

The Effects of Digital Games on Hedonic, Eudaimonic and Telic Entertainment Experiences

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This paper has been accepted for publication in *Journal of Gaming & Virtual Worlds* (published by Intellect)

**Citation:** Kümpel, A. S., & Unkel, J. (2017). The effects of digital games on hedonic, eudaimonic and telic entertainment experiences. *Journal of Gaming & Virtual Worlds*, 9(1), 21–37. [https://doi.org/10.1386/jgvw.9.1.21\\_1](https://doi.org/10.1386/jgvw.9.1.21_1)

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# THE EFFECTS OF DIGITAL GAMES ON ENTERTAINMENT EXPERIENCES

## Abstract

This study extends current research on media entertainment by examining the effects of (perceived) game characteristics on hedonic, eudaimonic and telic entertainment experiences. Furthermore, differentiating between meaningful and nonmeaningful games, we investigated whether these game types lead to the experience of different gaming-related emotions and what determines their discontinuation. Building on an online survey with 325 German gamers, we found a game's narrative, its mechanics, the satisfaction of basic needs and perceived cognitive and affective challenge are associated with the three entertainment experiences in distinct ways. In addition, the results suggest that meaningful and nonmeaningful games induce specific emotions and are discontinued due to different considerations. The study furthers our theoretical understanding of (interactive) media entertainment and shows how the interplay of factors internal and external to a game shapes the overall game entertainment experience.

*Keywords:* digital games, entertainment experiences, enjoyment, appreciation, need satisfaction

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### The Effects of Digital Games on Hedonic, Eudaimonic and Telic Entertainment Experiences

Perhaps it was renowned digital game designer Bruce Shelley who, in an essay on how to be a successful game developer, best summed up the common notion of what digital games are supposed to be: ‘We are in the entertainment business, not simulation or education. Our priority is to create fun’ (2001: 3). But read up about recent digital games like *The Last of Us* (Naughty Dog 2013) or *The Witcher 3: Wild Hunt* (CD Projekt RED 2015) and you will come across commendatory comments that may seem contradictory to this conception. Game journalists write about feeling ‘uncomfortable’ (Simpson 2015) and ‘com[ing] to terms with (...) loss’ (Parkin 2015) in *The Witcher 3*, while their colleagues offered similar sentiments about *The Last of Us*. But these two games are not only critically lauded—review aggregator *Metacritic* lists average review scores of 92 and 95 out of 100, respectively, indicating ‘universal acclaim’—, they have also been vast commercial successes. This shows that not only do gamers undergo experiences that go beyond those traditionally associated with games, such as fun and pleasure; they are also not limited to niche or indie games, but part of blockbuster titles targeted at mainstream audiences (Elson et al. 2014, Oliver et al. 2016).

While it would be misleading to say that research has focused primarily on hedonic gratifications—a large body of literature has, for example, examined educational effects of digital games—, distinct entertainment gratifications were largely thought to be limited to hedonistic ones. However, recent shifts in entertainment research lead to other than instantaneous hedonic gratifications being considered for digital games as well (Vorderer and Reinecke 2015). The purpose of the present study, thus, is to expand our understanding of game enjoyment by not only studying the effects of digital games on hedonic entertainment experiences (i.e., experiencing fun), but also on eudaimonic (i.e., experiencing meaningful human conditions) and telic (i.e., experiencing joy through improving one’s performance, see the following section for detailed definitions) entertainment experiences. Combining research on media entertainment, need satisfaction and determinants of player experiences in the context of digital games, we examine how a game’s narrative, its mechanics, the playing context, perceived cognitive and affective challenge and need satisfaction are associated with the three entertainment experiences. Differentiating between meaningful games—that refer to significant human conditions and encourage the player to reflect on substantial questions— and nonmeaningful games—that

mostly appeal to fun and distraction—, we furthermore investigate to what extent these game types evoke different emotions and whether reasons for discontinuing them differ as well.

