's the reason I'm going to tell you but I think anger's much much rawer much more like a rawer emotion um that is harder to kind of steer in a way that you want to and I think a lot of times especially if you're really angry at someone and |

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| | they say something and you wanna just white lie it or or ignore it that's the time when you just go no and say what you think |
| I | Yeah |
| P | Com...like compared to other emotional states where you can be in them really really solidly in them but still kind of have a clear enough picture of what's going on and what you need to say to this person or what should be said. |
| I | So by your logic the hardest person to lie to should be your ex romantic partner? Cos then there's no longer the presumption of trust... |
| P | No but the problem is with that is that there's nothing to lose so that's even that's even easier because that's something no no no no I get that I get that but it's not I don't think it's true because someone who you did have that trust with so unless it ended really really badly if they still if they can at least respect you as a person then which yeah should be the case I think in most romantic relationships then It's even easier because they're like this is someone I used to ah trust in that way... you've got nothing to lose as long as you don't push like push your luck you'd be absolutely fine...absolutely fine |
| I | Someone who's caught you before? |
| P | Someone who's caught you before yeah you need to have a big cool down period before you can try and like lie to them again but that could be really easily sped up by just sharing some personal information going out for a drink and getting personal. Becoming better friends with them. You don't have to excuse why you lied at all to be honest you, you just don't have to. You actually don't have to you go let's move forward let's be better friends than before here's some personal information about me let's just share um you can just say I'm going to move forward um we don't have to talk about that um here's some stuff going on with me...you can talk and just like become better friends and then speeds that process up way way faster Cos then when you tell them a lie they're not going to think 'oh he's lying to me again' they're going to think no we're now better friends than we were before even if you're not and it's just to excuse yourself and then you need to lie again you go well.... |
| I | Brilliant thank you very much |

| Interviewer (I) and Participant (P) | Transcription - Steve |
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| I | It seems to be... and we're recording. Ok, Thanks for coming, I've already said that? um so I'll just give you quick run through of what I want to do and what I want to achieve, and then we'll get into it. Um...the whole point of bringing a couple of people back is to try and understand what was happening inside your head while you were doing the task. |
| P | Yeah, sure |
| I | So I've got all these videos and I've got all these measures that you did online. Um, and I can infer what was happening, but if I want to know I could just ask you, right! |
| P | Yeah, yeah, sure |
| I | That might be, probably the easiest way! Um...so I've got a couple of people, bringing them back in and saying ok...let's talk about it. |
| P | Yeah |
| I | So what I'll do is, um, the first ten minutes or so we'll just ask you to cast your mind back a year ago, it was snowing and it was horrible, and just tell me what you remember about the whole process, |
| P | Yeah |
| I | and if you can remember anything of what you were thinking or feeling, um...and we'll kind of build on that...We'll have a quick look at the GoPro footage – |
| P | Oh god! |
| I | And get you to kind of David Attenborough style narrate it, we won't look at the whole thing – |
| P | Yeah... (laughs) |
| I | The first five minutes and the last five minutes, and just – cause that'll be a really good memory trigger, of like |
| P | Yeah, definitely |
| I | “what was I thinking, what was I doing?” and then we'll look at the interview...um...and it might be quite interesting to you to see yourself from another angle – |
| P | Oh god! (laughs) |
| I | Um...and we can have a think about it! Did you think you were doing a good job? what was happening – |
| P | Have you got my good side of my face (laughs) |
| I | I keep-I have to hear my own voice which is super awkward |
| P | Oh I hate hearing my voice |

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| I | and I keep seeing myself and my fidgety habits and...it's not a good-it's not a good process for the ego! |
| P | I remember bumping into my friend at one point, and he was like-he was like "you alright mate?" and I was like I haven't got time, (laughs) or something like that, and he was like "what? What you doin'?" and I was showing him the camera I think and he was like – he just started laughing...he was like "what you doin'?" (laughs) "you're supposed to be revising!" (laughs) |
| I | So...if you go...back in time...to when you did the-did the study for me. And having a think about if we start with why...why did you agree to do it? |
| P | Um...I think it was, if I remember rightly, it was probably for the money... |
| I | Or credits? |
| P | Primarily, yeah...I think it was that |
| I | Cool, so it wasn't necessarily that you saw the poster and thought I'm awesome at lying |
| P | No, no (laughs) |
| I | Cool... |
| P | I also just wanted to try lots of different experiments and just get a feel of it from when I did my project so... |
| I | Excellent, good thinking! Um...and so, what did you think it would involve? |
| P | Um...I think I kind of remember it to be a task...I wasn't sure what it would exactly measure for me, I thought it might be navigation or obedience or something like that...yeah something like that if I remember right, something around those lines |
| I | Yeah...So when you came in, and you watched the video and you had your instructions, and you knew then what you needed to do...What were you thinking at that point? |
| P | I was excited, I was like oooh (laughs) cause I'm not great at navigating around or following instructions, so I thought if I do this all right I'll feel good. Even though it sounds a bit um silly, probably just the reward system going off in my head, feeling like I've achieved something even if it was just following like basic directions. But, yeah |
| I | At that point were you thinking forward to the interview phase? And thinking oh at the end of it I'm going to have to lie about it? Or were you just focused on the – |
| P | No, no I like that bit! It sounds bad but I like lying. I like trying to see if people can read me, so yeah...I that was..I was actually looking forward to that more than the actual task of going around, cause I was just worrying I might get lost or I if won't do something right. So yeah the interview bit was what I was looking forward to most... |
| I | And were you...it sounds like you were pretty confident, that you were going to do okay in the interview part? |
| P | I think so yeah... |

