

Negative Emotion, Positive Experience? Emotionally Moving Moments in Digital Games

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ABSTRACT

Emotions are key to the player experience (PX) and interest in the potential of games to provide unique emotional, sometimes uncomfortable experiences is growing. Yet there has been little empirical investigation of what game experiences players consider emotionally moving, their causes and effects, and whether players find these experiences rewarding at all. We analyzed 121 players' accounts of emotionally moving game experiences in terms of the feelings and thoughts they evoked, different PX constructs, as well as game-related and personal factors contributing to these. We found that most players enjoyed and appreciated experiencing negatively valenced emotions, such as sadness. Emotions were evoked by a variety of interactive and non-interactive game aspects, such as in-game loss, character attachment and (lack of) agency, but also personal memories, and were often accompanied by (self-)reflection. Our findings highlight the potential of games to provide emotionally rewarding and thought-provoking experiences, as well as outline opportunities for future research and design of such experiences. They also showcase that negative affect may contribute to enjoyment, thereby extending our notion of positive player experience.

Author Keywords

Emotion; Player Experience; Enjoyment; Appreciation.

ACM Classification Keywords

J.4 Social and Behavioral Sciences: Sociology, Psychology;
K.8.0 Personal Computing: Games

Please note that this paper contains major spoilers for several games.

INTRODUCTION

People play games for the experience [20], and one of the aims of player experience (PX) research is to understand what constitutes and contributes to positive gaming experiences [23]. Emotions are commonly considered a key component of good PX [6, 20, 22, 30, 31]. Fun and enjoyment, in particular, are some of the most frequently explored constructs in player experience [6, 24]. Negative affective gaming experiences, however, are far less researched, because they are

seemingly at odds with the focus on fun [20], positive affect and enjoyment [24]. Unfortunately, this may suggest that all negative affective experiences cannot by definition be considered positive, and implies that it is not worthwhile to design for such experiences [23], thereby restricting the spectrum of possible emotional experiences in games [6, 23]. Yet other forms of media such as literature or film are often acclaimed for their ability to convey a wide spectrum of emotional experiences [2, 3], and it has been argued that negative affect may also contribute to engaging player experiences [6, 10, 25]. Moreover, recent research on serious games suggests that emotionally challenging game experiences have the potential to stimulate reflection, thereby raising awareness of real world issues [16] and facilitating prosocial behavior [32].

While research on negative experiences and negatively valenced emotions in digital games is growing (e.g., [11, 15, 35]), the focus often lies on individual games or game aspects. Moreover, while several studies on serious games and uncomfortable experiences imply that players might value such experiences [9, 16, 32], it remains unclear how this relates to core PX concepts, such as enjoyment or need satisfaction.

The present paper reports on a study, in which 121 players reported an emotionally moving experience with a digital game. Employing both psychometric scales and open-ended questions, we explored what emotions were evoked, why players felt this way, what game components contributed to this, and whether players considered these experiences as rewarding. The contribution of this study is threefold: First, we provide evidence of the emotional and personal impact of games, highlighting the potential of emotional game experiences to stimulate (self-)reflection. Second, we identify a variety of interactive and non-interactive game aspects, but also personal factors as a possible source of emotions in games, which may provide a starting point for future research and design of emotional game experiences. Third, we contribute to a better understanding of the interplay between (negative) emotions and (positive) experiences in games, thereby broadening our notion of positive PX.

RELATED WORK

Emotions are oftentimes considered a core component of the media experience [2, 12, 33]. Consequently, a sizable amount of research has been conducted on the role of emotions for the entertainment experience, especially why many people seem to value media experiences evoking negatively valenced emotions, such as horror or drama movies. Oliver and Bartsch [26], for instance, introduced *appreciation* as a possible explanation for why people are drawn towards these genres. Ap-

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preciation denotes an experiential state distinct from enjoyment, in that it is “characterized by the perception of deeper meaning, the feeling of being moved, and the motivation to elaborate on thoughts and feelings inspired by the experience” ([26], p. 76). In a series of studies, Oliver and Bartsch found that whereas people enjoyed light films (e.g., comedies), dramas were more strongly associated with appreciation [26]. Bartsch [2] further identified several gratifications that people derive from emotionally moving movies, such as being able to vicariously experience feelings that they would not experience or display in everyday life. Some gratifications, such as character engagement and social sharing were more strongly associated with positive affect, whereas empathic sadness and contemplativeness were associated with both negative and positive affect.

Emotions are also at the core of the player experience [6, 20, 22, 30, 31], and commonly considered a main reason for why people enjoy playing digital games [20]. Games may offer players a safe environment for experiencing different emotions [17], and Lazzaro [20] argued that games heighten emotional responses to increase player enjoyment. In the study of Bateman et al. [4], players reported experiencing positive emotions, such as amusement, excitement, or contentment. To a lesser degree, players also reported experiencing anger or disgust, indicating that negative emotions also figure into the player experience. Yet research on negative emotions in games is relatively scarce, compared to positive emotions [6, 23], as they are seemingly at odds with the traditional research focus on positive experience. This, for example, is reflected in enjoyment, – another core construct in PX, – being frequently operationalized as positive affect [24].

However, recent findings suggest that negative emotions may play a more complex role for the player experience than initially considered by PX research [6]. Johnson et al. [18], for instance, found that players, who listed massive online battle arena games as their favourite genre, experienced less positive affect and more frustration compared to players of other game genres. Recently, Allison et al. [1] found that players of *DayZ*, a zombie survival game, considered the permanent death of a character a frustrating, albeit necessary component for the game to be enjoyable. Similarly, Lazzaro [20] stated that frustration is essential to “hard fun”, as it heightens the feelings of *fiero* (a positive emotion of personal triumph over adversity, akin to pride) once a game’s challenges have been mastered.

Moreover, Marsh and Costello [23] argue that the prevalent focus on positive experiences, such as fun and enjoyment, poses a shallow and cursory approach to game design, thereby restricting the spectrum of possible emotional experiences in games. Indeed, a recent analysis of professional game reviews [11] revealed that core blockbuster games mostly offer functional challenge, which evokes few emotions other than the frustration/*fiero* cycle of hard fun [20]. Based on the notion of uncomfortable interactions introduced by Benford et al. [5], Marsh and Costello [23] coined the term *serious experience* to denote all types of game experiences that are not exclusively positive. Serious experiences encom-

pass negative, but also mixed (positive-negative), as well as thought-provoking experiences. Recent studies on serious games showcased the potential of emotionally affecting experiences. Iacovides and Cox [16], for instance, evaluated serious experience in games designed to promote reflection on human error and blame culture in the healthcare domain, and found that the most impactful game still lingered with players days later. Similarly, Steinemann et al. [32] found that while *Darfur is Dying* was rated low on enjoyment, it afforded more appreciation and in turn more donations than non-interactive media.