## Literature Review

### **The Digital Game Entertainment Experience between Enjoyment, Appreciation and Self-Improvement**

Scholarship on media entertainment, for the longest time, has focused on media content's role in eliciting fun, pleasure and positive affective states (Vorderer et al. 2004, Zillmann 1988). This hedonic approach on media entertainment mainly conceptualizes the audience as seeking fuss-free fun and forms of pleasure which require no or only limited cognitive and/or emotional effort (see further Bartsch and Hartmann 2015). This approach, however, is now considered to be only *one* among a number of perspectives on mediated entertainment experiences. Current research thus more and more examines entertainment experiences that go '[b]eyond pleasure' (Wirth et al. 2012) and acknowledges that people actively seek out media content that is sad, bleak, or emotionally challenging. To address this and provide a more comprehensive view, Vorderer (2011) proposed a two-level model of entertainment motivation that differentiates between the classic hedonic *enjoyment* and *appreciation*, which refers to a more fundamental aspect of entertainment driven by the feeling of being moved and experiencing meaningful human and emotional conditions. Oliver and Raney (2011) introduced the Aristotelian concept of 'eudaimonia' to this domain of entertainment research, leading to the currently most used distinction between fun/enjoyment, building on hedonic motivations, and appreciation, building on eudaimonic motivations (Bartsch et al. 2014, Oliver et al. 2016, Oliver and Bartsch 2010, Oliver and Hartmann 2010). In this paper, we use the term *hedonic entertainment experience* (HEE) when referring to fun/enjoyment and the term *eudaimonic entertainment experience* (EEE) when referring to appreciation.

Researchers already have started to study the underlying processes that affect these different entertainment experiences. For example, Bartsch and Hartmann (2015) found that the amount of cognitive and affective challenge a given media content is posing influences HEE and EEE. According to their results, media content fosters HEE when both affective and cognitive challenge are low, whereas EEE is heightened when both affective and cognitive challenge are high. The concepts of cognitive and affective challenge might be particularly pronounced when it

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comes to games, because the players are actually involved in the progression of the story and—especially in episodic games like *The Walking Dead* (Telltale Games 2012) or *Life Is Strange* (Dontnod Entertainment 2015)—able to radically alter the narrative depending on their decisions.

Recently, in the context of digital games in later life, De Schutter and Brown (2016) introduced a three-factor model of game entertainment experiences, adding *telic entertainment experiences*<sup>1</sup> (TEE) to the existing HEE and EEE. This form of entertainment experience is defined as ‘[t]he joy of improving current performance by playing a game’ (p. 33). In this case, entertainment is achieved because games are perceived as promoting health, improving one’s performance or cognitive ability. Albeit the authors argue that TEE is especially pronounced among older age-groups (e.g., enjoying brain jogging for memory training), we assume that it is also a relevant factor for young(er) gamers. Even if the performance improvement is only limited to a specific game or genre, this can lead to feelings of mastery, self-efficacy and thus to a specific kind of entertainment. This seems especially relevant for (hard-)core gamers, who will spend hours practicing tactics and weapon handling in online shooters, meticulously planning routes for speed runs, or completing labour-intensive tasks like mining resources in MMORPGs to build better equipment for their characters (cf. Yee 2006). Zillmann (2000) referred to this as telic hedonism, thus describing the tendency to put off immediate (hedonic) gratifications for future—most likely *larger*—benefits.

Contrary to TV shows or movies, a pleasurable entertainment experience with games is not only shaped by the narrative or storyline, but also by the game’s specific mechanics and the social context in which it is played (cf. Elson et al. 2014). Although game mechanics, defined as ‘methods invoked by agents for interacting with the game world’ (Sicart 2008), do not lead to EEE per se, they have a strong influence on the overall gaming experience (Elson et al. 2014). For example, a game with a sophisticated narrative and characters might ultimately be perceived as bad when the controls are jumpy or the game barely responds to input. When it comes to entertainment experiences, another relevant factor is the social context in which the gaming experience is embedded (Elson et al. 2014). Albeit being largely ignored by entertainment research so far, it is reasonable to assume that the same game can produce different kinds of entertainment experiences, depending on whether it is played alone, with, for example, one’s significant other in front of the same screen or online with a large number of different players

from all around the world (e.g., in MMORPGs). Hence, in the context of digital games, narrative, mechanics and social context all work together in shaping the final entertainment experience.

As Elson and colleagues (2014) have noted, ‘the lion’s share of the theoretical and empirical work on eudaimonic gratifications has focused on cinematic and television entertainment’ (p. 523) while meaningful gaming experiences, that is EEE, have only sparsely been investigated up to this point (exceptions: De Schutter and Brown 2016, Oliver et al. 2016, Tamborini et al. 2010, Vorderer and Ritterfeld 2009). This is especially surprising since digital games, due to their interactive nature, specific mechanics and possibilities for social interaction might be more capable of fulfilling needs than TV shows or movies, leading to even more or deeper states of entertainment (see also Elson et al. 2014, Oliver et al. 2016). The link between need fulfilment and entertainment experiences, besides, helps to explain why people decide to engage themselves with media content that cannot be described as pleasurable in the common understanding of the word.

