Goldsmiths Research Online

Goldsmiths Research Online (GRO)
is the institutional research repository for
Goldsmiths, University of London

Citation

Persistent URL

Versions

Goldsmiths

UNIVERSITY OF LONDON

Emotional Exploration and the Eudaimonic Gameplay Experience: A Grounded Theory

Tom Cole
Goldsmiths, University of London
London, United Kingdom
t.cole@gold.ac.uk

Marco Gillies
Goldsmiths, University of London
London, United Kingdom
m.gillies@gold.ac.uk

ABSTRACT

Research on the emotional experience of playing videogames has increased in recent years, yet much of this work is focused on the hedonistic player experience (PX) commonly associated with the nebulous concept of 'fun' and positive affect. Researchers are increasingly paying more attention to the eudaimonic PX commonly associated with 'appreciation', mixed-affect and reflection. To further investigate eudaimonic PX we interviewed 24 games players about 'significant or memorable emotional experiences' from their games playing and used grounded theory to analyse their responses. This led to the construction of the concept of 'emotional exploration' which is used to help explain (i) why players would seek out a eudaimonic PX, (ii) how eudaimonic PX is constituted and (iii) how developers can design for a eudaimonic PX. We further make the case for the 'eudaimonic gameplay experience' to be realised as different and separate to pre-existing notions of eudaimonic entertainment.

CCS CONCEPTS

• **Human-centered computing**;

KEYWORDS

videogames, gameplay, mixed affect, grounded theory, eudaimonia, emotions

1 INTRODUCTION

Research on the player experience in videogames has increased much in recent years. So much in fact, that ACM inaugurated a conference specifically for 'player-computer interaction' — CHI Play. However, most of this HCI research focuses on positive affect and 'fun'. There has been increasing discussion about the modes of hedonistic and eudaimonic entertainment and how this applies

to videogame play and HCI user experience [8, 43, 44, 47]. The hedonistic player experience is easily associated with positive affect and the slippery concept of 'fun', but there is increasing attention being given to the concept of eudaimonia and how it can be realised in games. What does this look and feel like, and how can we describe it? How do the concepts of 'appreciation' and mixed-affect manifest in videogames?

Previous work on emotional engagement in videogames has suggested that the concept of 'emotional challenge' is a promising one, but one that needs further work and definition [10, 15, 21]. 'Functional challenge' in Cole et al.'s original paper [15] was relatively easy to understand since it was effectively 'challenge as is commonly understood and discussed in videogames' — using dexterity and skill with the controls or strategy to overcome environmental or enemy-based challenges thrown at the player (e.g. environmental traversal, combat, logical puzzles etc.) and to resolve emotions of frustration to victory and relief. However, the definition of *emotional* challenge is not as easy to define and requires further investigation.

Emotional challenge is described as 'challenge where the core pleasure for the player is the resolution of tension within the narrative, exploration of ambiguities within the diegesis, or identification with characters, that is not achieved through skill or dexterity, but with cognitive and affective effort'[15]. Further work has been done to further differentiate emotional challenge in games [8, 10, 48]and closely related phenomena [21]. Parallel and related research from the area of Media and Communications, with a focus on TV and film, is also ongoing [3, 33, 47, 52]. However, none of these investigations provide an account for *why* players would seek emotional challenge, *how* they experience that challenge, and does not make any real suggestions as to *how to design for* this kind of mixed-affect experience.

To gain further insight into this area we interviewed 24 games players about 'significant or memorable emotional experiences' from their games playing. Our aim was to deduce what was happening in the hearts and minds of the player when they experienced a mixed-affect emotional experience from playing games, to see what games were proficient at encouraging this kind of experience, and thereby determine whether there were any design practices that could recommended for facilitating eudaimonic PX.

The contributions of this work are two-fold:

(1) The formulation and description of the theoretical concept of 'emotional exploration'. This concept helps to explain:
 (a) Why players would seek out eudaimonic PX.
 (b) How players experience eudaimonic PX and associated mixed-affect.

    (c) How developers can think about designing for eudaimonic PX.

(2) Provides rationale for, and description of, the 'eudaimonic gameplay experience' and why this should be considered separate and different to the already established eudaimonic entertainment experience [69].

2 RELATED WORK

2.1 The Mixed-Affect Emotional Experience

Recent research in media research has explored the ideas of hedonistic vs. eudaimonic entertainment [2, 3, 69], as a means for understanding why viewers purposefully view 'difficult' films that do not necessarily give pleasure as it is commonly understood [46].

Whereas the purpose of hedonistic entertainment is to maximise enjoyment for the viewer (and is pleasure-seeking), eudaimonic entertainment aims to evoke a strong sense of 'appreciation' in the viewer (and is meaning-seeking).

'Appreciation' is defined by Oliver and Bartsch as, *"an experiential state that is characterised by the perception of deeper meaning, the feeling of being moved, and the motivation to elaborate on thoughts and feelings inspired by the experience"* [46]. Hedonic and Eudaimonic entertainment fulfil different need gratifications in the viewer — both of which can result in satisfying experiences and strong motivations for viewing. The majority of research to date has focused on the hedonistic mode of entertainment [2, 42, 52] although research on eudaimonic gratifications and motivations is growing. [8, 10, 43].

The compelling nature and popularity of tragedy (potentially the oldest form of theatre [65]) has always been an area of great debate and contention since its inception [45, 57]. The question, 'Why do people like consuming media that makes them feel sad, bad or upset?' is not a new path of enquiry. This has been investigated in the work of scholars such as Bartsch, Oliver and Hartmann [2, 33, 46]. Indeed it is Oliver and Bartsch who coined the phrase 'Eudaimonic Entertainment Experience' (EEE) [46]. They assert that there has been much research done on gratifications arising from amusement and pleasure, but point out that not all entertainment is about such things. There is, not surprisingly, a reluctance to classify gratifications had from tragedy or 'serious' films (e.g. 'Hotel Rwanda', 'Schindler's List' etc.) under the term 'enjoyment' or 'pleasure', but their gratifications still need to be accounted for in some way.

Bartsch and Hartmann [3] further investigated what kinds of challenges are involved in eliciting three types of gratification (fun, suspense, appreciation). Cognitive and affective challenge resulted in higher levels of appreciation, affective challenge with reduced cognitive challenge resulted in heightened suspense, and the absence of either kind of challenge corresponded strongly with fun. This adds to Hartmann's earlier writing on media consumption for recreation versus that for psychological growth [33] — here 'fun' relates to recreation and 'appreciation' maps to psychological growth. The status of 'suspense' is undetermined.

The processes that lead to this type of experience in games have begun to be investigated by scholars in HCI, such as the range of challenges possible in games [15, 22], hedonic and eudaimonic

user experiences [43], and how games can be used to convey more serious experiences [37].

Recent work on mixed affect in videogames builds upon work in media research and upon Cole et al.'s notion of emotional challenge [8, 10, 15, 44]. Bopp's work in particular has focused on empirical investigation of mixed affect in players of videogames [8] and the details of emotional challenge [10], and Denisova et al. have focused on indie game designers of 'emotionally impactful' games. Whereas the term 'emotional challenge refers to a characteristic of the game interacting with the player, 'emotionally impactful' directly addresses the emotional experience of the player. Mixed affect in videogames has been referred to as 'the mixed-affect emotional experience' or 'eudaimonic experience' [16], 'emotionally moving experiences' [8] and 'emotionally impactful experiences'. In these examples, going by the elaboration of definitions provided within the respective papers, these terms are used to refer to similar types of experience. However, this is not necessarily the case across the field in general. A recent scoping review by Daneels et al. of the concept of eudaimonia in digital games [19] shows that whilst there are *some* areas of consensus, there are broad areas of disagreement and still much to discuss with regards to how eudaimonia looks, feels and can be designed for in videogames. An interesting aspect of their discussion states that people tend not to turn to games for personal growth and eudaimonic content. This is something born out in our recruitment and interview process detailed in the methods section below — where even avid players often had difficulty naming an emotionally moving experience from their play history.

The core properties of what *constitutes*, what *causes* and *how* we can design for this kind of eudaimonic experience still require further investigation. Some recent work on agency [16] proposes new vocabulary to describe different types of agency at work in videogames, and therefore speaks partially to the question of how to design for the eudaimonic experience in games. One particular type of agency — Interpretive Fictional Agency (IFA), is of particular importance for facilitating the mixed-affect emotional gameplay experience. IFA in a game, "...gives the player a minimal narrative framework and encourages them to build their own understanding of the fiction, story and characters."[16] Through being given the space to expend effort on building their own interpretation (often with the controlled use of ambiguity), players receive a more powerful and deeper emotional experience back as a reward [60]. This matches with Denisova et al.s findings from their interviews of indie game designers [20], where participants said they design for emotional impact by leaving space for the player to build their own interpretation.