Besides frustration, researchers have only recently started looking into negative emotions in games. Wilson and Sicart [35], for instance, discussed different types of abusive game design, which aim to elicit feelings of distrust, discomfort or embarrassment, or even subject players to physical pain. Next, Harrer [15] analyzed several examples of in-game loss, how it manifests both in gameplay and controls, as well as in the game narrative. However, little research has been conducted on how players experience and evaluate mixed or negative emotions in games. Brown et al. [9] designed *Taphobos*, a virtual reality game for uncomfortable interactions, where one of two players had to lay in a life-size coffin. They interviewed players before, during and after interacting with the game, and found that after their initial nervousness had dissipated, players found that *Taphobos* had provided them with an engaging and thought-provoking experience.

In fact, Burnell [10] pointed out that emotions, in particular negative emotions, facilitate player involvement and claimed that negative affective reactions could be evoked by “breaking” the psychological needs for autonomy, competence and relatedness, themselves well established PX constructs [29]. Similarly, Birk et al. [6] stressed that under certain circumstances negative emotions may enhance the player experience, and Brown and Cairns [8] identified high emotional investment as characteristic for mid-level immersion. Indeed, Montola [25] found that while players experienced extreme live action role-playing as initially unpleasant, as they felt emotions of disgust and desperation, they derived satisfaction from the insights and feelings of accomplishment that confronting the game provided them. Similarly, Cole et al. [11] argued that avant-garde games often confront players with emotionally and cognitively effortful subjects (i.e., emotional challenge) instead of functional challenge. Another recent study [21] found that only players reporting high sensation seeking and low empathy derived enjoyment from fear experiences in games. Finally, Oliver et al. [27] found that negative affect (e.g., feeling tense) was more pronounced in meaningful than in fun game experiences.

While this body of research has provided valuable insights, most of the work only investigated specific emotions (e.g., [21]), or individual games or game aspects (e.g., [1, 9, 15]), thereby offering only a fragmented glimpse into the role of negative emotions for the player experience. Moreover, many of these findings have not yet been examined from the player’s perspective (e.g., [10, 11]). Therefore, the present study aimed to explore what emotions beyond the purely pos-

itive players experience in games, as well as whether and – if so, – why they enjoy and/or appreciate such experiences. Moreover, we wished to obtain comprehensive and detailed descriptions of emotionally moving game experiences. In particular, we wanted to explore the “causes” of such experiences, that is, what game components may have contributed to these emotional reactions. For these reasons, we conducted an online survey containing psychometric measures of several player experience constructs, as well as open-ended questions.

METHOD

Study participants were asked to report an *emotionally moving experience*, as we were mainly interested in emotional reactions that are *not purely positive* [23]. Rather than restrict ourselves to one particular emotional reaction (e.g., sadness), we chose to focus on *emotionally moving experiences*, because they are typically characterized by negative or mixed affect [3]. Hence, we believed that this would cover a sizable spectrum of the possible serious experiences Marsh and Costello outlined in their framework [23]. A preliminary series of 12 interviews [7] confirmed that players had no difficulty thinking of and recounting an emotionally moving game experience.

Participants

Participants were recruited from various gaming forums (e.g., Talk Nintendo, TV Tropes), social networks (e.g., Facebook, Twitter), as well as gaming-related groups on Facebook. In total 121 participants (23.1% female) completed the survey in entirety. Their age ranged from 14 to 48 years (mean = 26.27). On average, participants had been playing digital games for 17.47 years (ranging from 2 to 39 years) with varying preferences for game genres. The three most popular genres were RPGs and action RPGs ($n = 109$), followed by adventure and action adventure games ($n = 95$), as well as strategy and real time strategy games ($n = 71$). Popular genres for other media were, for example, science fiction, comedy, drama, fantasy, and thrillers. In exchange for completing the survey, participants could enter a lottery to win one of 12 \$10 (USD) Steam gift cards.

Procedure

Upon clicking the survey link, participants were introduced to the study. In the first part of the survey, participants were then asked to “*bring to mind an emotionally moving experience you had with a digital game. Try to describe this particular experience as accurately and detailed as you remember in at least 50 words, and try to be as concrete as possible. Please write about your thoughts and feelings that may have been brought up by this particular game experience and about how you responded emotionally to the particular event(s) of this game experience. You can use as many sentences as you like, so we can easily understand why this was such an emotionally moving experience for you*”.

Afterwards, participants were asked to “*clarify your thoughts and feelings regarding this particular game experience. Specifically, where you think they came from and/or what caused these thoughts and feelings*”.

After answering the two open-ended questions, participants were asked when their experience had taken place. Then, they rated their experience in terms of need fulfilment, enjoyment, appreciation and affect. Finally, they were asked to provide some information on demographics and genre preferences for games and other media (e.g., movies, TV-series, books). At the end of the survey, participants could enter their email address if they wished to participate in the prize raffle. The survey took 27.5 min to complete on average.

Measures

All measures consisted of 7-point Likert scales ranging from strongly disagree (1) to strongly agree (7). Reliability scores (Cronbach’s α) and descriptive statistics are listed in Table 1.

Variable	Cronbach’s α	Source	M (SD)
Enjoyment	.87	[26]	5.95 (1.31)
Appreciation	.76	[26]	5.69 (1.31)
Affect			
Happy	.85	[28]	3.95 (1.49)
Sad	.70	[28]	5.54 (1.52)
Meaningful	.76	[28]	4.70 (1.52)
Needs			
Autonomy	.68	[29]	4.69 (1.46)
Character Engagement	.89	[2]	5.38 (1.59)
Competence	.83	[29]	5.11 (1.59)
Contemplativeness	.90	[2]	4.66 (1.71)
Experiencing Emotions	.78	[2]	5.56 (1.32)
Social Sharing	.89	[2]	4.64 (1.74)
Vicarious Release	.83	[2]	4.19 (1.60)

Table 1. Reliability and descriptive statistics for all psychometric scales.

Enjoyment and Appreciation

Enjoyment and appreciation were measured using the scales developed and validated by Oliver and Bartsch [26]. While originally intended for assessing movie experiences, these scales were also successfully applied to games [27, 32]. Enjoyment was measured, as it is considered a core component of player experience [24]. Appreciation has been suggested as a complementary type of media experience besides enjoyment [26], and has been linked to the degree to which media is experienced as moving and thought-provoking [3].

Affect

To assess the general affective quality of the experiences, three broad types of affect were measured, as operationalized by Oliver and Raney [28]: Happy affect (e.g., upbeat), sad affect (e.g., sad), and meaningful affect (e.g., introspective).