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| I | Interesting. |
| P | You did terrible! (laughs) |
| I | And so, did you have a strategy in mind or were you just focused on getting the task done? |
| P | Getting the task done, or do you mean more for the interview part or? |
| I | Yeah, sorry that wasn't clear |
| P | No that's fine...No I-I tend not to think about it too much, it's like a normal interview like a job interview. I go in there as if its...as if I've already got the job or if I'm acting like I'm telling the truth, and I tend to know kind of-I might have been given off a different type of body language but I tend to know that body language can give off a lot, so I was trying my best to portray like I was relaxed and open and not closed off, you know lying |
| I | So you were thinking about those things in the interview? |
| P | Yeah I was not too much, just a little bit, and I was trying to act like yeah like I was telling the truth about stuff...if I remember rightly |
| I | So the stuff you described there was all body language stuff, were you thinking much about the actual words you were saying or was it mostly about how you were coming across physically? |
| P | Yeah it was more being relaxed really, I think you can say one thing but then your whole body and demeanour suggests something else, and a lot of people can see through that even if they can't pinpoint perhaps why, they can still just get a good grasp of whether you're lying or not I think. |
| I | And, in the actual interview itself did it feel like it was going well? Did you have any sense of |
| P | Yeah, it felt well, yeah it felt good to me. I think probably also cause you're quite positive...um...you know maybe perhaps if it was like a police interview or something else with a more serious demeanour it might have felt different. Cause you know I think I usually tend to look at other people's reactions to gauge how well I'm doing, so if you're quite positive then I feel better and so that's how I'm guessing I probably felt...yeah... |
| I | So the whole thing's over, and you've finished and you're walking away, how did you think it went? |
| P | I thought it went okay, yeah I thought it went well yeah, probably not the best but up there...I don't- (laughs) I don't try and blow my own trumpet to be honest... |
| I | Interesting... |
| P | Yeah, I think it went pretty well, yeah...I might have looked a bit stressed by the end but that was probably more the task itself rather than the interview, if I remember rightly... |
| I | What's interesting, I hadn't thought of it ahead of time but the-the timescale did mean a lot of running around, and so people's heart rate is up – |
| P | Yeah, yeah exactly |

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| I | And you're excited and adrenalin and – |
| P | Yeah, yeah, that might have even helped as well just feeling quite confident in a way as well, that completing the task and coming back and let's smash this out next, yeah (laughs) |
| I | Cool!...Um...You've pretty much already covered this, but I'm just going to double check, so you're walking away it's all done, you felt like you've done an okay job there was no kind of "oh I wish I could change this" or done that differently or... |
| P | I don't think so no, it would go straight over my head, I'm already thinking about lunch so... (laughs) |
| I | Awesome, so we are going to try now...is take a look at your GoPro footage! |
| P | Oh dear...You won't see me though will you? |
| I | No! You won't see you, well some people went into the lift and so they saw themselves in the mirror! |
| P | Oh! (laughs) Oh right... |
| I | Um yeah and stuff like that but mostly no |
| P | Just hope you can't hear my breathing, I don't realise but sometimes (laughs) I'm quite a heavy breather |
| I | What's very interesting is that some people talk to people, some people didn't... |
| P | Yeah, I think I probably that... if anything you might see in the main building, you might see where I'm talking to a friend... |
| I | So...what we are going to do because it's a half hour of GoPro, um...what we'll do is have a look at the first five minutes and the last five minutes. And, as far as you're able to, try and just give it a voiceover... |
| P | Sure |
| I | It may not come back to you, you might be looking at it going "I don't even know what I was doing at this point! What was happening?" But hopefully, as you're looking at it – |
| P | So, kind of narrating it? |
| I | Yeah! Narrating, you're David Attenborough and this is you are also the wildlife...Um...that's a picture of my dog and now you'll see Sam... |
| P | Sam, out of breath already, walking down the steps...If I remember right I also wasn't eating too well last year so...My fitness level wasn't great... |
| I | And it was this time last year, it was – |
| P | I can't remember if it had been snowing, for some reason, I thought it had been in the summer! |
| I | It was "The beast from the east" |
| P | Yeah...I remember that, was it like-do you remember the weather outside for that day? I always, for some weird reason I just envision it being sunny and it was quite nice. |