Oliver et al. recently investigated the potential for eudaimonia/appreciation in digital games [47], associating mechanical gratifications with enjoyment and narrative gratifications with appreciation, although other studies show that this distinction is oversimplified [4, 41]. This suggests that the EEE does not fully account for the eudaimonic experience that arises from videogame play, that it qualitatively different and more complex and nuanced than this. We suggest that a new concept — that of the 'eudaimonic gameplay experience' be introduced to promote discussion of this growing field of research.

Part of our analysis came to explore why players would *want* to play a game that yielded a eudaimonic gameplay experience. In

this respect, participants spoke about how their play made them reflect upon themselves and the world around them, and that they would sometimes seek out games that gave them the opportunity to do this. Self-determination theory provides a useful framework to explore this motivation to challenge oneself in our results and discussion — in particular the need for *relatedness*.

2.2 Self-Determination Theory (SDT)

Self-determination (SDT) is a major psychological theory in human motivation [66]. Originally conceived by Edward Deci and Richard Ryan [55], it states that there are three needs which must be fulfilled to achieve optimum mental well-being — competence, autonomy and relatedness. *Competence* is where an individual has the ability to show mastery over part of their environment (e.g. a skill or task). They are able to develop skills in a certain area and have an opportunity to demonstrate this. *Autonomy* is where someone has the ability to make some choices in their life and have some decision-making power so that they can act on the world in a way that matches their own desires. Note, this does not have to be absolute i.e. someone does not need completely free-reign in their lives in order to satisfy this criteria, simply that they have been able to make some decisions in how their live is conducted. *Relatedness* is where an individual feels connected to others around them and a sense of belonging.

A recent review of the discussion of SDT in HCI found that many researchers cite the theory but relatively few engage with it in-depth. The net result of this is that whilst SDT is cited widely, it has contributed little so far to the field of HCI [66]. Games, being interactive, afford the player (cf. viewer/reader) a degree of autonomy and often, though not always, a good chance of satisfying competency needs. It seems fair to assume that playing a multi-player game may contribute to a sense of relatedness, and this has been shown in studies of massively multiplayer online games [56] and in studies of players using games to deal with difficult life experiences [38]. Furthermore, SDT research on games in general has tended to focus on the needs of competency and autonomy, but not on relatedness [66, 67]. The well-known Player Experience of Need Satisfaction Questionnaire (PENS)[53] only includes three items connected to relatedness, and even then it's only applicable to the study of multi-player games such as MMOs.

Even less discussed than multi-player games is how playing a *single-player* game may give players a sense of relatedness. Tyack and Wyeth seem to be the only ones to have done so to date [67]. For them, relatedness comprises of three aspects: reciprocal love and care, acceptance of one's true self by others, and perceived belonging to social/cultural groups. Relatedness is satisfied by games from three potential sources: parasocial relationships, games development culture, and the game artefacts themselves. Parasocial relationships [36] in the context of a videogame refers to the player identity with any character in the diegesis, but very often with that of the player avatar/character (this has also been investigated by Bopp et al. [9]). With regards to games development culture, Tyack and Wyeth use Bourdieu's concept of habitus [12] — a shared sense of history and set of influences, to explain how relatedness could be satisfied — where the 'gamer' (a controversial term at best) feels part of a sub-culture or liked-minded people. Finally, Tyack

and Wyeth assert that during play the player constructs 'mind' or another reflexive mental representation of self in order to relate to the game, and so may feel that playing the part of the player character allows them to come closer to their 'ideal self'.

2.3 Stenseng's Escapism Scale

A common reason given for the motivation behind media consumption and games playing is that it provides 'escapism' and, in some senses, relief from everyday life. But the continuing 'paradox of enjoyment of sad films'[45] and it corresponding notion in videogame play, reported by many of our participants, suggests that the idea of 'escapism' is significantly more complex than many would first assume. Stenseng's model of types of escapism [58], inspired by Regulatory Focus Theory (RFT) [34, 35], maps well to the concepts of Hedonia and Eudaimonia and assists in understanding the motivations behind engaging in both types of experience — especially with regards to the meaning-seeking experience of 'appreciation' associated with eudaimonia.

RFT is about where a person's focus is when they engage in an activity, and defines two different self-regulatory viewpoints. A *promotion* focus leads to pursuit of improved standards and ideals, with an allocation of time and attention to that end. A *prevention* focus leads to maintaining congruity between one's actions and current duties and obligations. A *promotion* focus leads to growth and disruption of the 'status quo', a *prevention* focus leads to not attempting to improve (or even change) one's situation, thereby avoiding failure or any negative evaluations that might be forthcoming from those around them, and is associated with seeking to protect the self's unity and stability from exterior threats [58].

Stenseng, inspired by RFT, investigated different modes and motivations behind activities that resulted in 'escapism' (escapism is here characterised by task absorption, temporary dissociation of parts of the self and reduced self-evaluation). He found there were two types of escapism — *Self-expansion* (correlating to RFT's *promotion* focus, and an increase in positive affect) and *self-suppression* (correlating to RFT's *prevention* focus, and avoidance of negative affect).

In *self-expansion* an individual engages in an activity and sees it as an opportunity for self-development and growth. Whilst these activities may be risky or present potential threats to the individual's self in some fashion, the individual undertaking the activity sees this as a worthy endeavour since it will result in self-improvement. These activities are linked with a higher level of life satisfaction, and can lead to an 'upward spiral' of positive effect in live. Self-expansive escapism appears to map well to the gratifications of the eudaimonic entertainment or the eudaimonic gameplay experience. In contrast, *self-suppression* is when someone engages in an activity to remove negative affect and otherwise avoid troubling thoughts from consciousness. The individual undertaking these activities wishes to avoid thinking about their current situation or any potential future challenges. Self-suppressive escapism appears to map well to the gratifications to be had from hedonistic media consumption and the hedonistic gameplay experience commonly associated with playing mainstream videogames.

Hartmann has written about motives for media consumption, which appear to align closely with Stenseng's notions of esapism.

Hartmann suggests that people consume media either for recreation or for psychological growth [33]. In the case of 'recreation', "this refers to both the harmonising of imbalanced physiological states (homeostatic regulation) and the replenishment of exhausted physiological resources, with both processes linked to pleasurable responses." [33] Essentially, we watch media for recreation when we wish to rest and recuperate from a stressful episode — such as a hard day at work. Psychological growth is "achieved via the master of challenges. . . the term 'challenge'. . . refers to a variety of cognitive, affective, visceral and behavioural tasks imposed by the media environment." [33]

It is suggested here that Stenseng's self-expansive escapism appears to map closely to Hartmann's notion of media consumption for psychological growth, and Stenseng's self-suppressive escapism to that of Hartmann's notion of media consumption for recreation. This is important for our discussion of why players seek out a eudaimonic, mixed-affect experience, rather than selecting for one that is emotionally simpler, 'fun' and hedonic.

2.4 Games Cited in this Paper

A brief description of games cited in this paper is provided in Appendix B.

3 METHOD

Interviews were focused on player experiences of (predominantly) single-player games. All interviewing and analysis was carried out by the primary author. Participants are referred to as 'P(x)' where (x) is the number of the participant.

Participants were recruited and interviews were analysed using grounded theory methodology (GTM) as described by Glaser [28, 29] with many aspects informed by the views of Charmaz [13].

We side with Charmaz on questions of epistemology. Our position is that all knowledge is constructed and that codes, concepts, categories and theory are constructed by the researcher during the analysis i.e. they are not latent and present 'waiting to be discovered', and that you cannot fully remove the researcher from the analysis nor enter into the project as a 'cognitive blank slate'. We also agree with Charmaz that full transcriptions of interviews are necessary so that data is preserved for later analysis and re-analysis, and not left to the vagaries of memory (Glaser refutes this and insists that one should only take brief field notes during the interview for later reference).

However, we side with Glaser in regards to the Classic Grounded Theory's emphasis on abstraction and the development of a single, powerful and useful core-concept to explain 'what is going on in the data'. This contrasts with Charmaz, who favours more detailed descriptive concepts which focus on telling the participants stories as a result. We feel this approach is less appropriate for the application of GTM to this project than where Charmaz locates her research (social and health sciences), and that it does tend to lessen the potential of GTM to generate useful and readily understandable explanatory theory — which should always be the aim of GTM.

We also reject the tendency of Straussian GTM to encourage the construction of detailed and verifiable models and taxonomies [17, 59]. We feel that the product of a grounded theory analysis should be a *theory*, not a description and that the detail it encourages

hinders the potential of GTM as just mentioned. Since codes and theory are constructed rather than 'discovered', it stands to reason that no model could be fully verifiable.

We also regard the use of axial coding as 'optional, if you think it would be useful' after Charmaz, rather than a necessary part of the analytical procedure as defined by Strauss and Corbin. Axial coding is only useful *if* the emergent codes and categories would benefit from being organised along a dimension or axis to provide an extra level or order, and if it would help with the emerging theory. If not, then it does not have to be used — to do so would be similar to 'forcing' the data into a framework that does not suit it, and could hamper the developing analysis.