Needs and Emotional Gratifications

The Player Experience Need Satisfaction scale (PENS, [29]) was used to assess the needs for autonomy, competence, and relatedness with three items each, as was already done in previous PX research (e.g., [18, 27, 29]). However, Oliver et al. [27] suggested that additional needs may be relevant predictors of game enjoyment and appreciation, especially for

meaningful (versus fun) game experiences. We hence employed the questionnaire developed by Bartsch [2], which explicitly captures emotional gratifications in entertainment experiences.

Since there was no prior research on whether these gratifications also apply to the gaming context, we conducted a preliminary interview study (see [7] for more details). Based on its results, we included the scales for emotional engagement with characters, contemplativeness, vicarious release of emotions, and social sharing of experiences [2]. *Emotional engagement with characters* (hereafter referred to as character engagement for the sake of brevity) denotes the degree to which one empathizes with fictional characters. *Contemplativeness* describes the potential of the movie experience to provoke thought. *Vicarious release of emotions* refers to the degree to which people like to experience emotions that are difficult to experience in everyday life, for instance, because it is inappropriate to do so. Next, people often value sharing their emotional experiences with others, a notion subsumed under the construct *social sharing*. Bartsch also stated that people find it gratifying to *experience strong emotions* in itself [2]. Therefore, we included an adapted version of Bartsch's empathic sadness scale, modified to more clearly cover emotions in general, as we assumed that not all participants would report experiences of sadness. Following the original item "I liked to be overwhelmed with emotion", the item "I liked to feel strong emotions" was added, and the item "I liked the experience of being moved to tears" was shortened to "I liked the experience of being moved".

Bartsch argued that social sharing and character engagement cover differing aspects of relatedness [2]. Therefore, we checked whether the PENS and emotional gratification scales formed independent factors by calculating a factor analysis using Varimax rotation. As relatedness and social sharing loaded onto one factor, we decided to exclude relatedness from further analysis.

Development of the Coding System

The open-ended answers were coded using qualitative content analysis, based on an expanded version of the descriptive system developed by Gabrielsson and Lindström-Wik [14]. Gabrielsson and Lindström-Wik originally developed their coding system to analyze strong experiences with music, putting special emphasis on the emotional responses people reported from their experience. Therefore, we deemed it a suitable starting point for the analysis of emotionally moving experiences in games. Based on an initial selection of 30 randomly chosen experiences, the first author applied and expanded this coding system to also cover game-related aspects that emerged from the experience accounts. The final coding system contained 15 main categories, which were further divided into 43 sub-categories. Descriptions, examples, and frequencies of all categories are listed in the supplementary material available at <http://dx.doi.org/10.1145/2858036.2858227>.

All open-ended answers were coded by the first author. Sentences formed the smallest unit of analysis. Note that each open-ended answer could contain multiple codes and that in-

dividual sentences within one answer could be assigned to several different categories. To assure interrater reliability, the second author independently coded a random subset of 80 experiences. The interrater agreement was substantial (mean $\kappa = .787$ over all codes, range = .637 - 1.000). To identify common and notable themes, experiences were grouped in terms of what "caused" the emotional reaction according to participants' accounts.

RESULTS

Participants reported a variety of games of different genres. The most frequently mentioned titles were games from the Final Fantasy series ($n = 20$), the Mass Effect series ($n = 8$), the BioShock series and The Last Of Us (both $n = 6$). Time since the experience had taken place ranged from less than one month ($n = 10$), two to six month ($n = 13$), seven to twelve month ($n = 13$), one to two years ($n = 25$), more than two years ($n = 35$), and more than ten years ago ($n = 25$). Notably, participants reporting that the experience had taken place more than two years (including those over ten years) represented nearly half (49,6%) of the sample.

As illustrated in Table 1, mean scores for enjoyment and appreciation were overall high, suggesting that most players considered their emotionally moving game experiences as very positive. Sadness was the most salient affective reaction, followed by meaningful and happy affect. Taken together, this suggests that negatively valenced emotions, such as sadness, may "coexist" with high appreciation and enjoyment. In terms of needs, experiencing emotions was most salient, followed by character engagement and competence.

To further explore the relationship between needs, affect, enjoyment and appreciation, we calculated several hierarchical multiple regressions (method: "Enter"). First, after controlling for age and gender, all seven needs were entered into the regression models as predictors, and separate regressions were run for enjoyment ($R = .68$, R^2 adjusted = .42, $F(9, 111) = 10.50$, $p < .001$) and appreciation ($R = .70$, R^2 adjusted = .45, $F(9, 111) = 11.79$, $p < .001$). Another set of separate regressions was calculated with happy, sad and meaningful affect as predictors of enjoyment ($R = .60$, R^2 adjusted = .33, $F(5, 115) = 12.68$, $p < .001$) and appreciation ($R = .73$, R^2 adjusted = .51, $F(5, 115) = 25.56$, $p < .001$). Indicators of multicollinearity (tolerance and variance inflation factors) were within acceptable limits (tolerance $> .25$; VIF < 1.88). As illustrated in Table 2, competence, autonomy, experiencing emotions, and character engagement all significantly predicted enjoyment. In turn, experiencing emotions and contemplativeness were significant predictors of appreciation. Notably, experiencing emotion predicted both enjoyment and appreciation, suggesting that players considered the experience of emotions in itself as gratifying. With regards to affect, happy affect significantly predicted enjoyment, whereas meaningful affect predicted appreciation. Sad affect was a significant positive predictor of both appreciation and enjoyment, suggesting that player particularly valued experiencing sadness.

We also calculated partial correlations to check whether affect and needs were related. As listed in Table 3, experi-

		Appreciation	Enjoyment
Affect	Happy	-.02	.51**
	Sad	.45**	.32**
	Meaningful	.40**	.02
Needs	Autonomy	.02	.25*
	Character Engagement	.09	.29*
	Competence	-.17	.22*
	Contemplativeness	.46**	-.04
	Experiencing Emotions	.29*	.21*
	Social Sharing	.05	.02
	Vicarious Release	.02	-.11

Table 2. β weights of affect and need measures for appreciation and enjoyment. * Significant at $p < .05$. ** Significant at $p < .01$.

encing emotions correlated significantly with both sad and meaningful affect. This suggests that players felt particularly overwhelmed with emotion, the more sad and meaningful affect they experienced. Autonomy was positively correlated with happy affect, but negatively correlated with negative affect. It seems that the more autonomy players experienced, the happier they felt. Concurrently, the less autonomy players experienced, the more sadness they reported. Character engagement was positively correlated with sadness, suggesting that sad players empathized more with characters or vice versa. Lastly, meaningful affect was substantially correlated with contemplativeness.