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| I | You may well have got-you may well have been post the snow storms...I think you were one of the later people so you might have been outside in sun |
| P | Yeah, that's good! |
| I | I'm pretty sure in the video you're wearing a t-shirt, so it can't have been that cold! |
| P | Yeah, I think, I swear it's actually this one...as well...if it's that cause I never wear this either so that would be very strange... I think I had long hair as well at that point... |
| I | A window into your past! |
| P | (laughs) |
| I | We might have sound, just in case you want to hear your breathing! |
| P | No...don't do that! |
| Quiet for 20 seconds | |
| P | How many other people have you got doing this then? Like coming, come back? |
| I | 5 in total...Um...So obviously now that I've been able to analyse the verbal output and video content, I've got a better idea of where people sit on the spectrum of their ability to lie! |
| P | Right... |
| I | Um...so, now I know! |
| P | (laughs at footage) |
| I | This is you! |
| P | Yeah you're gonna see a lot of me looking constantly at the notes and going right where am I? |
| I | Why were you doing that? Do you think it was just to make sure you were doing the right thing? |
| P | Yeah, like I said, I'm not...I second guess myself a lot so... |
| I | What are you thinking? |
| P | Right, so I'm walking down the steps, and I'm-I'm probably going to trip over at some point cause I'm just constantly staring at the notes I think. Trying to figure out where I'm going...was it sunny out? Trying to I remember feeling a bit embarrassed, because I felt having the camera on me as well was probably a (laughs) like people were probably looking at me – is it sunny out? |
| I | It does look nice! Yeah, good memory! |
| P | Yeah I wish I remembered important things (laughs). Yeah I remember feeling, cause it's that strap there wasn't it at the front, so I remember feeling like probably people thought I was either one of those jobsworth kinda cyclist or just um yeah a weirdo...but, so yeah at this point the problem is...I'm thinking one of the first things was in that |

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| | room down there I think, so yeah, I was I was kind of familiar with that area, cause I had a tutorial around that bit... |
| I | You're not moving at high speed |
| P | (laughs) No... |
| I | I notice cos it's interesting that some people rush around... |
| P | (laughs) oh (laughs) do they, I think the thing was I didn't want to look or draw more attention to myself...um...and also I didn't want to miss anything so I probably still looking at those notes going...Oh I'm not the fastest walker...It's painful to watch it now! Bit of a bopper as well. Then I think I took a right down there, yeah that's it! And yeah I think I went there's another right coming up... |
| I | Essentially there's no kind of hesitations or anything, you didn't stop and stand anywhere and get your bearings you seem like were on it straight away |
| P | Yeah, yeah maybe! Yeah I think maybe just for this bit I was – oh no! Was it the left because there's something down there and then there was a little thing you take out of the box, if I remember rightly! |
| | Ok he's got his envelope |
| | Oh, is it the envelope – that's it! (laughs) Yeah I remember feeling a great sense of achievement just that...just felt good um... |
| I | Got part of it right! |
| P | Yeah that's it (laughs) oh no I don't think I was wearing... what was I wearing? |
| I | So far, all quite positive feelings... |
| P | Yeah, yeah I think so, just that sense of adventure in a way, just a bit...which is a bit unusual cause I don't think... I'm that kind of person I'd rather not do something in case of um failing it, I know that sounds stupid but...just doing this was quite fun! Um... now I can't... |
| I | You're now getting somewhere |
| P | Yeah, I'm thinking I'm going to walk out to the library in a minute... Probably feeling at that point come on hurry up, hurry up. I tend to, rather than just rush past someone I don't – I tend to (laughs) and they're probably like "go on you just go" God I'm about to walk into the door |
| I | So you still seem like you know where you're going and what you're doing? |

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| P | Yeah... |
| I | It's pretty smooth! |
| P | (laughs)...Yeah, so, and then I think then-then I'm starting to feel a bit more of "ok I don't think I've been to this part of the library before" I can't imagine what I'm going to do in there cause...but, at the same time a little bit curious |
| I | So, at this stage, it's all the task that you were set, so it's like do this for the first 15 minutes and then the second 15 minutes was more was kind of free range to just do something |
| P | Yeah |
| I | At this point, while you were doing the task did you have in mind what you were going to do with the free time or were you just – |
| P | No um...no, I mean I was—I was just probably...(sighs) what did I do with the free time now? No, I didn't have it in mind I'd sort of just take it things as it comes. |
| I | So you're all about the task while the task is happening |
| P | Yeah (laughs) once the task is done then I can just—then I'll can just burn time wherever...um...I can't imagine that I had much money at that point (laughs) so I probably didn't...oh, I might've got a drink... |
| I | I know what you did! |
| P | (laughs) I might have actually got a drink now—now you've um made me think a little bit... see it takes me about 20 times to get through this (laughs) it cracks me up, I'm still like that now... yeah, so I'm feeling a little bit embarrassed again going through the library cause there's a lot of people with me—with a camera on me um...but at the same time kind of—oh yeah, I think I was about—oh that was probably there when I went for the handle, that's like a natural habit of me cause I only go up to that computer room on the first floor, so going through here is completely um...I don't usually go through here. So, probably at that point I might have felt a little bit out of my comfort zone just in terms of where we are and, yeah... |
| I | I'm going to stop that there...That was the first 5 minutes... |
| P | I remember there being a bin or something and I had to that in the bin or something |
| I | Yeah! |
| P | Yeah |
| I | The um...the video files do this really odd thing of splitting themselves into two, I haven't been able to figure out why yet, if I had better video editing skills I'd put them back together so we're going to open the second one and look at the last 5 minutes – |
| P | Breaks it up anyway doesn't it! |