### **The Digital Game Entertainment Experience and Need Satisfaction**

The stronger focus on nonhedonic entertainment experiences also led to a stronger recognition of the *functional* role of entertainment. Specifically, entertainment experiences were conceptualized as the result of the successful fulfilment of basic intrinsic needs (Oliver et al. 2016, Przybylski et al. 2012, Ryan et al. 2006, Tamborini et al. 2011, 2010, Vorderer and Ritterfeld 2009). The theoretical framework commonly applied in these studies builds on self-determination theory (SDT, Ryan and Deci 2000a)—a theory of human motivation that is concerned with human behaviour that is self-determined and -motivated. SDT hypothesizes that people have three basic psychological needs ‘that appear to be essential for facilitating optimal functioning of the natural propensities for growth and integration, as well as for constructive social development and personal well-being’ (Ryan and Deci 2000a: 68). The first need is the need for *competence*, which describes the desire to control one’s environment and experience mastery. In the domain of gaming, feelings of competence might be achieved when the player beats a difficult boss character or generally feels able to meet the challenges of the game. The second need is the one for *autonomy*, which describes people’s urge to control the course of their life out of their own volition. Transferring this to gaming experiences, autonomy can be obtained when the player has many opportunities to decide the course of the story and is able to play the game according to his or her desires. Last, *relatedness* refers to the need to feel connected with

others and experience caring for them. In the context of digital game play, this need can both refer to relationships with other players (e.g. when playing multiplayer mode, see Ryan et al. 2006) as well as to relationships with the game's characters (see Oliver et al. 2016). Addressing common criticism of the three needs being too general, Ryan and Deci (2000b) argue that the utility of the approach would diminish when adding more and more needs to the list. The strength of SDT would especially lie in its broad applicability to a large number of phenomena.

Ryan and colleagues (2006) were the first that studied entertainment experiences as the satisfaction of these basic psychological needs in the context of digital games. The results of their study show both the connection between game characteristics and need satisfaction as well as the theoretically assumed connection between need satisfaction and HEE. Follow-up research (Tamborini et al. 2011, 2010) confirmed these relationships, providing additional evidence for the role of successful need satisfaction for entertainment experiences. Just recently, Oliver and colleagues (2016) expanded the focus to include appreciation (=EEE) as an additional dependent variable of need satisfaction. In an online-experiment with 512 gamers they found increased feelings of autonomy and competence to be related to HEE whereas increased feelings of relatedness and insight—a novel dimension developed by the authors to capture the ability of games to enrich one's life and provide greater meanings—were positively associated with EEE. Furthermore, they found game characteristics to be related with entertainment experiences: First, high gameplay ratings led to a greater satisfaction of autonomy and competency and also had a direct effect on HEE. Second, high ratings of the game's story led to a greater satisfaction of relatedness and insight, which in turn led to more EEE.

The mentioned studies demonstrate the usability of SDT for studying entertainment experiences and show that the approach is especially useful when investigating non-hedonic gratifications.

### **Investigating the Effects of Digital Games on Hedonic, Eudaimonic and Telic Entertainment Experiences**

Considering the literature on media entertainment, need satisfaction and the empirical findings on entertainment experiences in the context of digital games, the present study tries to expand our understanding of game enjoyment by studying the effects of digital games on hedonic (HEE), eudaimonic (EEE) and telic (TEE) entertainment experiences. The need for this

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study arises from the fact that, except for a few studies (De Schutter and Brown 2016, Oliver et al. 2016), 1) nonhedonic entertainment experiences of digital games have not been studied sufficiently up to this point, 2) the connection between need satisfaction and TEE has not been investigated at all and 3) the specific characteristics and challenges associated with digital games shed more light on the specific gratifications interactive media can offer.