During this analysis no 'dimension/axis' presented itself. We did not use axial coding therefore, because we did not think it would be useful.

In line with Glaser [28, 31] and Charmaz [13] (though not with Corbin and Strauss [17]), we did not start with *specific* research questions prior to this research, nor a *detailed* literature review (a broad literature review was undertaken). To do so, in grounded theory methodology, risks 'forcing the data' [29], that is pre-empting analysis which may produce both a 'self-fulfilling outcome', and potentially close off novel and important lines of theory generation. We have already stated our aims in the introduction, but some broad questions that prompted this research were:

- Why do players choose to engage in mixed-affect emotional experiences in videogames?
- There is a difference in the emotional experience gained from playing games such as *Call of Duty*[40], *Gears of War*[24] or *Grand Theft Auto*[54], versus that from *Papers Please*[1], *Everybody's Gone to the Rapture*[64] or *Journey*[62]. However, what exactly **is** that difference?
- Are there any common strategies or features amongst those games that encourage the latter type of emotional experience from gameplay?
- What is happening during emotional challenge? Can we describe it with more rigour than Cole et al. [15] could in their original study, or find a common theme underlying the 'different forms of emotional challenge' (as per Bopp et al.s work [10]?

The goal of grounded theory is be as reflexive as possible, and open to the analysis taking an unexpected turn if need be. Therefore, not all of these questions were fully answered. This being grounded theory, the main overarching question is always, "What is the data telling us?"

3.1 Participants

26 interviews were carried out with 24 participants (2 participants were available and willing to give a second interview). 15 were male, 8 female, 1 non-binary. Participants represented 7 ethnicities and 11 nationalities, a range of ages from 18 to 42. Four participants were or had been games developers themselves, three were games academics, the other 17 had no involvement in the games industry and held a range of occupations.

The first two interviews were with personal acquaintances willing to speak about emotional experiences from their gameplay.

Subsequent participants were recruited from the internet by posting on gaming-related Facebook groups and on the itch.io forums, asking for potential participants to contact the research to discuss. These were a range of general games players with no particular focus on any certain games, groups of games or specific kinds of experiences. Work started with a general and unfocused group to avoid pre-empting the analysis of the data. Focusing on certain games or genres of games without a clear rationale could lead to 'forcing of the data' to fit pre-defined conclusions rather than allowing novel codes and categories to be constructed from and fit the data [29].

In line with grounded theory practice, participants were chosen according to the demands of developing theory, and *not* to provide a diverse cross-section of the population. In grounded theory, the researcher pursues new data which will develop, test and strengthen the developing theory — in whatever stage it is in at that time. Grounded theory can be conducted on any type of data, but when using interviews as your primary data source this means that participants are selected and interviewed based on what they may bring the developing analysis, not on whether they are currently represented demographically amongst the data – unless that is a concern of the developing theory [7, 13, 17, 28, 30, 59]. In this study, this meant a move from recruiting games players 'generally', towards players of a certain type or of certain games (see next section).

Participants were recruited on a voluntary basis and were not compensated for their time. They all willingly volunteered because they were interested in the topic, and several remarked they seldom had the opportunity to talk deeply about games in this way, and appreciated the opportunity. Previous research by Wiseman et al. has suggested that the data from volunteers can be of higher quality than if they were paid [70].

3.2 Recruitment

The developing theory and areas of potential interest directed the recruitment of participants (a grounded theory practice known as theoretical sampling [13, 17, 29]). This meant that data collection and analysis was interleaved and iterative. Where possible an interview would be fully analysed, coded and memos written before the next. Sometimes this was not possible due to scheduling constraints of participants. At most there would be three interviews completed before a pause for analysis. Results of each analysis, every one to three interviews, would dictate recruitment practices for the next few participants, until core concepts and categories had been fully explored and the resultant theory was strong (a practice known as theoretical saturation).

The first few participants were recruited to discuss "*gaming moments that have changed you*". This unexpectedly elicited very little response. Despite the passion and money that is spent on gaming worldwide and on the gaming lifestyle at large, our experience with recruitment, along with some participants responses, suggest that few want to *admit* that a game has changed them significantly in some way. The next few participants were recruited using a broader and less defined statement — "*a gaming experience that has affected you in some way - maybe it made you ponder, or made you realise*

or understand something". Although this did encourage greater engagement, participants *still* struggled to engage with this central question.

During earlier interviews certain games were repeatedly mentioned such as *Journey*[62], *Night in the Woods*[39], *Detroit: Become Human*[51] and *Papers, Please*[1]. An online community for the game Journey was then used for recruitment since the data so far suggested that players of this game were more likely than others to be interested in a more eudaimonic/mixed-affect gameplay experience. A post was made on /r/JourneyPS3 (the subReddit forum for fans of the game *Journey* for both PS3 or PS4) seeking participants to talk about "*significant or memorable moments from your games playing*." This proved to be a far more productive recruitment strategy — a far stronger response was obtained, with several people making contact to volunteer their time.

3.3 Procedure

Semi-structured intensive interviews [13] took place at times which were possible and convenient to the participants, given the multiple time zones involved. All interviews were conducted using the instant messaging protocol of the participants' choice. Interviews generally lasted between two and three hours.

During the early stages of the investigation line-by-line coding was used to drive deep engagement with the data and what lay underneath (as strongly recommended by Charmaz, Corbin/Strauss and Glaser [14, 18, 28].

Towards the end of the study the more developed theory was discussed with participants to test for fit, explanatory power and usefulness.

Memo writing continued throughout, and were regularly sorted and compared with each other and codes and categories to test for emergent patterns of thought and prominent features. A total of 145,000 words were analysed, with each interview transcript averaging 5500 words. Chat logs were exported as raw-text, anonymised and formatted in word-processing software. Coding, analysis, memo-writing etc. was done with the support of MaxQDA (Computer-Aided Qualitative Data Analysis software (CAQDAS)).

3.3.1 Usage of Instant Messenger Interviews. Videogames players tend to be confident technology users. Combined with the modern pervasiveness of IM, it is a reasonable assumption that the majority of people eligible for the study would be familiar and comfortable with extended conversations over IM.

Many participants appreciated the anonymity and convenience of using IM rather than spoken conversation. The enhanced anonymity of of using IM meant that the identity of participants can be easily hidden and therefore reflect good ethical research practice.

We feel that this anonymity, along with the use of a keyboard and screen between interviewer and participant, was in fact a great 'leveller' from a social point of view, and encouraged more people to get in contact and participate. Some participants stated they were the quiet type, and not so confident with speaking, especially about new or seldom-thought about topics such as those covered during this project. Even if interviews had been conducted over VOIP rather than physically face-to-face, there could be all sorts of unconscious social interactions associated with personality, gender

roles, class, status, accent etc. that could adversely affect the conversation between the interviewer and participant. The use of IM allows most of these factors to fade into the background and be 'less present' in the conversation between interviewer and participant. Birks and Mills speak of taking steps to 'reduce power differentials' between researcher and participant [6, 7], and the use of IM greatly assists with this. As a result of this several participants were able to share intimate experiences and stories connected to their game play during their interviews.

The use of IM has a few disadvantages. There is no body language to be observed, and so some observational data is lost. The rhythm and flow of the discussion can take a few moments to establish — the interviewer must learn to wait and look for the typing progress indicator (often represented by blinking or bouncing dots just above the text entry area), so as to not interject, cut-off the participant's answer, and to allow them to answer as fully as possible. Interviews are generally longer than face-to-face interviews — people generally type slower than they can speak.

However, usage of IM meant there was increased participation internationally — especially from those whose first language isn't English. These participants may feel more comfortable with the extra thinking time afforded by writing/reading rather than speaking/listening. This gives IM an extra advantage even over the use of VOIP or video conferencing services, which would still have allowed participation outside of the interviewers immediate locality. This extra thinking time may not only be advantageous for those whose first language was not English. Despite the loss of body language, we felt that the use of written language and the slower, more ponderous pace of an IM conversation (as compared to a spoken conversation) made it easier for *all* participants to be reflective when questioned about their experiences. With IM there is less urgent pressure to perform and think of words in the moment, and these few extra seconds allow people time to think, reflect, and to express themselves more authentically and accurately.

In addition to the greater internatinoal participation, reduction of power differentials, and greater freedom of expression that anonymity brought, data was of equal if not higher quality than that derived from transcription of face-to-face interviews during previous research projects. Transcripts were shorter and denser with information due to fewer filler words, phrases and general speech dysfluency. The shorter length and denser information made managing and analysing source transcripts much easier. Of course, it also negated the need for manual transcription of the interview, since you can easily extract and reformat the chat logs from your interview ready for analysis.