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| I | So your one has a big old chunk in the middle of you reading a book, um... |
| P | (laughs) What?! Does it? |
| I | It's just you sitting there, you're reading a book! |
| P | What the–what was I reading?! |
| I | I don't know what you were reading, you can try and zoom in! Um... |
| P | Ah, no...I think–what was that? |
| I | So we'll try just the last five minutes, so that I can just get some good narration from you on what was going on! So, this is the last five minutes – you've successfully carried out the task, got the envelope, you've destroyed the envelope, you're all good to go, you've spent 10 minutes on your chosen activity which looks like it was chilling, reading a book in the canteen, lots of witnesses all good! |
| P | Yeah (laughs) |
| I | Um...so this is the last 5 minutes, you're about to head back and do your interview... |
| P | Oh! |
| I | What's going through your head now? |
| P | Yeah...Ok, no (laughs) just the book. I think–no, I just–it was sort of lingering though, like I couldn't really get into my book, I'm kind of almost just reading words but not taking it in. |
| I | Yeah |
| P | Um... but–feeling good that it's coming towards the end, looking forward to actually doing the interview. |
| I | And when you say it's lingering, what–what was in your head? The the stuff you'd already done? Or the stuff to come? Or... |
| P | Yeah, a culmination of things. It was–it was...it was that but also oh what's next? is there going to be some trick or something, is there something um...they've not told me that might happen? So just anticipation really... |
| I | Lots of people felt that way! |
| P | Yeah! (laughs) |
| I | Maybe it was because this was a psychology experiment so you're always looking for the – |
| P | Yeah, yeah, exactly that! Yeah...But I think as well I was trying to think of–how am I going to, if I remember rightly, how am I going to pull this off? and...make it look genuine... |
| I | And what was your answer to yourself? How are you going to pull this off? |
| P | Um...this is another thing, I don't really–I start thinking about it and then I go ugh whatever, just deal with it. Rather than keep thinking about it which, only stressed me out more I just tend to go meh let's go, let's just go |

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| | and do it. I couldn't wait to get out though and, get there on time. Um, I was also probably feeling a bit anxious about getting back on the set time, so I tend to always leave a little bit earlier but then just walk slowly... (laughs) What am I doing? Oh did I get a drink in the end? (laughs) No? Where am I going? |
| I | You thought about something there! |
| P | Yeah (laughs) |
| I | Went into the shop, turned around left the shop (laughs) |
| P | I think that's my mate, yeah (laughs) |
| I | He's now following you thinking why are you ignoring me? |
| P | He must have just thought what a weirdo what are you doing? (laughs) I was like "I'll talk about it in a bit" (laughs) |
| I | What do you think was happening with the shop? |
| P | I don't—I don't know um – |
| I | Maybe you wanted a drink? |
| P | Yeah, I haven't got a clue...yeah that—that I don't remember at all. |
| I | It's interesting to me because it sort of the only time in the footage that I've seen where you don't seem to be quite purposeful – |
| P | Yeah, just—and the yeah and hesitant as well (laughs) I do that a lot though in all fairness, I do go somewhere and think mm actually no, I don't need to be there. So it's—it's sometimes a money thing where I'm a bit impulsive, I tend to go to places and want to spend money and then I'm like no, don't need it right now! |
| I | But you stop yourself! |
| P | Yeah, it's—it's a start! |
| I | A lot of people once they're in the door – |
| P | Yeah, that's it |
| I | —they're having a Snickers, no matter what (laughs) |
| P | (laughs)...yeah so I was just looking forward to getting back...but I'm also thinking about my friend and probably what he thought of me (laughs)... |
| I | So you say that a couple of times that you were looking forward to the interview... |
| P | Yeah! Yeah... |
| I | Did you have any sense of what it would be like, what it would involve? |
| P | I thought it was going to be quite um...quite harsh techniques, not—not harsh enough to breach ethics but more just the (laughs) just you'd be quite stern perhaps cause you had a very friendly um demeanour, which you know, |

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| | you are, but um, I was wondering whether it was just going to be you were going to be nice one minute, then come back very different... |
| I | That was never the plan! |
| P | (laughs) maybe next time! (laughs) |
| I | No, when we-when we described the interview ahead of time we kept it deliberately vague – |
| P | Oh! |
| I | Cause we did want people to be a little bit nervous about it – |
| P | Yeah! That's good... |
| I | So it was like 'a forensic interview'...um... But what you had is actually, or should be, best practice what the police should do |
| P | Oh well I was feeling good though, I felt oh good I've done everything that I was supposed to do, I think...well unless I left anything out but... |
| I | And again no hesitations on your route, you – |
| P | Yeah |
| I | Know where you're going |
| P | Yeah, it's weird... But if you stop going uni for three months you-you know if you have that long break and you come back and it um feels a bit weird (laughs). What-what month was this in? Do you remember? |
| I | Hmmmm... |
| P | Was trying to think – this would've been before my exams and then – |
| I | Yeah! So it was almost exactly a year ago, the majority of them... |
| P | Right yeah, yeah |
| I | Around this time |
| P | Yeah, cause I don't think I was stressed out at that point, not till later on in the year |
| I | We did some in kind of December time |
| P | Yeah |
| I | And then spread them all the way through to-but I felt like you were maybe in the second half, after Christmas – |
| P | Yeah! Yeah, I think you're right |
| I | So this sort of time... This is very strange! walking up to where we are right now |
| P | (laughs)...Yeah also I'd never been in this room either, so this was-it was a bit of a new one for me...(laughs) |
| I | And there we go... |