Building on the assumption that game characteristics, the playing context and need satisfaction work together in predicting game-related entertainment experiences, we want to investigate, in a first step, the influence of these factors. Following Elson and colleagues (2014) as well as Bartsch and Hartmann (2015), we concentrated on *game narrative*, *game mechanics*, as well as *cognitive and affective challenge* to study the effects of game characteristics. Additionally, we also considered the influence of *playing context*, that is, the social setting in which a game is played. Since SDT suggests that games are differently capable to satisfy the three basic needs, namely autonomy, competence and relatedness, need satisfaction is expected to have an effect on HEE, EEE and TEE and thus the overall game entertainment experience. Therefore, the central research question of our paper is:

*RQ1.* What effects do game characteristics—game narrative, game mechanics, playing context, perceived cognitive and affective challenge—and need satisfaction have on HEE, EEE and TEE?

Research suggests that high levels of relatedness need satisfaction, high levels of perceived affective challenge and high ratings of a game's plot and characters should lead to higher levels of EEE (Bartsch and Hartmann 2015, Elson et al. 2014, Oliver et al. 2016). HEE, on the other hand, should be related to high levels of autonomy need satisfaction and low levels of perceived affective and cognitive challenge. Lastly, high levels of TEE should be reported when competence need satisfaction and cognitive challenge are perceived as being high and the game's mechanics (i.e., controls and balance) are rated favourably.

While there are various possibilities for characterizing a game's type, we—due to the focus of our paper—decided to concentrate on the trait *meaningfulness* to differentiate between different kinds of games. Building on research in the domain of meaningful entertainment (Hofer 2013, Oliver and Bartsch 2011, Oliver and Hartmann 2010), meaningful games are defined as appealing to more than fun and pleasure, in that they are referring to significant human



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conditions and make the player reflect on substantial or existential questions (see also Elson et al. 2014, Oliver et al. 2016). As Oliver and Bartsch (2011: 31) put it for non-interactive entertainment media, ‘entertainment can be understood as increasingly meaningful when it focuses to a greater extent on questions of human moral virtues, it demonstrates such virtues (or the ramifications of the lack thereof), it teaches or inspires insight into these virtues, or it causes the viewer to contemplate them and what it means to live a ‘just’ or ‘true’ life’. Nonmeaningful games on the other hand mostly appeal to fun, possess a (comparatively/relatively) shallow narrative and are more distracting than thought-provoking. Thus, such games can be conceptualized as fulfilling ‘needs and desires that do not necessarily stand the test of reason and moral scrutiny’ (Oliver and Bartsch 2011: 31). In reality, of course, meaningfulness is not a dichotomous characteristic and should rather be conceptualized as a continuum, with some games being more meaningful than others. However, the methodological decision to assign the studied games to one of these two categories seems justified, because—based on prior research (Oliver et al. 2016)—distinct differences between games that tend to one or the other side of the spectrum are to be expected. This might be especially relevant when it comes to gaming-related emotions (Bartsch 2012, Oliver et al. 2016). As suggested above, digital games foster the experience of a wide range of emotions—whether they are good and pleasant or more negative and challenging. We thus want to investigate whether such gaming-related emotions actually differ for meaningful and nonmeaningful games:

*RQ2.* To what extent does the experience of gaming-related emotions differ for meaningful and nonmeaningful games?

Studying need satisfaction and game entertainment experiences helps us understand what kind of gratifications a game actually offers, but not whether these gratifications and experiences were *sought* in the first place. Discontinuation decisions may provide an indication of what was actually expected from a game. Generally, research shows that continuance intentions are determined by gratifications obtained (I-Cheng et al. 2014, Shin 2011). Investigating discontinuation decisions for meaningful and nonmeaningful games thus might offer some more insight into what is expected from these different game types. Hence, we ask:

*RQ3.* Do reasons for discontinuing a game differ for meaningful and nonmeaningful games?

## Method

### Design and Procedure

To investigate the effects of digital games on HEE, EEE and TEE, we conducted an online survey among German-speaking gamers in September 2015. Participation was voluntary, unpaid and respondents were guaranteed complete confidentiality. In exchange for participating, participants had the chance to win one of six *PlayStation 4* games.