3.4 Theoretical Saturation

The core concept of *emotional exploration* was constructed between the eighteenth and and nineteenth interview as a result of constant comparison of memos, categories and codes. Further participant sampling and interview questions were focused on testing this concept. In the context of GTM, 'testing a concept' means ensuring that all properties of the concept have been fully explored and realised, and presenting participants with the developing theory/concept to assess 'fit' and 'grab' (these are Glaser's terms — "Does it fit the data well?" and "Does it have strong explanatory power that's

easily understandable?". Charmaz uses the terms 'credibility' and 'resonance' to describe similar aspects). A good grounded theory should make sense to the people who work in the context from which it is derived — the participants themselves. They don't have to agree with it, but they should at least be able to understand it. [13, 29].

The core concept was tested with later stage participants, and was found to have strong utility and explanatory power, as the following quotes illustrate.

> "Interviewer: Is it fair to say that you're exploring those difficult concepts emotionally? Which wouldn't be possible in a film/tv. . .
>
> P3: **Yes, I think you explore things more emotionally** in the game because of the actions you take - i.e. all the choices you make. It might be less emotional in a TV show where the actions/responsibility is taken out of your hands."
>
> (P3 (second interview), on *Soma*)
>
> "Interviewer: It sounds as though..maybe to explore a bit, emotionally? To explore a part of you that you do not usually get a chance to?
>
> P20: **This could be it.** These emotionally extremes packed in a story which itself is still "plausible". Being extreme happy/sad is something I haven't got so many times in my daily/weekly routine.But being "a bit sad" (like a depression way) isn't a nice feeling as well. . . sometimes the feeling after the "sad part" . . . makes me feel better/happier."
>
> (P20, on emotional games such as *Journey*[62], *The Walking Dead*[61], *Heavy Rain*[50] and *Life is Strange* [23].)

At this point the theory was deemed to have reached theoretical saturation.

4 RESULTS

Open coding of the first nine interviews resulted in over 600 initial codes. During these initial coding efforts, memos were written to record thoughts and insights as they occurred. In between interviews these codes and memos were sorted and compared in relation to each other with the assistance of whiteboarding/concept diagram-building functionality within MaxQDA and the ability to cross-reference between codes and memos in-program.

Codes and categories emerged around concepts such as exploring self, practice for future, understanding self, understanding the world, understanding others, needing to be understood and a drive for meaning. Codes that related to the mixed-affect emotional experience in games, which shared meaning with many other codes and which were prominent were raised and/or merged to produce categories. Codes that seldom occurred or which were not connected to the mixed-affect emotional experience in videogames were not investigated further.

After several iterations this process produced a set of focused codes (see Table 1 in Appendix A). These focused codes were used to code subsequent data — which also yielded more codes which

were then compared and sorted in relation, where possible, to these focused codes. Further data collection, memo writing, comparison and analysis resulted in the construction of the core concept of *emotional exploration*. At this point memos and codes were resorted and analysed with respect to emotional exploration and its properties. The core concept was also tested with participants for 'fit' and 'grab' (see 3.4).

Emotional exploration is when players, by exploring the emotional landscape of the game, are also exploring themselves, others and aspects of the real world through the situations presented (and sometimes resolved) in the game. This emotional landscape is a reflective space for self-expansive escapism, where players aim to grow and develop.

This is a eudaimonic experience — where 'appreciation' of life and meaning-seeking is realised, and self-development and reflection is encouraged afterwards. A prominent aspect of this is that players who value the mixed-affect experience feel they are satisfying a need to feel related not only to other people and the world around them, but also to themselves.

All quotes are verbatim from chat logs and have not been altered.

4.1 Properties of Emotional Exploration

The core category of 'Emotional Exploration' has six properties, which are summarised and explored below:

- It requires *expectations* to be appropriately set.
- The emotional landscape needs some level of *challenge* to be understood or 'traversed' (as we would a 'mechanical' landscape).
- One of the key tools for this is *ambiguity*.
- Emotional exploration results in a *mixed affect* emotional experience.
- The data here suggests that this emotional experience is *potentially more powerful* than that experienced in other media due to the player's participation in the diegesis and a certain level of *interactive vulnerability*.
- Emotional Exploration satisfies a need for *relatedness* in the player.

4.1.1 Setting expectations. Participants needed preparation for emotional exploration in the same way they need to be prepared for (virtual) physical exploration. The player is far less likely to have a strong and/or mixed-affect experience if they have not been suitably prepared, in the same way that a player will not navigate an environmental obstacle if they haven't been taught how the avatar can move and the affordances of the environment (e.g. in Assassin's Creed [68], the jump, run and climb mechanics and the handholds that are visibly present on buildings and walls to allow the player to plan and find a path to a destination).

> " *I think part of what made it so amazing were all the smaller, (easier?) moral choices that came before which seemed more clear cut… the game throws increasingly nuanced choices at you - and by the time you get to the one I described a moment ago, it totally stops you in your tracks and makes you retroactively consider all the choices you made so far… Were you right to take the actions you did earlier?*"
>
> (P3, on *Soma*[26])

Participants felt it important that they were given chance to reflect and absorb what is going on in the game. This corroborates earlier research which found that functional and emotional challenge are often antagonistic to each other [15].

> *"**Having time to process the narrative and ruminate over the meanings** behind the decisions taken by the characters allows you to become more involved with the story."*
>
> (P7, on *Everybody's Gone To the Rapture*[64])

4.1.2 Challenge. One component of emotional challenge [10, 15] is the strong emotions that the player is encouraged to feel or is exposed to, either through the mechanics or through the narrative.

> *"To me emotionally challenging games and content is important. To me that would be games that **challenge you to feel strong emotions or deal with situations and experiences that are emotionally significant** to us as human beings."*
>
> (P4, on the idea of emotional challenge in games)

.

Related but not the same is moral challenge (where the player is feeling conflicted over their in-game decisions, which produces challenging emotions in and of itself) and intellectual challenge (piecing together disparate elements of the narrative (from the environment or through exposition) to form a coherent story or account, encouraging extensive reflection and pondering of all the elements of the gameplay experience). Denisova has referred to this kind of challenge as 'decision-making challenge'[21].

In moral challenge the player's main question is, "What's the right thing to do here?".

> *"I think these are the challenges I most enjoy, the **challenge comes not from gameplay but from morality**. What choice feels right to you? The walking dead achieves this by putting you in situations similar to the classic "trolley problem" — two bad choices and the player must decide which one is least morally wrong"*
>
> (P18 on the moral challenges in *The Walking Dead*)

In intellectual challenge, the main question is "What is going on?". This can often be as a result of piecing together disparate and disconnected pieces of information about a diegesis.

> *"It stood out because of the sheer amount of thought that went into it. k7 lasted its whole runtime for me because the gameplay/story were so out-there. But were **well thought through. It had a soul**, which most games do not seem to have in my opinion"*
>
> (P21 on the intellectual challenge of *Killer 7*)

None of these three challenges need to co-exist with another. These types of challenge are inter-related and overlap at many points, but are distinct from one another and can exist independently of one another. However, none of these challenges require dexterity, strategy or reflexes to be overcome, as in functional challenge [15].

4.1.3 Ambiguity. The controlled use of ambiguity gives space for the player's mind and emotions to move and explore. Ambiguity allows for greater use of *imagination*, enhanced opportunity for

reflection, and offers the player just enough material to build their own *interpretation* [25]. It is key in giving the player interpretive fictional agency [16] to build their own personalised understanding of the game and their experience in it.

> *"so it's very, like a sort of emotional jigsaw puzzle. You like investigate these scenes, walk around looking and the room and picking things up and exploring, taking in what information you think matters…**very cinematic and interpretive…and I loved that, I loved not being told anything and just…using what I had**, and the tone they were setting and everything to just…**experience it in a way i thought was meaningful** and obviously that's like heavily directed, but it's all directions and no script."*
>
> (P14 on interpretation in *Virginia*)

4.1.4 Mixed Affect. The role of mixed affect emotional experiences in film, TV and literature is well-documented [2, 3, 11, 32, 33, 46, 49]. Participants described emotional experiences that were cathartic, involving negative affect, a contrast of positive and negative feelings and, in some cases, as revelatory.

> *"Yeah, entertainment or whatever you might call it. The other day I was playing Papers, Please…and, **I do not know, if you could really say entertainment. It was a really nice experience**. It was a really good experience I do not want to miss."*
>
> (P2, on the mixed-affect experience of *Papers, Please*)

Many participants sought out mixed-affect games in order to grow as a person and feel challenged in how they think, feel exist and relate to others and the world around them.

> *"Yeah, and I generally do not seek out bleak films, but with games, I sort of want it…maybe bleak is the wrong word, but I want games to be able to be more than just fun. Fun is great and I love fun games, but I want them to be more…I want games to exist that provide **moments that you want to talk about**."*
>
> (P15 on media preferences.)