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| P | Aw, that's cool! |
| I | Cool! Thank you! |
| P | Yeah sorry if I couldn't give much more narration it's-it's kind of weird watching yourself back over from a year ago – |
| I | It's very weird! |
| P | Yeah... |
| I | Some people can't say anything at all...Some people even while watching it it still doesn't bring the memory back |
| P | No! |
| I | So I've done this a few times with some people who have piloted it through for me, and they were sort of looking at it like oh I don't even know if I've been there! Did I go there? (laughs) |
| P | (laughs) |
| I | If you can't remember – I can't help you! (laughs) Very cool! So! Um do you need a glass of water or a bathroom break? |
| P | No, no, unless you do I'm ok! |
| I | No? Cool! Excellent, so now my favourite bit, which is the actual interview footage! And this is both of us so we can both feel self-conscious together! |
| P | (laughs) Oh god! |
| I | Um... So again, what I'm really looking for is the sort of internal voice that was in your head at the time if you can remember that...um... As well as, I'm kind of asking you to do two things at once, one of them is tell me what you were thinking at the time, but also, as you're looking at it, tell me what you're thinking now as you look at yourself! Is it like ah god ***, why did you do that? |
| P | It's like a Russian doll thing yeah |
| I | It is that, yeah! |
| P | Yeah! |
| I | And...we'll see how it goes! Um, but if you are looking at it and suddenly think oh look at me, I'm awesome! Look how calm I am! Then let me know |
| P | No, I'll never think that about myself... Or ah get a haircut (laughs) |
| I | Or if you suddenly notice something you didn't notice at the time and go aw I'm smiling or... |
| P | Oh god! (laughs) Bloody hell! (laughs) Oh god I can't watch myself, it's so cringe! (laughs) |
| I | I am going to pause it because – |

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| P | Did I realise when I was on camera? – I can't remember... |
| I | You probably didn't realise that it was recording the whole time, a lot of people kind of fidget and then when I walk in they think is when it starts. Um, your audio is...terrible! The batteries were dying in this and so it is quite hard to hear... |
| P | Yeah, yeah... I thought I had long hair at that point, but it looks like I had short hair... I thought I still had long hair down here... |
| I | So I'm going to turn up the computer settings as high as I can... |
| P | Sure |
| I | Even with that it'll be probably quite hard to hear, you'll probably do better than me cause you know what your voice sounds like...um... But it may not be brilliant in terms of the actual dialogue but just have a look at it and we'll kind of go from the shape of everything. |
| P | (laughs)... Oh stop scratching yourself, that's a nervous thing (laughs) |
| I | Look at you all confident! |
| P | (laughs) Is that confident? (laughs) I don't know I'm...I'm |
| I | How do you look to yourself? |
| P | I don't-I don't, I don't know I feel like I'm not that confident...um...Yeah I might have been um... It's weird watching yourself... Um, so yeah I'm thinking at that point what's the catch?... Um, but trying not to think too much into it... Think my body language kind of says – |
| I | Oh dear god that's the whole of the first one! It split itself into a tiny one and then a larger file, that's annoying but at least this one we can just leave... What, what were you going to say about your body language? |
| P | Nah, it looks a little bit like um, I don't know, um... Think it looks a bit stiff there to me, but you probably might think I was relaxed, but... |
| I | Is it how you'd remembered it in your head? |
| P | No not at all |
| I | When we'd talked before you'd felt like you were quite confident and quite relaxed... |
| P | Yeah, I do remember being, um feeling confident, but just when you look at yourself, I think maybe in general it's just, maybe my posture's not too great, I do slouch a bit. So, I think that's why... (laughs)... |

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| | As well, I've always been told, I don't know if it's actually true, but people look to the left when they're giving a response to something apparently if they're asked a question and if they look to the left, apparently that's a sign of lying! I don't know-that's probably a myth, but I tried to actively look to the right where I could... |
| I | Interesting! |
| P | Yeah... (laughs) |
| I | Were you able to do that? Cause that seems like a hard thing... |
| P | Yeah, you think it's a natural-but, um yeah, I kind have tried to do that over the years...(laughs) It's the hand movements, like a dinosaur (laughs). I don't even know what I'm talking about then but... |
| I | Um, the black and white flooring! |
| P | Oh yeah...(laughs) |
| I | I think! |
| P | So... That to me there, kind've...I don't know whether that is a-I don't know that might feel like a bit of a comforting thing I do, sometimes. |
| I | With your arm across the chest? |
| P | Yeah... I think so... So maybe at certain points that could've been when I was maybe lying there (laughs) I feel like that- that little er that little - |
| I | T-shirt pull? |
| P | Like 10 seconds ago I kind've went like that a little bit |
| I | We can rewind? |
| P | (laughs) What am I doing?! |
| I | Um, you were telling me that you brought your own water to the café - |
| P | Oh god! (laughs) |
| I | Which is why you didn't need to... |
| P | Shouldn't have shown off my water to people (laughs)... Oh I think I might've thought that was a good little decoy as well to sort of drag attention...um... from perhaps what you were asking, I can't remember what you were asking at that point. You might've said how did you use up your free time... And maybe that's why I went into the ca- the shop, but I didn't because then I realised I had a big bottle of water on me...Maybe... |
| I | One of the things that we said to you at the start was that you should be able to account for your time and your behaviour. Um and so, if what you chose to do was just sit and read a book, you might feel like oh I've got no evidence, so I need a receipt or... |