After consent to participate was obtained, participants were asked whether they themselves had played at least one of six specified games. We chose to predetermine those games to ensure the fit of the questionnaire and comparability of the answers. The games were selected based on three criteria: 1) All games had to be fairly recent, popular games to ensure that a large percentage of possible participants had played at least one of them and that the playing experience was still accessible to them. 2) All games had to be narrative games (in contrast to games that focus predominantly on mechanics, such as most puzzle or sports games) to ensure valid comparisons of their perceived characteristics. 3) Half of the games should have been regarded as more meaningful (i.e., confronting players with questions about human moral virtues) by gaming experts, to ensure variance across the entertainment experiences. Thus, considering discussions by gaming scholars and reviews by gaming journalists, *The Last of Us* (Naughty Dog 2013), the *Walking Dead* series (Telltale Games 2012) and *The Witcher 3: Wild Hunt* (CD Projekt RED 2015) were selected as *meaningful games*. *The Last of Us*' plot has been acclaimed for its thematic focus on morality and the human condition in the face of societal collapse (Green 2016). *The Walking Dead* has already been singled out by scholars as a game that 'offer[s] eudaimonic gratifications' (Elson et al. 2014: 531), as it regularly confronts the player with moral decisions and their often fatal consequences. Similarly, *The Witcher 3* has been praised by game journalists (Parkin 2015, Simpson 2015) for the weighty moral and emotional dilemmas the protagonist is facing (and the player is deciding). As *nonmeaningful games*, we selected *Call of Duty: Advanced Warfare* (Sledgehammer Games 2014), *Assassin's Creed Unity* (Ubisoft Montreal 2014) and *Destiny* (Bungie 2014). While these games are also set in times of conflict or war, they deal with those topics in a less serious, flippant (i.e., hedonic entertainment-friendly) way.

All participants were assigned to one of the games they had selected.<sup>2</sup> Because an online survey was chosen due to considerations about sample size, recruitment strategy and costs, it was

not possible to ensure that the participants had interacted with the selected game shortly before the survey. Thus, to help participants to remember the game, its atmosphere and setting, they were exposed to four screenshots of the game they were assigned to prior to the questions about the game experience.

### Measures

**Game characteristics and playing context.** Following Elson and colleagues (2014), the gaming experience was conceptualized as the interplay of game narrative, game mechanics and playing context. Like Oliver and colleagues (2016), we asked participants to imagine that they were writing a review about the game. Offering a 5-point star rating system, participants were able to rate the game in terms of plot and characters (*game narrative*) as well as in terms of controls and balance (*game mechanics*). The *playing context* was assessed by asking participants about whether they (had) played the game mostly alone or mostly together with other people (5-point semantic differential with the extrema ‘alone’ and ‘together’).<sup>3</sup> Furthermore, participants were asked to indicate their *overall gaming experience* by rating the game from 0% (terrible game) to 100% (perfect game). Participants’ perceived levels of *cognitive and affective challenge* were assessed with two 5-point rating scales ranging from 1 (no intellectual resp. emotional challenge at all) to 5 (high intellectual resp. emotional challenge) (scale from Bartsch and Hartmann 2015). In addition, we asked participants whether they finished the game (i.e., played through the main story), thus addressing possible *discontinuation decisions*. This was done by using a binary scale with the options ‘yes’ and ‘no’.

**Need satisfaction.** Building on operationalizations from previous studies (Oliver et al. 2016, Peng et al. 2012, Ryan et al. 2006), we created items to measure the extent to which the game was perceived to satisfy the needs of competence, autonomy and relatedness. We chose three statements for each need and asked participants about their level of agreement, ranging from 1 (strongly disagree) to 5 (strongly agree). *Competence* was assessed with the statements ‘I felt a great sense of accomplishment playing this game’, ‘The game kept me on my toes but did not overwhelm me’ and ‘I did not feel very capable when playing this game’ (inverted item). However, this index was found to only have a very low reliability ( $M = 3.81$ ,  $SD = 0.65$ ,  $\alpha = .21$ ). Hence, we treated competence as a single-item measure, using the first item listed above. This aspect will be further expanded upon in the discussion. *Autonomy* was assessed with the statements ‘I experienced a lot of freedom in the game’, ‘I felt like I was free to decide for

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myself how to proceed in this game' and 'I was able to play the game the way I wanted to play it' ( $M = 3.10, SD = 0.98, \alpha = .74$ ). *Relatedness* was, similar to Oliver and colleagues (2016), conceptualized to be related to relationships with the characters of the game. Hence, following the authors as well as Wirth and colleagues (2012), we used the following statements to assess relatedness: 'I found the relationships I formed with the characters in this game fulfilling', 'I really felt for the characters in the game' and 'It was hard for me to build an emotional connection to the characters' (inverted item) ( $M = 3.12, SD = 1.45, \alpha = .93$ ).