> *"…it's very human to want to reach out and see other human experiences, to want to test out all the weird little nooks and crannies of your emotional spectrum…I just have a desire to play in ways that make me feel a Bunch of Stuff. Sometimes you want to put your hand into the river, or look at the stars, or listen to a sad song over and over."*
>
> (P14 on seeking out diverse emotional experiences in games)

Players are seeking out gameplay experiences that they are aware are not easy to decipher or deal with emotionally. However, they regard this experience as ultimately gratifying — leading to self-improvement, and in improvement in how they understand the world, themselves and others around them. This evokes Stenseng's notion of self-expansive escapism [58] and Hartmann's concept of recreational media viewing [33].

4.1.5 Interactive Vulnerability. As encountered during recruitment for this study, even amongst dedicated gamers and members of

the development industry there is a reticence to acknowledge the strength and variety of emotions that can be elicited from a videogame. But it should not be surprising that videogames have the potential to be more emotionally engaging than other media such as film, TV and literature. Participants in this study made several references to how the ability to *act* within a game made it more emotionally engaging. This suggests the increased involvement of a participant, due to their choices in the diegesis of a game as compared to that of a viewer of a film or reader of literature, means that there is a certain kind of '**interactive vulnerability**' — that a strong emotional experience is *more likely* in videogames than in other media, and will feel more unique and personal to them.

> *"Interviewer: So, what would you say your main reasons for playing games were?*
> *To be moved? It's the same reasons I would watch a movie, see a play or read a particular novel but **videogames have that added element of interactivity that makes me feel even more invested and therefore more vulnerable to the possibility of being moved by them**."*
>
> (P4, on why they play videogames.)

4.1.6 Relatedness. SDT states that three needs must be satisfied to have optimum psychological wellness — competence, autonomy and relatedness. Often studies have focused on the clear potential for videogames to realise competence and autonomy [56, 66] and for relatedness — but in multiplayer games only (cf. single-player games) [56, 67].

Similar to Tyack and Wyeth's work on relatedness [67], our results also suggest that the gameplay experiences investigated here, even though they are played in single-player, do indeed give players a sense of connection with others directly, via the world around them, or through understanding themselves better and therefore feeling connected to others in a different way post-play. The data here shows that by engaging in *emotional exploration* and dealing with emotional challenge participants felt a stronger sense of connection with life, the world, and the people around them. They described being motivated to play games in order to derive meaning and find their place in the world (real or diegetic), and then bringing what they've experienced into their real world existence, as well as seeking to understand others and to understand the world around them.

> *"Interviewer: So you gained perspective on life, you think?*
> *Maybe not on life as a whole, **but on how I felt about people? For sure. Everything about how I connect with, understand, and feel about people in general has a little Journey influence in it now**.…It taught me a lot about friendship. I hadn't had a super good experience with other people in general before Journey.*"
>
> (P23, on *Journey*)

> *"I guess I once again arrive at **appreciating the good parts in life and enjoying them while you can**. Because I replayed the game a few times always anticipating those moments. Also making the best of dire*

times."

(P19, on *The Last of Us*)

Participants showed a strong interest in exploring and understanding themselves through gameplay. They displayed a *need* to be understood, and then set about exploring parts of their personality which either do not have an outlet in society or needed reaffirmation.

"It makes you think a lot about the "grey areas" of morality

Interviewer: What do you find interesting about those 'grey areas' of morality?

*I suppose those are **the questions we've been asking ourselves since the inception of psychology,** when it comes to these grey areas nobody really knows the answer and it's interesting to think about **what we might do if humanity was faced with such a situation** as nuclear annihilation"*

(P18 on *Fallout 4*[5])

*"Whether this game makes me confused or happy, **it makes me know myself better**. I would like to say that this game is a **very self-examination promoting game**. Of course, this may only be for me. I often observe my emotional response after experiencing some things. **These observations let me understand myself**, especially in this game"*

(P24, on *Journey*)

*"The game sort of centres around, among other things, having to come back to your parents after a sort of breakdown at college, and trying to find out who you are and how you fit into your old spaces… university was sort of terrible for me. I didn't drop out in the end, but I spent a lot of time thinking about the same sort of things, having the same sort of breakdown, and then I had to go home to A small town of my own, to my own weird family situation and changed friends and abandoned houses and stuff, and so **a lot of it just felt very like being seen, in some ways, like "oh, yeah, that IS how that feels""***

(P14, on *Night in the Woods*[39])

Participants used games to engage with present issues in their lives and as a form of practice for future situations.

*"So I think the purpose was simply to show Lee's "goodness" but **to me he's a sort of role model, I think I would like to be the person who would make those sacrifices for someone who needs it**."*

(P18, on *The Walking Dead*)

This ties in with the concept of 'mind' from Tyack and Wyeth's research as discussed earlier [67], where players explore certain facets of the person they *could* be, or would aspire to be.

5 DISCUSSION

Research on how videogames elicit a eudaimonic and mixed-affect emotional response (as opposed to a more mainstream fun and hedonistic experience) from players has greatly increased in recent

years. Yet the question remains as to why certain videogames are better at eliciting a mixed-affect response than others.

To try and answer this we interviewed 24 players to investigate their mixed-affect response during play. We were interested in what motivated them to seek out these experiences, how these emotions were experienced and in pinpointing game design strategies that encourage these kinds of eudaimonic experiences to occur. Grounded theory methodology was used to recruit participants, collect and analyse the interviews, and yielded a number of codes and categories which resulted in the construction of the core concept of 'emotional exploration'.

5.1 Emotional Exploration

The idea of emotional exploration helps answer a number of questions. It helps explain:

- *how* to design for an emotionally challenging eudaimonic experience
- *what* is happening in this experience and how it is constituted
- *why* players would be interested in the mixed-affect emotional experience, as opposed to a more functional-challenge derived experience of 'fun' or enjoyment.

In terms of the **'how'** there needs to be an emotional challenge, the expectations of the player must be set appropriately, and a major tool for designing a eudaimonic experience is the targeted and conscious use of ambiguity. Ambiguity is one method the game can use to mount an emotional challenge and for the player to be given tools to meet and overcome it. This echoes the findings of Denisova et al., where indie designers of emotionally-impactful games purposely design for mixed-affect but leave space for players to form their own interpretations and experiences [20]. Players must have their expectations appropriately configured for this to occur in exactly the same way a good game trains a player how to use its mechanics effectively and the extent of their mechanical agency.

During this emotional experience (the **'what'**) players feel a mixture of positive and negative affect which is evaluated as a positive experience overall [8]. Participants commented that the interactivity of the videogame medium — the ability to act and exert some level of choice in the diegesis, made them more vulnerable to this kind of mixed affect experience — which again aligns with Denisova et al.s findings that designers consider players active interaction with the game as an important factor in creating a deep connection with the game [20]. This mixed affect experience is one that leads to psychological growth[33] through self-expansive escapism [58], prompting a reflective mindset and satisfying a psychological need for *relatedness* not only to others and the world, but also to the self.

This kind of growth experience is something that an increasing number of players are interested in (the **'why'**), over the more recreational, hedonistic experiences offered by many games. They have an opportunity to explore themselves and their relationship to the world and the people in it, in ways that may not be otherwise possible. In doing so, as well as fulfilling their needs for competence and autonomy, they are also fulfilling a need to relate to themselves better, and develop understanding of the world and people that are around them. Whilst there has been significant research into the

satisfaction of competence and autonomy needs from videogame play, research into how *relatedness* is satisfied — particularly from playing single player games as opposed to multiplayer games, is relatively sparse. The concept of emotional exploration therefore makes a contribution towards our understanding of satisfying the need for relatedness from playing single player games.

Most games consist of a well-developed mechanical possibility space, but a relatively undeveloped emotional one. This does not mean that the former does not elicit an emotional experience — far from it. Most mainstream game releases (e.g. *Call of Duty series*[40], *Grand Theft Auto V*[54]) are exciting, thoroughly engaging and exhilarating, and yet unlikely to yield a compelling mixed-affect or reflective emotional experience. Conversely, a game can have a very restrictive mechanical possibility space, and yet the emotional possibility space is large and heightens the chances of the player having a deep mixed-affect emotional experience (e.g. *Dear Esther*[63], *Journey*[62], *Night in the Woods* [39] etc.).

The games in this second group are providing an 'emotional possibility space'. This is analogous to how we think of virtual environments and gameplay systems. Designers and developers provide a virtual environment and systems for players to traverse, experiment with and interrogate using decisions and mechanics — a 'mechanical possibility space'. If we wish players to engage in a strong mixed-affect emotional experience there should be a similar amount of freedom to explore, interrogate and *emotionally* interpret, building their own 'nexus of meaning' [25] about the diegesis. The player requires Interpretive Fictional Agency [16], rather than mechanical agency, to emotionally explore an emotional landscape that's been constructed by the developer (a point echoed by Denisova et al. [20].