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| P | Yeah... |
| I | something physical |
| P | Yeah, perhaps! |
| I | I'm guessing.... So I've rewound it to the bit where you were going to talk about why you think you smiled maybe... |
| P | Yeah... (laughs) |
| I | Talk me through what's happening there... |
| P | Um...Was it that bit there? Yeah that bit there, I kind of felt like...Like that might have been a kind of um...What's the word? Like a grimace... Um (laughs) |
| I | Is that your awkward smile? (laughs) |
| P | Yeah (laughs) |
| I | What does that smile mean? |
| P | Um... It's kind of, when you're looking down I'm probably like "ah did I give something away there, or am I?-like is she believing me?" |
| I | But you-but it happens... |
| P | Oh I remember that book yeah! |
| I | When I was looking down, so you think it was kind of to yourself? |
| P | Yeah that was to myself, but yeah (laughs)... I feel like looking at myself it looks like I'm um, knowing myself I'm-I'm lying... |
| I | Oh! |
| P | I feel like I'm, just watching myself now it looks like I'm very...not fidgety...but |
| I | What was it about that specific section there? |
| P | Just the-I mean I'm also I was a bit conscious about my weight at that point so maybe I was doing that but also the-the ear bit? Like scratching the ear? Um...The hand movements, there's just a lot I'm doing. I mean my partner says I am quite fidgety in general, but...when I'm trying to maybe concentrate a little bit, if I'm maybe trying to lie or something I mean maybe that's what I give off without me even realising I'm doing it...I can be a bit socially awkward though sometimes so... |
| I | It's interesting though 'cause...You go through phases where you're very calm and still and then loads of different fidgets happens and then you go back to being calm – |
| P | It's probably when you look down I'm like ah (laughs) |

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| I | So we talked before about how like while the interview was happening, how you thought it was going, so you didn't have any sense from me at any point that I was clearly suspicious of you or you kind of felt like it was going okay? |
| P | Um...I don't think so, yeah no you were quite—I think maybe 'cause you weren't, um...I think we were quite we were laughing a few times so it made me feel at ease, but then um you wasn't giving too much away so that's maybe where I'm—it's hard to...it was you were hard to read. (laughs) I do that a lot...Making like the illuminati sign... No, I'm still looking at body language and how it's...I'm not.. when I'm looking down at the ground I'm not sure if that's me being...um...kind of...like it's a social awkward thing or if that is just me kind of knowing that I'm lying... |
| I | (whispers) Interesting |
| P | If I could hear the or if I could've heard the audio perhaps a bit more, maybe I could've detected in my voice perhaps, or from what I was saying with does it match up with my body language? But, I'm not sure how I did in total. Probably left the place thinking "no she didn't buy it" (laughs). Just because I always, I always feel like I'm going to end up exhibiting behaviour that the experimenter's very fully aware of or they're gonna know... so |
| I | That was VERY good! Thank you! |
| P | It's alright (laugh). Probably gave you too much there (laughs) |
| I | There's no such thing as too much! Qualitative research is all about the words! |
| P | Yeah... |
| I | As many words as possible! |
| P | Oh you got plenty of that (laughs) Couldn't get him to shut up! (laughs) |
| I | So having watched it back now, if we go back to the kind of idea of how well do you think you did, and did your strategy pay off, did your idea of be calm and be relaxed? |
| P | I think it paid off in terms of, the little things I maybe tried to like oh I got a bottle of water here and um perhaps joking around a little bit? that's also a thing that I tend to try and get out and make the other person try and laugh a little bit, try and distract them a little bit as well. So I think, I've always done it, I try in interviews to make people either distracted or laugh a little bit. |
| I | And what happens when they laugh? |
| P | Makes me feel a lot at ease, um... |
| I | Makes YOU feel at ease? |
| P | Yeah, definitely, yeah yeah... And then I'm in control a little bit as well in a funny way, |