In their written experience accounts, participants mentioned a wide array of emotions. Players mentioned experiencing both negative and positive emotions. In terms of negative emotional responses, sadness (incl. terms like heartbreak, grief, etc.) was most frequently mentioned ($n = 58$), followed by emotions related to shock and fear (e.g., shock, fear, anxiety; $n = 21$). Nineteen players stated that their experiences contained moments of frustration, reporting emotions, such as anger, frustration, or feeling upset, whereas relatively few players mentioned feelings of guilt and regret ($n = 5$). Concerning positive emotions, players described emotions related to fun (e.g., fun, joy, happiness; $n = 17$) and achievement (pride, satisfaction; $n = 9$). Eight players made reference to feelings of awe or amazement. Twenty-nine players explicitly mentioned mixed affective responses, that is, they experienced both positive and negative emotions at the same time. Specifically, these statements often listed seemingly conflicting emotions, such as *'It was a mixture of happiness and sadness. Happiness of having finished the game, and sadness from the main character being sacrificed'* (P89, Final Fantasy X). Lastly, many players ($n = 39$) emphasized how intense and powerful their emotional reaction to the game events were, without necessarily specifying the emotional valence or making reference to any particular emotions: *'I was so moved, I bursted out in tears and almost couldn't see what happened next'* (P99, The Legend of Zelda Ocarina of Time).

Common and Notable Themes

In the following paragraphs, we describe the most prominent themes that emerged from the qualitative analysis. Players

Needs	Affect		
	Happy	Sad	Meaningful
Autonomy	.34**	-.20*	.03
Character Engagement	-.11	.24*	-.06
Competence	.13	.10	.06
Contemplativeness	.08	.07	.52**
Experiencing Emotions	.06	.31*	.27*
Social Sharing	.01	.04	-.11
Vicarious Release	-.03	.07	.15

Table 3. Partial correlations between affect and needs. * Significant at $p < .05$. ** Significant at $p < .01$.

listed a variety of interactive and non-interactive game components that they thought “caused” or contributed to their emotional reaction. Specifically, loss, character attachment, agency and responsibility, achievement, as well as atmosphere were identified. Notably, personal factors also figured prominently in emotionally moving game experiences. Full text examples of the individual themes are provided in the supplementary material available at <http://dx.doi.org/10.1145/2858036.2858227>.

Loss

More than half of the participants ($n = 63$) narrated an occurrence of in-game loss, that is, a scene in which either a character had died (e.g., *'the father of a group member was killed by a robot'* (P100, Xenoblade Chronicles)) or some other separation took place (e.g., *'at the end of the game Tidus has to disappear as he is only a dream'* (P65, Final Fantasy X)). Sadness was the most prominent emotion, which was also reflected in the sad affect score ($M = 6.14$, $SD = 0.91$). Nevertheless, the enjoyment ($M = 6.07$, $SD = 1.23$) and appreciation ($M = 5.97$, $SD = 1.03$) scores were quite high. In particular, character attachment played a crucial role. Players felt sadness because they cared about the lost character: *'My emotional attachment to the character that died as well as the identification with the main character lead me to feel sorrow at Gremio's death'* (P9, Suikoden). Others mentioned that they empathized with the characters left behind, *'those were very sad moments, as I empathized with the remaining character and their loss'* (P83, Brothers - A Tale of Two Sons). Moreover, having gotten to know the character(s) further contributed to players' sadness. For instance, P114 noted that the loss *'was so heartbreaking like nothing I had experienced in a game before - especially because you kind of got to know the little family a bit before the inevitable loss of his daughter'* (P114, The Last of Us).

Notably, the experience of in-game loss inspired players to think about themselves, with some even interrupting their gaming session to reflect on the game events. Specifically, players pondered what they would have done in the same situation: *'I remember how I had to stop the game for some minutes to think about that heavy situation and about what I would have done'* (P91, The Last of Us). Further, for some players the experience of in-game loss brought back memories of personal losses, which accentuated their emotional

response. For instance, one participant stated that when one of the main characters died *'I believe the feelings came from a childhood experience of an unexpected death of a family member/pet. It was the shock like losing a friend'* (P67, Final Fantasy VII).

Occurrences of in-game loss were often described as unique, memorable and unforgettable: *'Never has a video game presented the story of the hero, who sacrifices himself, this beautifully and this touching. I will never forget this moment!'* (P58, Gears of War 3). Especially the suddenness with which many instances of character death or separation happened had a big impact on players' emotional response. One participant noted that *'one of the roots of the feelings I think was that the event came quite unexpected'* (P46, Final Fantasy VII). Moreover, music and voice acting also impacted the emotional experience: *'The music at the point of his sacrifice was also deeply moving, and evokes great sadness in me even now'* (P9, Suikoden). Others commented on how the visuals intensified their feelings: *'When I saw one of my crew members in this pod and started to hear some kind of whirring machinery beneath her, saw a splash of blood across the pod, saw her eyes widen and dart around, I panicked with her'* (P38, Mass Effect 2).

Finally, some players commented how loss of a character was also associated with the loss of items or game functionality. One player, for instance, described the death of a main character as follows: *'Not only did I like the character personally, she was also an really important class (Healer) which I was then lacking of course'* (P46, Final Fantasy VII). Another player described that when one of the main characters died, some of the game controls lost their functionality. He noted that the *'loss is reflected in the game's control scheme, giving the loss a physical real-world manifestation'* (P83, Brothers - A Tale of Two Sons).

Character Attachment

Character attachment – a feeling of connection or bond with game characters, – was commonly mentioned ($n = 85$) as the source of emotional resonance, as was also reflected in the relatively high 'emotional engagement with character' score ($M = 5.40$, $SD = 1.54$). Character attachment usually formed with players investing time and effort (e.g., levelling a character) into the game: *'I think that it came from the connection I formed from the long hours of playing'* (P2, Dragon Age: Origins). Players also often emphasized how they got to know the characters: *'But seeing her attitude adjustment throughout the game and her true nature of wanting to do good has made her grown on me'* (P21, The Legend of Sword and Fairy).

Interestingly, there were different nuances in how participants described their attachment to the characters. Some of the participants simply mentioned that they liked the characters, without further elaboration. For example, they simply felt *'kind of connected with the guy'* (P96, Dead Space 1), whereas several participants commented on how they empathized with a character, sharing their feelings: *'It wasn't hard for me, as a player, to feel the regret of the character'* (P52, BioShock Infinite). In contrast, some players did

not reference any emotional engagement with characters, but took up character goals as their own: *'I wanted to kill him so much. It got me motivated to keep playing so I can beat him'* (P46, Final Fantasy VII).