By way of analogy: Imagine a game that had no significant narrative or environmental features to engage the player — consisting solely of a long corridor to walk down, with nothing unexpected or hidden, providing no surprises, no opportunity for plan-making or improvisation by the player, and little choice to exert any agency of any kind. In many cases, in the lack of any other redeeming features, this hypothetical game would be considered boring and uninspiring to play, and players are unlikely to have an engaging experience. If we construct the *emotional* landscape of our games in the same way, there will be little depth and variety to be had in the emotional experience of games — there is a low degree of Interpretive Fictional Agency [16].

Many of the most popular videogames are built in this manner. For many players this is not an issue, but it *is* an issue if we wish to see videogames continue to develop and diversify in the range of emotional experiences they offer players, and if we wish for broader demographics to discover the joy and value of digital games. Games that encourage emotional exploration engender a stronger sense of relatedness to self and the world, satisfying a core psychological need according to self-determination theory [55]. Videogames are often assessed for how they satisfy competency and autonomy within a hedonistic UX framework, but less often for how they satisfy relatedness within a eudaimonic framework. This research contributes to the discussion on how developers can diversify the design of games in order to reach a more diverse audience seeking more diverse experiences — which is not just an artistically 'worthy' goal, but a commercially beneficial one also.

There are, therefore, some potential suggestions to consider when designing for the mixed-affect emotional experience:

- Design for ambiguity. Note that ambiguity does not mean a lack of information, but the refers to the possibility for multiple interpretations [27]. Give the player space to create their own understanding[16, 20], but don't give them so little as to have nothing to build on.
- Use emotional exploration as a conceptual tool to visualise the emotional experience as a landscape, similar to how you design an environment and mechanics to traverse and act on/in it.
- How is the player being emotionally challenged [10, 15, 21]? What 'tools' are the players being given to explore this emotional landscape and overcome emotional challenge?
- Ensure that players' expectations are appropriately set for emotional exploration, in the same way you would for mechanical exploration.

5.2 Eudaimonic Gameplay Experience

The responses from participants in this study strongly suggest that the mixed-affect experience of playing videogames is qualitatively different to that from consuming films, media or literature. The ability to act and move within, and on, the diegesis in games is a fundamentally different property not found in other mediums. Other recent research has suggested the same [19, 47]. We therefore propose that a new phenomenon be named and investigated — the eudaimonic gameplay experience.

Our results suggest that a developer who wishes to facilitate the eudaimonic gameplay experience needs to build an emotional landscape (with some form of emotional challenge and interpretive fictional agency) that encourages players to explore and learn more. One that gives them an anchor in that space and yet affords them freedom to move emotively, intellectually and cognitively, as opposed to a game where all aspects of the diegesis are explained, where there are no gaps, where there is no space for the player to involve themselves and 'join the dots' on their own, and where they have little chance to think and reflect on what is happening.

Emotional exploration is a pre-requisite for the Eudaimonic Gameplay Experience, and gives the player the opportunity to meet and overcome emotional challenge [10, 15]. The game provides an emotional landscape for the player to explore, and through overcoming emotional challenges the player learns more about themselves and/or their place in the world which is experienced as a mixed-affect emotional experience (also described as an emotionally moving [8] or emotionally impactful [20] experience). This can be experienced as self-expansive psychological growth [33, 58], and so emotional exploration also helps explain why players would seek out a challenging eudaimonic experience.

Games are an effective vehicle for complex emotional experiences in ways that other non-interactive media cannot be — the player chooses what, when and how they move through the experience. The presence of interaction and varying degrees of agency means that 'emotional exploration' is an appropriate and powerful concept that merits further investigation, and the 'eudaimonic gameplay experience' is a phenomenon that deserves to be treated

as distinct from that of the eudaimonic entertainment experience of non-interactive media.

5.3 Limitations and Future Work

This was a piece of qualitative research, and as such cannot be taken as an objective account of player experiences. This was an exploratory study of the eudaimonic gameplay experience of videogames. Grounded theory inherently involves the creativity and subjective interpretation of the researcher(s), to a greater or lesser extent, and so cannot be judged with the same lens used for quantitative research. A grounded theory must instead be judged on it's fit to the data, and it's 'grab' or apparent explanatory power, and at 26 interviews this is a good-sized grounded theory study. The last few participants were recruited from a forum related to the PS3/PS4 game *Journey*. There were other games that were frequently mentioned by earlier participants, and so it would be interesting to see if players of other frequently-cited games such as *Night in the Woods* or *Papers, Please* showed a similar interest and openness to emotional exploration and the eudaimonic gameplay experience.

Certain games were mentioned more than others during the course of this research, and some of them are mentioned more frequently in related works also. There is no comprehensive study of what features and characteristics these games share and differ in, and therefore no way of identifying which features or genres of game may be particularly adept at providing the mixed affect experience. Future work could look more closely at the formal features of games mentioned in this paper and related work, and contrast them with the formal features of games less associated with the mixed-affect emotional experience, to produce more concrete suggestions for designers and developers.

All interviews here were conducted by instant messenger. It is felt this is advantageous for many reasons, and that the quality of data was no worse than that which would have been obtained through in-person or video conferencing. Nevertheless, it would be interesting to analyse the data from in-person interviews against that obtained from instant messenger to see what, if any, differences in quality and content there were.

6 CONCLUSION

Videogames can elicit deeply personal mixed-affect emotional experiences, yet the majority of Player Experience (PX) research still focuses on hedonistic rather than eudaimonic gameplay experiences. There is an increasing amount of work being done on the motivations and experiences of players who seek out mixed-affect experiences from videogames, but there are large gaps in our understanding of how the 'eudaimonic gameplay experience' is constituted and why players would seek out this kind of experience.

This grounded theory study involved 24 participants across 26 interviews who were interviewed about 'significant or memorable moments from your games playing'. From this analysis the notion of 'emotional exploration' emerged as the key concept which helped explain how emotional challenge is experienced, how it can be designed for, and why players would be interested in this kind of gameplay experience. 'Emotional Exploration' is a powerful idea which is of immediate utility to developers — who can use it to think of crafting an emotional landscape and possibility space in the

same way they craft one for mechanics, systems and the functional challenges of the game.

Six properties were proposed to describe emotional exploration (expectations, challenge, ambiguity, mixed-affect, interactive vulnerability, relatedness) which provides a lot of useful avenues for further analysis and investigation. In particular its relationship with self-determination theory and the idea that 'relatedness' concerns not just relationships with others around the player, but also how the player relates to themselves (self-relatedness).

This research has contributed novel concepts and vocabulary to aid the study of videogames within the field of HCI. The concept of 'emotional exploration' adds to the discussion around the nascent and evolving concept of the eudaimonic gameplay experience (EGE), and supports discussions and investigations into the deeper emotional and reflective experiences that videogames can give us, but which we are only just starting to research more closely.

ACKNOWLEDGMENTS

REFERENCES

[1] 3909 LLC. 2013. *Papers, Please.* Game [multi-format]. USA. Played November 2013.
[2] Anne Bartsch. 2012. Emotional gratification in entertainment experience: Why viewers of movies and television series find it rewarding to experience emotions. *Media Psychology* 15, 3 (2012), 267–302.
[3] Anne Bartsch and Tilo Hartmann. 2017. The role of cognitive and affective challenge in entertainment experience. *Communication Research* 44, 1 (2017), 29–53.
[4] Steve Benford, Chris Greenhalgh, Gabriella Giannachi, Brendan Walker, Joe Marshall, and Tom Rodden. 2012. Uncomfortable Interactions. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Austin, Texas, USA) *(CHI '12).* Association for Computing Machinery, New York, NY, USA, 2005–2014. https://doi.org/10.1145/2207676.2208347
[5] Bethesda Game Studios. 2015. *Fallout 4.* Game [multi-format]. Maryland, USA. Played March 2017.
[6] Melanie Birks, Karen Hoare, and Jane Mills. 2019. Grounded theory: the FAQs. *International Journal of Qualitative Methods* 18 (2019), 1609406919882535.
[7] Melanie Birks and Jane Mills. 2015. *Grounded theory: A practical guide.* Sage, Melbourne, Australia.
[8] Julia Ayumi Bopp, Elisa D. Mekler, and Klaus Opwis. 2016. Negative Emotion, Positive Experience? Emotionally Moving Moments in Digital Games. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (San Jose, California, USA) *(CHI '16).* Association for Computing Machinery, New York, NY, USA, 2996–3006. https://doi.org/10.1145/2858036.2858227
[9] Julia Ayumi Bopp, Livia J. Müller, Lena Fanya Aeschbach, Klaus Opwis, and Elisa D. Mekler. 2019. Exploring Emotional Attachment to Game Characters. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Barcelona, Spain) *(CHI PLAY '19).* Association for Computing Machinery, New York, NY, USA, 313–324. https://doi.org/10.1145/3311350.3347169
[10] Julia Ayumi Bopp, Klaus Opwis, and Elisa D. Mekler. 2018. *"An Odd Kind of Pleasure": Differentiating Emotional Challenge in Digital Games.* Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3173574.3173615
[11] David Bordwell. 1979. The art cinema as a mode of film practice. *Film Criticism* 4, 1 (1979), 56–64.
[12] Pierre Bourdieu. 1977. *Outline of a Theory of Practice.* Vol. 16. Cambridge University Press, Cambridge, UK.
[13] Kathy Charmaz. 2014. *Constructing grounded theory.* Sage, London, UK.
[14] Kathy Charmaz. 2014. *Constructing grounded theory.* sage, London, UK, Chapter 5, 121.
[15] Tom Cole, Paul Cairns, and Marco Gillies. 2015. Emotional and Functional Challenge in Core and Avant-Garde Games. In *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play* (London, United Kingdom)

(CHI PLAY '15). Association for Computing Machinery, New York, NY, USA, 121–126. https://doi.org/10.1145/2793107.2793147

[16] Tom Cole and Marco Gillies. 2021. Thinking and doing: Challenge, agency, and the eudaimonic experience in video games. *Games and Culture* 16, 2 (2021), 187–207.