**Game entertainment experiences.** Like need satisfaction, the three entertainment experiences (HEE, EEE, TEE) were assessed by presenting participants with statements and asking about their level of agreement, ranging from 1 (strongly disagree) to 5 (strongly agree). Again, three statements for every entertainment experience were used. *HEE* ( $M = 4.21, SD = 0.88, \alpha = .95$ ) was assessed with the statements 'It was fun for me to play this game', 'I had a good time playing this game' and 'The game was entertaining' (following Oliver and Bartsch 2010, Wirth et al. 2012). *EEE* ( $M = 2.51, SD = 1.16, \alpha = .84$ ) was assessed with the statements 'The game was thought-provoking', 'The game challenged my way of seeing the world' and 'I liked the game because it focused on conditions and events that are also relevant outside of the game's world' (following Oliver and Bartsch 2010, Oliver and Raney 2011, Wirth et al. 2012). Last, *TEE* ( $M = 2.75, SD = 1.06, \alpha = .77$ ) was assessed with 'The game allowed me to spend my time in a useful manner', 'I liked that I could improve my performance with playing the game' and 'I liked the game because it really challenged my skills' (following De Schutter and Brown 2016).

**Gaming-related emotions.** To investigate affective responses to the games (see also Oliver et al. 2016), we confronted participants with a 5-point semantic differential and asked them to choose where their experienced emotions lie on a scale between two bipolar affective states (following Brosius and Kepplinger 1991). Adjective pairs included 'bad-good', 'unpleasant-pleasant', 'unhappy-happy', 'tense-relaxed', 'emotionally untouched-emotionally touched' and 'aggressive-peaceful'.

### Participants

Three hundred and twenty-five German-speaking gamers that were recruited from a variety of gaming-related online venues like gaming websites (e.g., *ps4info.de*), forums (e.g. *4Players*, *Gamestar*) and *Facebook* groups participated in the study. We asked several website

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providers or forum/group administrators whether they would share the link to the questionnaire, generally receiving positive feedback. The vast majority of the sample was male (90.4 %), which may be attributed both to the selected games and the recruitment venues.<sup>4</sup> Participants' age ranged from 15 to 49 ( $M = 27.69$ ,  $SD = 6.53$ ). Furthermore, participants came from a variety of different educational backgrounds and reported an average game use of 17.55 hours per week ( $SD = 11.55$ ). We thus may argue that our sample consists mainly of (hard)core gamers.

### Results

Prior to the actual analysis, a treatment check was conducted. Meaningful games were indeed rated as providing stronger EEE ( $M = 3.11$ ,  $SD = 1.07$ ) than nonmeaningful games ( $M = 1.91$ ,  $SD = 0.92$ ),  $t(313) = 10.794$ ,  $p < .001$ ,  $d = 1.20$ . However, they scored higher on the other two entertainment experience ratings—HEE ( $M_{MF} = 4.60$ ,  $SD = 0.67$ ;  $M_{NMF} = 3.82$ ,  $SD = 0.86$ ;  $t(297) = 8.894$ ,  $p < .001$ ,  $d = 0.99$ ) and TEE ( $M_{MF} = 2.96$ ,  $SD = 1.05$ ;  $M_{NMF} = 2.54$ ,  $SD = 1.04$ ;  $t(318) = 3.569$ ,  $p < .001$ ,  $d = 0.40$ )—as well.<sup>5</sup> While this does not indicate that meaningful games necessarily provide those other entertainment experiences as well—the meaningful games selected for this study may have just been *better* games overall than the nonmeaningful games—, these results demonstrate that a more meaningful gaming experience does not necessarily lessen other gaming entertainment experiences.

Considering RQ1, three regression models were calculated to identify predictors—ratings of game narrative and game mechanics, the playing context, perceived cognitive and affective challenges and need satisfaction of autonomy, competence and relatedness—of the three entertainment experiences (see Table 1). Higher ratings of controls and a higher need satisfaction of competence and relatedness were associated with higher HEE. Higher EEE was predicted by a higher rating of the quality of the plot, a higher cognitive challenge and a higher satisfaction of the relatedness needs. Finally, a higher TEE was predicted by higher cognitive challenges, lower affective challenges and a higher satisfaction of all three SDT needs.