Some players commented on how they *'came to view them (the characters) as almost people'* (P27, Dragon Age: Inquisition) and noted how they grew close to characters, comparing or referring to them as friends. For instance, *'when I came to accept his death I was near tears and said my farewells like I would see off an old friend'* (P77, Final Fantasy VII Crisis Core).

Finally, some players noted that they felt emotionally involved, because they identified themselves with a character. One player noted that *'you become the character'* (P27, Dragon Age: Inquisition), while another participant described a character as *'kind of my digital alter ego'* (P95, Final Fantasy IX). Identification often was accompanied by reflections on the self, with the player drawing parallels between themselves and a particular character: *'While playing the game, I experienced some changes in my life. Therefore I saw her cutting her hair as a metaphor for getting rid of old baggage, giving in to her feelings and becoming an independent woman - not caring what others think about her'* (P95, Final Fantasy IX).

Agency and Responsibility

Agency or the lack thereof was another frequent theme. Many players reported that the game allowed them to act as they wanted, suggesting that they felt in control of their own actions. Player agency typically applied to optional game content, such as seeing all the dialogue a particular character has to offer, engaging in side quests, or simply exploring the game world at their own leisure: *'As I was playing, I decided to find the parts to build myself a Seamoth (a little submarine) to go explore further'* (P59, Subnautica). This was also reflected in their relatively high autonomy ratings ($M = 5.06$, $SD = 1.41$). Further supporting the positive relation between enjoyment, happy affect and autonomy, players mostly mentioned positive emotions, such as feeling happy or *'enjoying the openness of the land and in a way it did make me feel like there was a sense of freedom and control'* (P22, SOCOM II: U.S. Navy SEALs). However, agency was sometimes also associated with negative emotions, such as sadness, worry and anger, as players pondered the consequences of their previous or future actions: *'I already felt uneasy on the menu screen. I didn't want to lose my beloved crew, but I had to take a decision. Sure enough one of my crew members died, which made me very sad, even furious'* (P101, Mass Effect 2).

A special case of agency – which we termed *responsibility*, – was when players had to make in-game decisions. Independently of whether players were 'forced' by the game to take a decision or not, decisions were associated with higher autonomy scores ($M = 5.58$, $SD = 0.97$) compared to overall mean autonomy ($M = 4.69$, $SD = 1.46$). While decisions themselves evoked positive emotions, feelings of guilt were especially characteristic, as players took responsibility for the consequences of their actions: *'The second time around I killed my friends, and I felt somewhat guilty for doing so, and im-*

moral' (P55, Far Cry 3). In fact, players often pondered the consequences of their actions, as *'every decision resulted in a character close to me dying'* (P54, The Last of Us). Indeed, accounts of in-game decisions were often about the death of a character, as a result of the player's decisions. However, players provided with decisions usually evaluated the game narrative positively: *'To see that story unfold, to actually help it unfold and to see the decisions made by each of the characters. It made it a very emotionally charged story for someone who was properly invested in it'* (P39, The Last of Us). Moreover, players valued the attachment to characters. Character attachment and the risk of loss, made players *'evaluate every decision extremely cautious'* (P1, Mass Effect 2).

Concurrently, lack of agency was a source of negative emotion. A few participants explicitly stated that they felt forced to perform a certain action in-game, which was typically associated with negative emotions. For instance, P107 explained that they unwillingly *'had to torture that guy. I really hated it and did not want to do it but the game didn't leave the choice to me. (...) It was really disturbing'* (P107, Grand Theft Auto V). Other players wished that they could have been able to take action, but were presented to do so by the game narrative: *'I did not want to say goodbye, but I couldn't do anything'* (P93, The Legend of Zelda: Skyward Sword). Lack of agency often evoked anger in players *'due to the fact that I couldn't do anything to prevent it'* (P60, Star Wars: Knights of the Old Republic) and *'caused some sort of helplessness'* (P46, Final Fantasy VII).

Achievement

Achievement, be it by beating a boss or managing to play the game to the end was also experienced as emotionally moving. However, positively valenced emotions were predominant in this theme, ranging from happiness, pride, amazement, to satisfaction and excitement. Many players described their experiences in purely positive terms, for instance by simply stating that *'I was extremely happy'* (P112, Monster Hunter 3 Ultimate). Unsurprisingly, achievement scored lowest on sad affect ($M = 3.64$, $SD = 1.59$) of all themes. However, some players reported conflicted feelings, when they defeated a formerly friendly character or a boss with whom they empathized: *'I felt kind of sad that I had to fight my friend, but at the same time he looked so badass that I really enjoyed fighting him'* (P92, Bloodborne).

Atmosphere

Twenty-nine players reported that they were emotionally moved solely by the game's atmosphere: *'I was playing journey, when the astonishing landscapes just felt like seeing a painting coming to life'* (P81, Journey). These accounts emphasized how graphics, music and sound came together to form a moving experience: *'It put a big smile on my face when I looked around and saw living creatures, only because I've always wanted to go diving. I turned off the music so I could listen to the actual sounds, and that's when the game really grabbed me. I could hear what sounded like whale sounds, far far away. Then, there would be closer, brittle noises. I felt like I was really in the ocean, hearing all the noises ring throughout, and that was what really made me*

attached to the game, it was that experience' (P59, Subnautica). Such experiences were described in terms of awe and amazement (e.g., *'I was truly amazed by it'* (P59, Subnautica)). Some players also recounted experiences of threat and fear in games, such as when hiding from an enemy or exploring a deserted place: *'The low light atmosphere, slight disorientation and the constant pulse of the tracker made for a fearful experience at times'* (P31, Xenomorph).

Personal Memories and Self-Perception

To our surprise, players not only listed game-related aspects as the "cause" of their emotional experience, but also often made reference to personal events. When players were faced with the loss of a character, they associated it with past life events or were reminded of loved ones: *'I assume that this situation subconsciously reminded me of my brother, who died when I was a kid'* (P51, Thief 1). Several players were particularly affected by the death of a character, as it felt very real to them: *'It reminded me of myself, as my brother died almost a year ago and it felt exactly the same. There was this deep pain in my heart as if someone was ripping it apart and I was speechless, not really able to process what just happened'* (P44, Brothers - A Tale of Two Sons). The player further explained that these memories allowed them to experience emotions they had to restrain in everyday life: *'Most of my social contacts can't handle the weight of this experience and don't know how to handle me, so I have to be strong all day long and when I played this game and saw this scene, it triggered all the feelings kept away and made me feel like my brother died yesterday'* (P44, Brothers - A Tale of Two Sons).