[17] Juliet Corbin and Anselm Strauss. 2008. *Basics of qualitative research: techniques and procedures for developing grounded theory* (third ed.). Sage Publications Inc, Newbury Park, USA.

[18] Juliet Corbin and Anselm Strauss. 2008. *Basics of qualitative research: techniques and procedures for developing grounded theory* (third ed.). Sage Publications Inc, Newbury Park, USA, Chapter 3, 58.

[19] Rowan Daneels, Nicholas D Bowman, Daniel Possler, and Elisa D Mekler. 2021. The 'eudaimonic experience': A scoping review of the concept in digital games research. *Media and Communication* 9, 2 (2021), 178–190.

[20] Alena Denisova, Julia Ayumi Bopp, Thuy Duong Nguyen, and Elisa D. Mekler. 2021. "Whatever the Emotional Experience, It's Up to Them": Insights from Designers of Emotionally Impactful Games. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. Association for Computing Machinery, New York, NY, USA, Article 120, 9 pages. https://doi.org/10.1145/3411764.3445286

[21] Alena Denisova, Paul Cairns, Christian Guckelsberger, and David Zendle. 2020. Measuring perceived challenge in digital games: development & validation of the challenge originating from recent gameplay interaction scale (CORGIS). *International Journal of Human-Computer Studies* 137 (2020), 102383.

[22] Alena Denisova, Christian Guckelsberger, and David Zendle. 2017. Challenge in Digital Games: Towards Developing a Measurement Tool. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (Denver, Colorado, USA) (*CHI EA '17*). Association for Computing Machinery, New York, NY, USA, 2511–2519. https://doi.org/10.1145/3027063.3053209

[23] DontNod. 2015. *Life is Strange.* Game [multi]. Paris, France. Played October 2017.

[24] Epic Games and Microsoft. 2011. *Gears of War 3.* Game [XBox360]. Cary, USA. Played December 2011.

[25] Russell Epstein. 2004. Consciousness, art, and the brain: lessons from Marcel Proust. *Consciousness and cognition* 13, 2 (2004), 213–240.

[26] Frictional Games. 2015. *SOMA.* Game [multi]. Malmo, Sweden.

[27] William W. Gaver, Jacob Beaver, and Steve Benford. 2003. Ambiguity as a Resource for Design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Ft. Lauderdale, Florida, USA) (*CHI '03*). Association for Computing Machinery, New York, NY, USA, 233–240. https://doi.org/10.1145/642611.642653

[28] Barney G. Glaser. 1978. *Theoretical sensitivity: advances in the methodology of grounded theory.* Sociology Pr, Mill Valley, CA, USA.

[29] Barney G. Glaser. 1992. *Basics of grounded theory analysis: emergence vs forcing.* Sociology Press, Mill Valley, CA, USA.

[30] Barney G. Glaser and Anselm Strauss. 1967. *The discovery of grounded theory: strategies for qualitative research.* Chicago: Aldine, Chicago, USA.

[31] Barney G. Glaser and Anselm L. Strauss. 1965. Discovery of substantive theory: a basic strategy underlying qualitative research. *American Behavioral Scientist* 8, 6 (1965), 5–12.

[32] Torben Kragh Grodal. 1999. Emotions, cognitions and narrative patterns in film. In *Passionate Views, Film, Cognition and Emotion*, Carl Plantinga and Greg M. Smith (Eds.). The John Hopkins University Press, Baltimore, Maryland, USA.

[33] T. Hartmann. 2013. Media entertainment as a result of recreation and psychological growth. In *The International Encyclopedia of Media Studies*, E Scharrer and A Valdivia (Eds.). Blackwell Publishing, London, UK.

[34] E. Tory Higgins. 1997. Beyond pleasure and pain. *American psychologist* 52, 12 (1997), 1280.

[35] E. Tory Higgins. 1998. Promotion and prevention: regulatory focus as a motivational principle. *Advances in experimental social psychology* 30 (1998), 1–46.

[36] Donald Horton and R. Richard Wohl. 1956. Mass communication and para-social interaction: observations on intimacy at a distance. *Psychiatry* 19, 3 (1956), 215–229.

[37] Ioanna Iacovides and Anna L. Cox. 2015. Moving Beyond Fun: Evaluating Serious Experience in Digital Games. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (Seoul, Republic of Korea) (*CHI '15*). Association for Computing Machinery, New York, NY, USA, 2245–2254. https://doi.org/10.1145/2702123.2702204

[38] Ioanna Iacovides and Elisa D. Mekler. 2019. *The Role of Gaming During Difficult Life Experiences.* Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3290605.3300453

[39] Infinite Fall. 2017. *Night in the Woods.* Game [multi]. USA and Canada.

[40] Sledgehammer Games Infinity Ward, Treyarch. 2003-date. *Call of Duty* series. Game [multi-format]. USA.

[41] Petri Lankoski. 2012. Computer games and emotions. In *The Philosophy of Computer Games.* Springer, Heidelburg, Germany, 39–55.

[42] Elisa D. Mekler, Julia Ayumi Bopp, Alexandre N. Tuch, and Klaus Opwis. 2014. A Systematic Review of Quantitative Studies on the Enjoyment of Digital Entertainment Games. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Toronto, Ontario, Canada) (*CHI '14*). Association for Computing Machinery, New York, NY, USA, 927–936. https://doi.org/10.1145/2556288.2557078

[43] Elisa D. Mekler and Kasper Hornbæk. 2016. Momentary Pleasure or Lasting Meaning? Distinguishing Eudaimonic and Hedonic User Experiences. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (San Jose, California, USA) (*CHI '16*). Association for Computing Machinery, New York, NY, USA, 4509–4520. https://doi.org/10.1145/2858036.2858225

[44] Elisa D. Mekler, Stefan Rank, Sharon T. Steinemann, Max V. Birk, and Ioanna Iacovides. 2016. Designing for Emotional Complexity in Games: The Interplay of Positive and Negative Affect. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (Austin, Texas, USA) (*CHI PLAY Companion '16*). Association for Computing Machinery, New York, NY, USA, 367–371. https://doi.org/10.1145/2968120.2968126

[45] Mary Beth Oliver. 1993. Exploring the paradox of the enjoyment of sad films. *Human Communication Research* 19, 3 (1993), 315–342.

[46] Mary Beth Oliver and Anne Bartsch. 2010. Appreciation as audience response: exploring entertainment gratifications beyond hedonism. *Human Communication Research* 36, 1 (2010), 53–81.

[47] Mary Beth Oliver, Nicholas David Bowman, Julia K. Woolley, Ryan Rogers, Brett I. Sherrick, and Mun-Young Chung. 2016. Video games as meaningful entertainment experiences. *Psychology of Popular Media Culture* 5, 4 (2016), 390.

[48] Xiaolan Peng, Jin Huang, Alena Denisova, Hui Chen, Feng Tian, and Hongan Wang. 2020. A Palette of Deepened Emotions: Exploring Emotional Challenge in Virtual Reality Games. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) (*CHI '20*). Association for Computing Machinery, New York, NY, USA, 1–13. https://doi.org/10.1145/3313831.3376221

[49] Carl R. Plantinga and Greg M. Smith. 1999. *Passionate views: film, cognition, and emotion.* Johns Hopkins University Press, Baltimore, Maryland, USA.

[50] Quantic Dream. 2010. *Heavy Rain.* Game [PS3]. Paris, France. Played December 2010.

[51] Quantic Dream. 2018. *Detroit: Become Human.* Game [PS4 and PC]. Paris, France.