[Table 1 about here]

Regarding RQ2, players of meaningful games described themselves as feeling better ( $M_{MF} = 4.19$ ,  $SD = 0.87$ ;  $M_{NMF} = 3.76$ ,  $SD = 0.89$ ;  $t(323) = 4.402$ ,  $p < .001$ ,  $d = 0.49$ ) and more emotionally touched ( $M_{MF} = 4.07$ ,  $SD = 1.03$ ;  $M_{NMF} = 2.29$ ,  $SD = 1.05$ ;  $t(323) = 15.512$ ,  $p < .001$ ,  $d = 1.72$ ), but also as less relaxed ( $M_{MF} = 2.80$ ,  $SD = 1.13$ ;  $M_{NMF} = 3.33$ ,  $SD = 1.10$ ;  $t(323) = 4.314$ ,  $p < .001$ ,  $d = 0.48$ ) than players of nonmeaningful games. No differences were

found for pleasantness ( $M_{MF} = 3.76, SD = 0.97; M_{NMF} = 3.76, SD = 0.78; t(307) = 0.017, p = .986, d = 0.00$ ; values corrected for unequal variances), happiness ( $M_{MF} = 3.63, SD = 0.89; M_{NMF} = 3.53, SD = 0.88; t(323) = 0.991, p = .322, d = 0.11$ ), or aggressiveness ( $M_{MF} = 3.31, SD = 0.89; M_{NMF} = 3.18, SD = 0.97; t(323) = 1.238, p = .217, d = 0.14$ ).

To answer RQ3, logistic regression models were calculated to identify predictors for discontinuing meaningful games and nonmeaningful games. For *meaningful games*, relatedness need satisfaction was negatively associated with finishing a game: the lower the satisfaction of the need relatedness, the higher the probability to discontinue the game. In contrast, HEE was negatively associated with finishing *nonmeaningful games*: the less hedonic enjoyment a game provided, the higher the probability to discontinue it.

[Table 2 about here]

### Discussion

The present study attempted to explore which (perceived) characteristics of digital games are associated with different forms of entertainment experiences. Integrating research on media entertainment, need satisfaction and determinants of player experiences in the context of digital games, we examined how a game's narrative, its mechanics, the playing context, perceived cognitive and affective challenge and need satisfaction are associated with hedonic (HEE), eudaimonic (EEE) and telic (TEE) entertainment experiences. Furthermore, differentiating between meaningful and nonmeaningful games, we studied whether these two game types lead to the experience of different gaming-related emotions and whether their discontinuation (i.e., the abandonment of a game) can be attributed to distinct factors.

Looking at determinants of the three entertainment experiences, we found that HEE was associated with higher ratings of a game's *controls*, higher ratings of *competence need satisfaction* as well as by higher ratings of *relatedness need satisfaction*. First, the relationship with controls suggests that 'having fun' with a game indeed is shaped by its mechanics: The more favourable people evaluated a game's controls, the more they enjoyed it (see also Oliver et al. 2016). Hence, in contrast to movies and, as already suggested by Elson and colleagues (2014), games actually have to fulfil a lot more expectations in order to be enjoyable. Surprisingly, autonomy need satisfaction did not show the expected positive association with HEE (contradicting results of Oliver et al. 2016). Instead, both competence and relatedness need satisfaction were positively associated with HEE, suggesting that feelings of accomplishment as

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well as being able to relate to a game's characters generally are related to experiencing more pleasure and fun.

EEE, on the other hand, as one of the entertainment experiences that go beyond instantaneous pleasure, was associated with higher ratings of a game's *plot*, higher levels of *perceived cognitive challenge* as well as higher levels of *relatedness need satisfaction*. As expected, a favourable evaluation of a game's narrative, more specifically of its plot/story, was indeed related to entertainment experiences that are perceived as being more fundamental and meaningful (see also Oliver et al. 2016). However, while we expected perceived affective *and* cognitive challenge to show a positive association with EEE (following Bartsch and Hartmann 2015), it was in fact only the perceived cognitive challenge that was positively associated with EEE. Having to contemplate far-reaching decisions and calculating different outcomes might actually be more an intellectual challenge than an emotional one—even more so because we studied *interactive* media. As assumed, EEE was associated with higher levels of relatedness need satisfaction, suggesting that feeling related to the characters of a game made people appreciate it more (see also Oliver et al. 2016).