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| | Got them laughing... |
| | not like controlling but, so it's not all on their terms it's also we've got a bit of give and take. |
| I | And do you reckon it worked for you here? |
| P | (laughs) |
| I | This is so weird 'cause I'm the person who was in the room, so– |
| P | Yeah, (laughs) so you tell me! No I think um to a point, um but I think you're also very good at reading people, you might pick up things that I don't–I'm not even aware of... |
| I | Um, in the interview, not at all which is why you video it so you can watch it back a million times! |
| P | Yeah, that's why the thing that you, when you're right in front of someone, you got so many other factors that you have to consider and you can't fully focus on one thing. You can go back as many times as you like and watch it, and you can pick up a lot I think... |
| I | I think it worked! |
| P | Yeah? Awesome! |
| I | Oh, yeah that's nice! I mean it's a very odd sort of setting right? |
| P | Yeah |
| I | So it's not like a normal interview setting... |
| P | Yeah, it's very intense |
| I | Yeah, intense, and I know for a fact that at least some of what you tell me is going to be a lie, but I set the interview up so I didn't know which part it was gonna be. I didn't know which order you did things in and I didn't know where you'd been sent... So I blinded myself so it could be as genuine as possible...Um...But yeah at some point you're lying, but also I was thinking "got to make sure the video's working, got to make sure I got all my questions and am I doing this in the right order?", so the amount of my brain left to be like is he pulling his teeshirt a lot is tiny, tiny so yeah |
| P | (laughs) that might also just be me feeling a bit conscious about myself, but I think– |
| I | You might've been quite hot as well! |
| P | Yeah, I think that is a lot fidgety yeah and fidgety, that's definitely a sign for me... |
| I | So that's what I wanted to ask you, is that just the kind of out-of-body experience watching yourself back or are you conscious when you do lie to people that you can feel yourself fidgeting at the time, is that something you try to– |
| P | No, no I don't think so I don't think I'm actually conscious of it so much... |

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| | <p>Um... It's hard to say because if I was, I've lost a little bit of weight more recently but then at that point there I think I'm, it sounds a bit silly but I was probably conscious also of the top hugging my body a little too much so I'm trying to like fidget about to make sure it looks alright, but then also I don't think if it was just for the lying, I don't think I would've been too aware of it.</p> <p>I'm probably more focused on eye contact and the way I talk and sort of not stuttering too much, slowly talking and not talking too fast, things like that.</p> |
| I | And you said that you kind of judge how well it's going by the reaction that you're getting, so what are you kind of looking for from the other person to know that you've pulled it off? |
| P | <p>Yeah, um...probably if you were, if you didn't sound convinced. Like if you were going 'right...', that kind of stuff, that tells me a lot that kind of not fully buying what I'm saying, um...</p> <p>Quite a serious face if you're always a bit, like you're looking beyond my words trying to see through me a bit, so an intense kind of gaze, that can that can be another one...Um...</p> <p>Yeah, or just being blunt-blunt um yeah that's about it really.</p> <p>Body language-wise if you're, funnily enough I think if you're quite laidback but to the point where you're a heads a bit like that (laughs) like looking like what you're talking about, then that would have also been one, but if you're a bit more forward it seems like you're almost buying it like 'yeah! Yeah!' like...</p> |
| I | Like eagerness? |
| P | Yeah, like little bit eager (laughs) |
| I | So not leaning back, pulling away from you... |
| P | No, yeah exactly! |
| I | And you've—you already mentioned it if you get someone laughing, does that make you feel like you've kind of got them on side... |
| P | Yeah, definitely, yeah... I think as well, like I don't like—I like to make people laugh just because I wanna make them more comfortable, like that could've been another thing just 'cause the task aside, just being in a room with someone I'd rather feel comfortable and they feel comfortable, rather than just 'ah can't wait to get out of here'...and it's just funny, some people are very comfortable with some other people, well I guess like anyone I suppose you know you get comfortable with some others you're not... |
| I | So in a general sense, 'cause I think you mentioned at like the beginning um that you're fairly comfortable with lying, it doesn't massively freak you out, this is very common (laughs) I think two people I've spoken to have been like 'no I hate it, I never do it', but everyone else has said 'it's ok'. So, do you generally not find it stressful or like really tough thing to do? |

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| P | Depends what it is, if it's like lying to my partner about money or something um...like how much I've spent on DJ decks like I have before and then she's found out yeah that's not great... or if it's—yeah if it's more general—yeah if no harm comes from it then I don't feel bad for it...um...but yeah lying on a big scale in the past I've had to do it and I don't—don't like I've had to lie for a friend and I—I you know that makes me feel uncomfortable. But, I think if it's if I...um...what's it? if it's in line with my ethical code then I'll feel fine, yeah. |
| I | If—if and when you do have to do the big lies that you're not sort of morally comfortable with, are you able to use the same techniques that you talked about like kind of trying to be relaxed and trying to make people comfortable, is that still the route you go down? |
| P | Yeah, yeah I still try to. |
| I | Yeah? |
| P | Cause I think it's just good (laughs) sounds a bit bad but good practice just in general cause you try and keep it as close to your chest I think, that's something I'm trying to practice I've always been wear my heart on my sleeve, very you know—and tell everyone everything about my business and I'm trying now to be a bit more closed, a little bit more so...yeah so that's more self-improvement for myself. So I do kind of enjoy in a weird way trying to see if people buy what I tell them, especially in these kind of circumstances, cause there's no harm done at all (laughs) |
| I | Um...and that is my final question. So, the um...what did this—this lying feel like, did it feel like a real lie, did it feel like a big lie or a small lie or... |
| P | Small lie, a small lie to me yeah. (laughs) |
| I | Because? |
| P | Um...think it was because there was no consequences, you know I'm not getting punished um...yeah and it kind of—it was I saw it more as quite enjoyable almost because...because of the task beforehand it kind of felt like I was (laughs) I don't know, you know like um...oh what's the word?...don't know like adventurous, it just felt kind of like a bit different to what I'd usually do and— |
| I | Like a game? |
| P | Yeah, and certainly more fun than some of the other experiments I've done. God that's so terrible isn't it... |
| I | Um...So in that sense do you think...would that have had any impact on the way that you went about your lie? |
| P | Yeah bit more jovial, bit more um...I was like 'oh yeah we'll deal with that' but if maybe if it had been for something like a serious thing like a police interview or something then yeah I don't think I would just, I think I |