Many players also stated that the emotional game experience inspired them to think about their life and how they perceived themselves: *'Am I being too selfish?'* (P24, Journey) or *'as someone who plays quite a lot of video games, in place of normal entertainment like television and movies, this really made me look at myself and see that I needed to focus on the bigger picture in my own life for a change. To find out where I am going with my life and if my current lifestyle is one that I genuinely enjoy. It was a very personal moment brought on by only a couple of hours of playing a game that had a thoughtful story and message'* (P74, Little Inferno). Game characters often prompted self-reflection, when they were seen as role models: *'It would be an understatement to say that Phoenix Wright is one of very few people/characters that I aspire to be like. It's very, very difficult to see something so destructive happen to someone you care about, whether they're real or not. It's a moment that affected me on a deeply personal level, and I believe that's why it was such an emotional experience to me'* (P63, Professor Layton Vs. Phoenix Wright: Ace Attorney). In some cases, emotionally moving game experiences even triggered behavior change: *'Now I try to be more helpful to others'* (P54, The Last of Us).

DISCUSSION

Our study expanded upon current research on emotion in games by exploring emotionally moving game experiences from a player perspective. We found that players reported a wide spectrum of emotions, with sadness being the most

frequently mentioned emotion. Most players found such experiences rewarding, as reflected in the high ratings on appreciation and enjoyment. In particular, they seemed to appreciate and enjoy the experience of strong emotions in itself, even for negatively valenced emotions such as sadness. Yet autonomy, competence, and emotional engagement with characters also contributed to enjoyment, whereas contemplativeness was associated with increased appreciation only. Emotions and thoughts were evoked by several interactive and non-interactive game aspects, such as character attachment, character loss, achievement, agency and responsibility, as well as the game's atmosphere. But personal memories and reflectiveness also figured prominently in emotionally moving game experiences, and sometimes even had a deep personal impact on players. In the following, we discuss the theoretical and practical implications of these findings.

Implications for PX Research

A variety of typically negatively valenced emotions were reported in our study, with sadness having been the most frequently mentioned emotion. Nevertheless, players rated emotionally moving game experiences high on enjoyment and appreciation. Moreover, not only did negatively valenced emotions and high enjoyment ratings coexist, but experiencing emotions, as well as sad affect significantly predicted enjoyment and appreciation. Taken together, this indicates that players did value their experience *not in spite* of negative emotions, but actually *thanks* to the game inspiring strong emotional reactions, including sadness. It seems that not only positive emotions are “fun” [20], but negative affect may also contribute to a positive player experience [1, 4].

Besides experiencing emotion, competence, autonomy, and character engagement were linked to enjoyment, whereas contemplativeness was related to appreciation. This is largely in line with previous findings on need satisfaction and player experience [18, 27], as well as the notions of hard and easy fun [20]. It further supports the fact that competence and autonomy are important to game enjoyment [27, 29]. It also comes as little surprise that emotional engagement with characters was related to enjoyment, since it shares many similarities with relatedness [29]. Players did not experience contemplativeness as enjoyable. However, this does not mean that contemplativeness did not contribute to a positive experience, as it was related to appreciation, arguably itself a type of positive experience [26, 27]. Seeing how appreciation has also been suggested as a facilitator of prosocial behavior in serious games [32], it might prove useful to expand the notion of positive player experience to not only include enjoyment (cf. [24], but appreciation as well.

Overall, these findings contribute to our understanding of how positive and negative emotions shape the player experience [6]. While positive player experience has largely been equated with enjoyment [24], fun [20] and positive affect [6], our study indicates that negative or mixed affect need not forcibly preclude enjoyment (or appreciation). In other words, the experience of negative emotions in games must not necessarily suggest that the experience itself was negative. As Benford et al. [5] argued, negative affect can be en-

tertaining. Recall also that Marsh and Costello [23] differentiate between positive, thought-provoking, positive-negative, and purely negative game experiences. Many of the experiences recounted in our study mentioned both negative and positive emotions, suggesting they fit the notion of positive-negative experience. Several may undoubtedly be categorized as thought-provoking experiences. Although, it could also be argued that the high ratings on appreciation and enjoyment ultimately characterized most of them as positive experiences.

Game Elements Contributing to Emotional Experiences

Our study highlighted the role of several game elements in contributing to or possibly causing emotional reactions in players. Many of these game elements have already been examined or discussed in previous work, such as making decisions (i.e., interactivity [32]), loss [1, 15], game narrative [27], character attachment [15, 16], as well as music and sound [3]. Additionally, our study identified a few more game elements as a possible source of players' emotions.

First, agency was an important factor, as it gave players control over their actions. In line with previous studies [18, 27, 29], this was associated with increased autonomy, which itself was related to enjoyment and happy affect. But agency also meant that players had to assume responsibility over their actions, which sometimes resulted in feelings of guilt or regret over their decisions. Similarly, having little or no control over their actions elicited varying reactions from players: Some players experienced the lack of agency as disturbing, which resulted in feelings of anger and helplessness. This reaction was also reflected in the negative correlation between autonomy and sad affect. Indeed, Burnell called for caution when “breaking” player autonomy, lest it detract from the player experience [10]. However, keep in mind that experiencing strong emotions and sadness were also positive predictors of enjoyment. While autonomy itself was associated with increased enjoyment and happy affect, reduced autonomy might thus still contribute to a positive experience, when players appreciate and enjoy experiencing the resulting sadness. It seems that deliberately restricting player autonomy can make for an intensely emotional experience [10], when players care for characters (e.g., having to bury the brother in *Brothers – A Tale of Two Sons*), or have agency over smaller decisions (e.g., choosing which crew member to talk to in the *Mass Effect* series). Indeed, other players, while conscious of the fact that they were “forced” by the game to perform a specific action, mentioned that this heightened their emotional reaction. A more in-depth examination of the role of player agency, autonomy, and responsibility in triggering certain emotional responses (e.g., guilt, helplessness) might prove insightful, especially when designing serious games (see also [16, 32]).

Next, Burnell claimed that the death of a character may reduce feelings of relatedness [10], whereas Harrer suggested that in-game loss affects players, because these scenes often occur late in game, giving players enough time to connect with the characters [15]. In our study, character attachment was one of the most frequently mentioned reasons for why players deemed their experience as emotionally mov-

ing, which was also reflected in the high ratings of character engagement. These findings suggest that character loss must not forcibly reduce feelings of relatedness. Rather, loss may actually serve to emphasize and intensify the connection players feel towards characters. Similarly, Allison et al. [1] found that losing a character in *DayZ* was accompanied by sadness for some players, whereas losing equipment was associated with frustration. According to Harrer [15], loss starts with a bonding phase (i.e., getting to know the character) that establishes a certain character as relevant to gameplay, followed by a non-interactive sequence that players cannot influence, in which the character is lost (e.g., death or separation), which then has consequences for the subsequent gameplay. In our study, the loss of a character in certain games (e.g., *Final Fantasy VII*) was also accompanied by the loss of game-play functions (no healer), which possibly further accentuated players' sadness or anger. It would be interesting to study whether players experience in-game loss differently, depending on whether it was triggered by a pre-scripted cutscene, or through the player's own actions and decisions (e.g., the *Mass Effect* series), as well as whether the loss has any consequences for gameplay (e.g., losing a NPC non-relevant to gameplay versus a playable character).