[52] Arthur A Raney, Mary Beth Oliver, and Anne Bartsch. 2020. Eudaimonia as media effect. In *Media effects: Advances in theory and research*, Arthur A Raney, Mary Beth Oliver, and Jennings Bryant (Eds.). Routledge, New York, USA, Chapter 17, 258–274.

[53] Scott Rigby and Richard Ryan. 2007. The player experience of need satisfaction (PENS) model.

[54] Rockstar North. 2013. *Grand Theft Auto V.* Game [multi]. Edingburgh, Scotland.

[55] Richard M. Ryan and Edward L. Deci. 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist* 55, 1 (2000), 68.

[56] Richard M. Ryan, C. Scott Rigby, and Andrew Przybylski. 2006. The motivational pull of video games: a self-determination theory approach. *Motivation and emotion* 30, 4 (2006), 344–360.

[57] Holger Schramm and Werner Wirth. 2010. Exploring the paradox of sad-film enjoyment: the role of multiple appraisals and meta-appraisals. *Poetics* 38, 3 (2010), 319–335.

[58] Frode Stenseng, Jostein Rise, and Pål Kraft. 2012. Activity engagement as escape from self: the role of self-suppression and self-expansion. *Leisure Sciences* 34, 1 (2012), 19–38.

[59] Anselm Leonard Strauss and Juliet M. Corbin. 1990. *Basics of qualitative research.* Vol. 15. Sage Newbury Park, CA, Newbury Park, USA.

[60] Ed S. Tan. 2013. *Emotion and the structure of narrative film: film as an emotion machine.* Routledge, New York, USA.

[61] Telltale Games. 2012. *The Walking Dead.* Game [multi-format]. Telltale Games, San Rafael, USA. Played June 2013.

[62] thatgamecompany. 2012. *Journey.* Game [PS3, PS4]. Los Angeles, USA. Played September 2013.

[63] The Chinese Room. 2012. *Dear Esther.* Game [multi-format]. Brighton, UK. Played April 2012.

[64] The Chinese Room and SCE Santa Monica. 2015. *Everybody's Gone to the Rapture.* Game [multi-format]. Brighton, UK. Played March 2016.

[65] J. A. K. Thomson, H. Tredennick, and J. Barnes. 2004. *Aristotle: the Nicomachean ethics.* Penguin Books, New York, USA.

[66] April Tyack and Elisa D. Mekler. 2020. Self-Determination Theory in HCI Games Research: Current Uses and Open Questions. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) (*CHI '20*). Association for Computing Machinery, New York, NY, USA, 1–22. https://doi.org/10.1145/3313831.3376723

[67] April Tyack and Peta Wyeth. 2017. Exploring Relatedness in Single-Player Video Game Play. In *Proceedings of the 29th Australian Conference on Computer-Human Interaction* (Brisbane, Queensland, Australia) (*OZCHI '17*). Association for Computing Machinery, New York, NY, USA, 422–427. https://doi.org/10.1145/3152771.3156149

[68] Ubisoft. 2007 onwards. *Assassins Creed series.* Game [multi]. Montreal, Canada.

[69] Werner Wirth, Matthias Hofer, and Holger Schramm. 2012. Beyond pleasure: exploring the eudaimonic entertainment experience. *Human Communication Research* 38, 4 (2012), 406–428.

[70] Sarah Wiseman, Anna L. Cox, Sandy J. J. Gould, and Duncan P. Brumby. 2017. Exploring the effects of non-monetary reimbursement for participants in HCI research. *Human Computation* 4, 1 (Apr. 2017), 1–24. https://doi.org/10.15346/hc.v4i1.1

A APPENDIX

Table 1: Focused codes

Core Concept	Category	Subcategory	Sub-sub-category	No. of Codes
Emotional Exploration	Features	Requirements		7
		Writing		8
		Characteristics		8
	Emotional Power	Story		6
		Interactive Vulnerability	Personal	9
			Unique	9
			Stronger	7
	Challenge	Moral		5
		Emotional		6
		Intellectual		9
		Mastery		6
	Ambiguity	Interpretation		15
		Reflection		3
		Imagination		2
	Mixed Affect	Catharsis		6
		Revelation		6
		Negative affect		11
		Rollercoaster of feelings		7
	Relatedness	Communicating with others		16
		Understanding others		11
		Needing to be understood		6
		Understanding world		10
		Drive for meaning		6
		Explore self		7
			Understanding self	8
			Safe space	10
			Embodiment as other	4
			learning about self	15
			practice for future	9
			dealing with present	6

B   GAME DETAILS

B.1   Assassins Creed series — Ubisoft

An open world game series played in third person. Players play a series of characters that are part of a resistance to illuminati attempting to take ultimate control of the world. Gameplay revolves around environmental exploration using acrobatics, combat, and stealth.

B.2   Call of Duty series — Sledgehammer Games, Infinity Ward, Treyarch

A series of first person shooters. Each installment is based around a particular theatre of war from modern history, the present or the near future. Move move through a linear plot inspired by military tropes.

B.3   Dear Esther — The Chinese Room

A first-person exploration game where the player explores a deserted Hebridean island by just walking. Along the way they hear audio excerpts of a man reading letters to his deceased wife and observe details in the landscape that give hints of narrative and events connected to the island.

B.4   Detroit: Become Human — Quantic Dream

A third-person cinematic narrative adventure game where players play a series of characters in the narrative. The plot focuses on three androids in futuristic imagining of Detroit, USA, and the issues that face them as they attempt to live alongside humans. During the gameplay players are asked to make periodic decisions that have some effect on the flow of conversations and narrative.

B.5   Everybody's Gone To The Rapture — The Chinese Room and Sony Computer Entertainment Santa Monica

A first-person exploration game where the player explores a deserted bucolic English Village where the inhabitants have mysteriously disappeared. Player actions are limited to walking and limited interaction with a small number of objects and floating lights that are encountered.

B.6   Fallout 4 — Bethesda Game Studios

A first-person open world role-playing game with strong elements of shooting and combat. Set in a dysutopian future that is a mix of steam-punk, advanced technology and 1950s culture, players engage in a series of quests and side quests to explore the game world and progress the central narrative.

B.7   Gears of War 3 — Epic

A third-person shooter set in a dysutopian future where humanoid aliens have pushed humanity close to the edge of extinction. Gameplay revolves around cover-based shooting and brutal combat and players advance through a linear narrative.

B.8   Grand Theft Auto V — Rockstar North

An open world game that can be played in third or first person. Follows the intertwining stories of three criminals in a satirical fictional recreation of Los Angeles and surrounding countryside. Activites and gameplay is varied, but tends to revolve around criminal activity, where the world is navigated on foot or using a variety of vehicles (particularly cars). Players engage in a number of main quests to advance the narrative or side quests as they explore the world of the game.

B.9   Heavy Rain — Quantic Dream

A third-person cinematic narrative adventure game where players play a series of characters in the narrative. The plot focuses on a man hunting down a murderer, whilst also trying to come to terms with the loss of their son - whose death they feel responsible for, and the breakdown of their marraige. During gameplay players are asked to make periodic decisions that have some effect on the flow of conversations and narrative.

B.10   Journey — thatgamecompany

A third person adventure game. Players guide a character through a mysterious desert filled with ruins en route to the top of a mountain in the distance. Along the way, players may team up with one other player for sections of the journey, and communicate using only movement and simple 'chirps'.

B.11   Life is Strange — DontNod

A cinematic narrative adventure game where players play a teenage girl with the power to rewind time. The narrative focuses on coming of age issues and friendships, and the player is presented with several chances to alter the flow of conversation and the narrative throughout the game.

B.12   Night in the Woods — Infinite Fall

A narrative focused exploration game, played from a side-on 2D viewpoint. Set in a run-down rural American town inhabited by anthropomorphic animals, the narrative relates the main character's dropping out of college and returning to their hometown to try and work out their next steps. It focuses on the main character's relationship with themselves, their family, and their friends.

B.13   Papers Please — 3909 LLC

A 2D indie game made by Lucas Pope. Players play the role of a border control guard in a dysutopian fictional recreation of Soviet-Era Eastern Europe called Arstotzka. The main mechanics of the game are reviewing documents presented by non-player characters and deciding whether they are accepted into the country or not, by matching their documents to an ever changing set of criteria. Decisions are complicated by a set of stories and plots underlying the seemingly straight forward puzzle mechanics of matching.

B.14   Soma — Frictional Games

A first-person survival horror game, with a strong focus on narrative and stealth. Story revolves around questions of true identity, existence, and the ethical limits and uses of technology and AI.

B.15   The Walking Dead — Telltale Games

A series of adventure games based on the popular graphic novel and TV series. Players play the role of Lee - a mysterious character with a criminal past who, with others, attempts to survive a zombie apocalypse. Gameplay involves navigation of the environment using a third-person viewpoint and fixed camera angles, solving simple puzzles, and making difficult decisions that impact upon conversations with other characters and the narrative.