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| | would just have to sit there for hours and practice and practice over the information I was having to lie about until I almost believed it and manifested it and yeah...sort of as truth. |
| I | That's interesting that you focused on the information, so the kind of behavioural stuff you wouldn't need to practice? or... |
| P | <p>More because...my memory isn't great with certain things and even when I have told the truth to some people before, the way I've delivered it...it makes them go 'are you telling the truth?' and I've had to sit there and I've laughed because I feel like I'm lying and I'm not, it's a weird thing that it happens so I have to try and sit there and make sure I learn the information so I've—so I can say it and I can then practice the behavioural bit later. The behavioural bit is not I don't consider as hard, as maybe the retaining bit of false information (laughs) yeah that takes a bit longer. But once I've done that a few times and enough then I can just kind of wing it a little bit.</p> <p>Before when I've had to—before when I started uni here I've had to go to um a college course and I had to lie to my work that—cause I was in the middle of leaving them anyway so I—I had to pretend that my um...I had like someone in hospital, it's really bad, but I had to pretend that someone—cause they were such a bad firm, the only way they would let me go or anyone go is if there was a real emergency, so I had to sort of "is she alright? Is she okay? Oh ok?" and then—then I had to lie and go to my manager and go "I've got to go" and she went "oh it's okay, it's okay go" and so I was out the door, and then went to college and then luckily got accepted for the access course to get here so. If I hadn't have done that maybe things—you never know how things could've turned out so. So certain things like that I'm good at improvising... um when it comes to lying a little bit but (laughs)</p> |
| I | But you feel like you need to be confident in the information? |
| P | Yeah, oh definitely...um but I think sometimes equally looking a bit flustered um if you're in the right circumstance if you're flustered you don't want to be calm when—when you've heard certain information so you want to fit the information that you're giving. |
| I | Naturally calm is not.. |
| P | I feel like a terrible person (laughs) |
| I | No (laughs)... It's a good skill to have! |
| P | Yeah... But my mum can read me like a book, like when I go visit her she's like "stop lying to me". |
| I | Really? |
| P | Yeah she can read me yeah better than anyone. She's—she's funny |
| I | So you wouldn't even try it with her? |

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| P | No–no I’d just tell her straight (laughs). I’ve tried plenty of times in the past but she can still–I think even when I’ve told the truth she can still tell that I’m–she almost thinks that I’m going to be lying so... It’s practice! |
| I | And my tip for the police would be just bring in everyone’s mum! |
| P | (laughs) my Mum was a cop... |
| I | Just tell them their mum’s there and it’s ruined! |
| P | No, she actually used to be a policewoman as well, that’s the worst time of my life when I was experimental when I was younger and...the worst... Coming home late and she’s just always like “come upstairs, where you been?”. So really I got interrogated quite a lot in a funny way... |
| I | Do you think that helped? Being built the skills? |
| P | Yeah, I think so yeah definitely... I think it’s um suggestibility as well, if that’s the right word? I think some people are easy to–they’re more easy to... more gullible sorry. So, they’ll be more likely to believe it than other types of characters that I find harder to–to people that are very stern and don’t give off much in their emotion, either like even when you’re talking to them... Don’t say much and then it makes me babble... So it’s funny with people like that, I–that’s why I try and make people laugh a little bit and it gives me that “ok I feel a bit better now”– |
| I | Yep! Feel a bit confident. So is there, if your mum is the absolute worst person to lie to, is there like a description of the person who would be the best? The easiest to– |
| P | Kind , kind and nice people yeah, I think. And also shy people in a way, shy, kind, nice... Yeah... Cause there’ll be people that I like talk to and–just as a joke I’ll say something that happened to me, but I’ll keep a straight face and they’ll still buy it, cause they’re waiting for me to go “ha joking!” but I don’t, I just carry on and they’ll go “really?” and then they’ll go to my partner “did that really happen to him?” and she’ll go “no, you’re up to it again” (laughs). But yeah those kind of people, so I’ve got friends like that who they’ve got a bit better with me over the years but I mean they–they know when I’m lying a bit more but... |
| I | Some people do that if they’re on a flight next to someone and they do the chitchat “oh what do you do?” (laughs) |
| P | Yeah! (laughs) I haven’t tried that actually it might be quite fun... |
| I | Fantastic! So do you reckon there’s anything else I need to know, that’s going to help me interpret your experience of this whole study? |
| P | I mean, from the interview bit maybe the body language, fidgeting, that’s about it really I don’t think there’s much more I can help you with on that! |

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| I | You have been superbly helpful! Thank you very much for your time! |
| P | That's ok it's been fun! It's actually kind of weird watching... |