Finally, not all emotionally moving experiences were characterized by mixed or negative affective responses, as many accounts of in-game achievement were described in purely positive terms. Mastering challenges [11, 20], and the resulting feelings of competence [18, 27, 29] are well known factors contributing to players' enjoyment of digital games. Nevertheless, some players reported ambivalent feelings, for example, when having to fight an initially friendly character, which then evoked both positive emotions, such as pride, as well as sadness. This is interesting, because it suggests that players experience different emotions other than the frustration/fiero cycle of hard fun only [20]. It also showcases that functional and emotional challenge [11] need not always be mutually exclusive. Instead, the friction caused by both the in-game conflict and the conflicting emotions may perhaps even add to the intensity of the experience.

Emotional Game Experiences Stimulate (Self-)Reflection

Both the quantitative and qualitative data suggest that emotional gaming experiences inspired contemplativeness in players, further highlighting the potential of digital games to provoke thought [9, 16, 27, 32]. And even though many core games do not primarily aim to be particularly thought-provoking [11], many of the games listed in our survey were commercially available blockbuster titles.

Interestingly, emotionally moving game experiences not only stimulated players to ponder general or game-related questions, but oftentimes triggered self-reflection. The latter struck us as especially interesting, as players not only pointed out game elements, but often mentioned personal aspects as potential causes for their emotional reactions. As of now, this aspect has received relatively little attention in PX research.

Firstly, emotional game experiences often prompted reflection by reminding players of past life events, which perhaps

even further intensified the emotional experience. Harrer previously argued that "throughout a play experience players establish meaningful links between the medium, their cultural memory, and the real world" ([15], p. 610). Similarly, our data indicates that this was especially the case when players lost or were separated from a well-liked character. For instance, several players recalled the loss of loved ones when playing *Brothers - A Tale Of Two Sons*, and commented on how similar the feelings of grief evoked by the game events were to their own personal experiences.

Secondly, emotionally moving game experiences inspired players to reflect on how they would have reacted if they were confronted with the same situation in real life. Other players specifically questioned their in-game actions, when these went against their own moral values (e.g., things they would never do in real life, such as the infamous torture scene in *Grand Theft Auto V*) or when they thought they had done something wrong. This finding seems especially relevant for serious games, as they often aim to be thought-provoking [23]. Iacovides and Cox [16], for instance, found that allowing players to take their own – sometimes bad – decisions in a game, led them to think more about the everyday challenges facing healthcare professionals. Additionally, such experiences may also challenge players' self-perception, which provides another interesting avenue for future research.

Thirdly, our results suggest that games have the potential to provoke thought about the player's personal development and ideals. Several players stated that the emotionally moving game experience prompted them to think about who they want to be, where they currently stand in life, or how to move on in the future. Sometimes this even resulted in changes in attitude or behavior, as players aspire to become a "better self". Bartsch argued that experiencing emotions and contemplativeness in movies might promote well-being [2]. Seeing how games have already been found to positively influence players' well-being [34], it seems conceivable that games also further contribute to player well-being by affording opportunities for self-reflection.

Lastly, while vicarious release was not significantly associated with appreciation or enjoyment, it still scored above average ($M = 4.19$), and one player explicitly stated that their game experience triggered all the feelings they felt they had to keep hidden in everyday life. Seeing how games may provide players a safe environment for experiencing different emotions free from social demands [13, 17], this may likely influence players' well-being positively. Future research could explore the potential of games for facilitating coping with real life loss.

Limitations and Future Research

Due to the exploratory nature of the present study, no causal inferences may be made about what factors actually *caused* players' emotional reactions. Still, the present study identified several game-related and personal factors that might contribute to emotionally moving game experiences, which may serve to inform future empirical work. However, it should be kept in mind that results from a lab study might differ from our findings, as players might react differently to potentially

emotional game content when in the presence of others (e.g., embarrassment), and may then suppress their emotional reaction [13]. Note also that while many participants in our study emphasized the suddenness of the emotional game content, all participants seemed to be receptive to this kind of experience. When conducting a study which aims at deliberately evoking negative emotions through gameplay, participants expecting to engage in more traditional (i.e., fun) forms of gameplay might not become as involved [16]. Next, because we were mainly interested in negative or mixed affective experiences [3], we deliberately asked participants to recount an *emotionally moving experience*. Thus, it comes as little surprise that sadness was the most frequently mentioned emotion.

Moreover, the present study asked participants to *recall* a past game experience. But as the retrospective evaluation of an experience may differ from the moment-to-moment experience, especially for emotionally charged experiences [19], it is necessary to also study players' feelings and thoughts during or immediately after an emotionally moving experience. Similarly, whether negative affective response and positive experience arise simultaneously or successively may prove interesting for further research.

Notably, nearly half of the participants reported that their experience occurred more than 2 years ago, showcasing that emotionally moving game experiences often "linger" with players for a long time [23]. Lingering experiences have been linked to reflectiveness in serious games [16, 23], but may prove difficult to assess in the long run [16]. A possible work-around would be to take appreciation into account, as it has been found to be predictive of lasting impressions in movies [26]. Future research may also examine how to encourage players to share their feelings and thoughts evoked by emotionally moving game events with others. This seems especially important for serious games, as it may promote discussion of the subject (e.g., stipulate reflection), and dissemination of the game to others, thereby raising awareness of the game's message.

Finally, if we consider both enjoyment and appreciation, not one single experience in our study was perceived as purely negative or uncomfortable [5, 9]. Therefore, it would be interesting to ask players about uncomfortable gaming experiences, their potential causes and the types of emotions they evoke, as well as whether players experienced them as enjoyable. Moreover, feelings of guilt were sometimes present when players faced difficult decisions. A large scale study may provide insights on whether guilt in games promotes contemplativeness, as well as attitude and behavior change. Finally, one participant explicitly stated that sharing the same cultural background as the game designers enhanced her empathy with the characters and thus contributed to the emotional intensity of the experience. Therefore, it might be useful to also take cultural differences into account.

CONCLUSION

Emotion is key to PX, but most research has focused on purely positive emotions, thereby limiting our understanding of what constitutes a positive player experience. We surveyed

121 players about an emotionally moving game experience, what they thought "caused" it, and whether they considered it positive. We found that although sadness was the most frequently mentioned emotional response, players enjoyed and appreciated these experiences *thanks* to the intense emotions the games afforded. Moreover, we identified agency and responsibility, character attachment, achievement, loss, and atmosphere as potential facilitators of players' emotional reactions. Emotionally moving experiences were also often accompanied by (self-)reflection. Taken together, our findings indicate that negative emotions in games may indeed contribute to positive player experiences.

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REFERENCES

1. Fraser Allison, Marcus Carter, and Martin Gibbs. 2015. Good Frustrations: The Paradoxical Pleasure of Fearing Death in DayZ. In *Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction*. ACM, 119–123.
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, Anja Kalch, and Mary Beth Oliver. 2014. Moved to think: The role of emotional media experiences in stimulating reflective thoughts. *Journal of Media Psychology: Theories, Methods, and Applications* 26, 3 (2014), 125–140.
4. Chris Bateman, Rebecca Lowenhaupt, and Lennart E Nacke. 2011. Player typology in theory and practice. In *Proceedings of DiGRA*.
5. 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*. ACM, 2005–2014.
6. Max V. Birk, Ioanna Iacovides, Daniel Johnson, and Regan Mandryk. 2015. The False Dichotomy between Positive and Negative Affect in Game Play. In *CHI PLAY '15*. ACM, 799–804.
7. Julia Ayumi Bopp, Elisa D Mekler, and Klaus Opwis. 2015. It Was Sad But Still Good: Gratifications of Emotionally Moving Game Experiences. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, 1193–1198.
8. Emily Brown and Paul Cairns. 2004. A grounded investigation of game immersion. In *CHI'04 extended abstracts on Human factors in computing systems*. ACM, 1297–1300.

9. James Brown, Kathrin Gerling, Patrick Dickinson, Ben Kirman, and others. 2015. Dead fun: uncomfortable interactions in a virtual reality game for coffins. In *CHI PLAY '15*. ACM, 475–480.
10. Kaitlyn Burnell. 2012. Breaking the Rules of Game Design: when to go against Autonomy, Competence, and Relatedness. In *Game Developers Conference*. <http://www.gdcvault.com/play/1015398/Breaking-the-Rules-of-Game>
11. Tom Cole, Paul Cairns, and Marco Gillies. 2015. Emotional and Functional Challenge in Core and Avant-garde Games. In *CHI PLAY '15*. ACM, 121–126.
12. Gerald C Cupchik. 2011. The Role of Feeling in the Entertainment= Emotion Formula. *Journal of Media Psychology* 23, 1 (2011), 6–11.
13. Sebastian Deterding. 2015. The Joys of Absence: Emotion, Emotion Display, and Interaction Tension in Video Game Play. In *Proc. FDG '15*.
14. Alf Gabrielsson and Siv Lindström Wik. 2003. Strong Experiences Related to Music: A descriptive System. *Musicae scientiae* 7, 2 (2003), 157–217.
15. Sabine Harrer. 2013. From Losing to Loss: Exploring the Expressive Capacities of Videogames Beyond Death as Failure. *Culture Unbound: Journal of Current Cultural Research* 5, 4 (2013), 607–620.
16. 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*. ACM, 2245–2254.
17. Jeroen Jansz. 2005. The emotional appeal of violent video games for adolescent males. *Communication Theory* 15, 3 (2005), 219–241.
18. Daniel Johnson, Lennart Nacke, and Peta Wyeth. 2015. All about that base: differing player experiences in video game genres and the unique case of MOBA games. In *CHI '15*. ACM, 2265–2274.
19. Daniel Kahneman and Jason Riis. 2005. Living, and thinking about it: Two perspectives on life. *The science of well-being* (2005), 285–304.
20. Nicole Lazzaro. 2009. Why we play: affect and the fun of games. *Human-Computer Interaction: Designing for Diverse Users and Domains* (2009), 155–176.
21. Teresa Lynch and Nicole Martins. 2015. Nothing to Fear? An Analysis of College Students' Fear Experiences With Video Games. *Journal of Broadcasting & Electronic Media* 59, 2 (2015), 298–317.
22. Filipa Madeira, Patrícia Arriaga, Joana Adrião, Ricardo Lopes, Francisco Esteves, and others. 2013. Emotional Gaming. (2013), 11–29.
23. Tim Marsh and Brigid Costello. 2012. Experience in serious games: between positive and serious experience. In *Serious Games Development and Applications*. Springer, 255–267.
24. 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 32nd annual ACM conference on Human factors in computing systems*. ACM, 927–936.
25. Markus Montola. 2010. The Positive Negative Experience in Extreme Role-Playing. In *Proc. Nordic DiGRA*.
26. Mary Beth Oliver and Anne Bartsch. 2010. Appreciation as audience response: Exploring entertainment gratifications beyond hedonism. *Human Communication Research* 36, 1 (2010), 53–81.
27. Mary Beth Oliver, Nicholas David Bowman, Julia K Woolley, Ryan Rogers, Brett I Sherrick, and Mun-Young Chung. 2015. Video Games as Meaningful Entertainment Experiences. *Psychology of Popular Media Culture* (2015).
28. Mary Beth Oliver and Arthur A Raney. 2011. Entertainment as pleasurable and meaningful: Identifying hedonic and eudaimonic motivations for entertainment consumption. *Journal of Communication* 61, 5 (2011), 984–1004.
29. 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.
30. José Luis González Sánchez, Francisco Luis Gutiérrez Vela, Francisco Montero Simarro, and Natalia Padilla-Zea. 2012. Playability: analysing user experience in video games. *Behaviour & Information Technology* 31, 10 (2012), 1033–1054.
31. Ian Graham Ronald Shaw and Barney Warf. 2009. Worlds of affect: Virtual geographies of video games. *Environment and planning. A* 41, 6 (2009), 1332–1343.
32. Sharon T Steinemann, Elisa D Mekler, and Klaus Opwis. 2015. Increasing Donating Behavior Through a Game for Change: The Role of Interactivity and Appreciation. In *CHI PLAY '15*. ACM, 319–329.
33. Eduard Sioe-Hao Tan. 2008. Entertainment is emotion: The functional architecture of the entertainment experience. *Media psychology* 11, 1 (2008), 28–51.
34. Kellie Vella, Daniel Johnson, and Leanne Hides. 2013. Positively playful: when videogames lead to player wellbeing. In *First International Conference on Gameful Design, Research and Applications*. ACM, 99–102.
35. Douglas Wilson and Miguel Sicart. 2010. Now it's personal: on abusive game design. In *Proc. FuturePlay 2010*. ACM, 40–47.