Last, TEE, the joy of improving one's performance with a game, was positively associated with *perceived cognitive challenge* and the *satisfaction of all three basic needs*, but also negatively associated with *perceived affective challenge*. While we expected higher levels of perceived cognitive challenge to predict TEE (building on results by De Schutter and Brown 2016), the data also showed that players might perceive an additional emotional challenge as distracting from their actual goal of performance improvement. Interestingly, the satisfaction of all three basic needs—competence, autonomy and relatedness—was positively associated with TEE. While both feelings of accomplishment and the perceived freedom to play the game as desired indeed seem like core components of improving one's performance, the association with relatedness need satisfaction at first seems contradictory. However, the overall contribution of relating to a game's character to all three entertainment experiences might be ascribed to the fact that all titles included in this study can be described as narrative games. With at least some focus on plot and protagonists, characters one cannot identify with thus might diminish the overall entertainment experience.

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Focusing on differences between meaningful and nonmeaningful games, participants described experiencing different emotions while playing one or the other game type. As expected, players of meaningful games felt *more emotionally touched*, but also *more tense*. However, participants also reported to generally *feel better* when playing meaningful games. This might be an effect of the games selected for both categories in this study, as the three meaningful games were rated as better games overall—both by our participants as well as according to review aggregator *Metacritic*.<sup>6</sup> ‘Feeling better’ in this sense thus can probably be understood as simply enjoying a game more.

Finally, the analysis of factors contributing to discontinuation decisions showed that for meaningful games, *low levels of relatedness* predicted abandonment of the game. In contrast, abandonment of nonmeaningful games was solely predicted by *low levels of HEE* (i.e., not enjoying the game). However, the model fit of both models is less than ideal. Because participants were not directly asked about why they abandoned a particular game, many other reasons to do so (e. g., simply not having enough time or the absence of other gratifications sought, cf. I-Cheng et al. 2014) were not considered. Nevertheless, these results indicate that gamers not only *experience* different forms of entertainment, but are actively *looking* for those different entertainment experiences and satisfaction of needs associated with those experiences.

Our findings, however, are not without limitations. First, measurement of competence need satisfaction showed very low reliability, which is why only a single-item measure could be used in the analysis. This might be a general problem of surveying (hard)core gamer samples, as there may exist tendencies to keep quiet about running into problems with games. Second, the fact that the playing context did not contribute to any of the three entertainment experiences might also be attributed to the quantitative measurement of these. Whether or not playing with others influences these entertainment experiences might depend on one’s personal background, situational factors, etc. (cf. Elson et al. 2014) that are not observable in a quantitative setting. On a related note, it might be interesting to investigate the ‘other side’ of the relatedness need more thoroughly. While we—based on the chosen games—decided to solely focus on participants’ relationships with the game’s characters, it might also be valuable to investigate relatedness to other players that might be a crucial determinant of entertainment experiences when it comes to multiplayer games or modes. Third, all games surveyed are considered to be fairly good games, which lead to HEE measures that tended towards the positive end of the scale. While we tried to



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counteract this by a semi-random assignment to the games—participants who indicated that they had played at least two of the six games did not get to choose which game they wanted the questionnaire to be about (and thus presumably picking their favorite)—, the vast majority of our sample at least somewhat enjoyed the selected games. Furthermore, the three meaningful games selected were consistently rated better than their nonmeaningful counterparts, which might have distorted some effects. Fourth, due to methodological considerations and decisions, we did not ask participants directly after actually playing the respective video game they were asked about. Furthermore, as we wanted to investigate discontinuation decisions as well, it would not have been feasible to exclude participants who had not at least interacted with the selected game a certain number of hours or completed a certain percentage of the game. Thus, some experiences may have faded or might not have been present to the participants in the survey situation. While it certainly is a considerable logical and both temporally and financially costly burden to have participants play a certain video game directly before taking a survey, further studies should develop research designs that allow to control for how recent and intense participants' playing experiences were. Finally, the assignment of the six games to a dichotomous category of course is debatable. While the three meaningful games were, as expected, rated to provide stronger EEE, individual players might have experienced similar emotions with the other three titles as well (e.g., another title of the *Call of Duty* series has been previously named by some players as a meaningful title, Oliver et al. 2016). Thus, game type was not included as a predictor in the regressions on entertainment experiences. To further address this problem of classifying meaningful and nonmeaningful games, a combination of content analyses of games and in-depth interviews with their users might help to elucidate which specific aspects of a game's narrative, mechanics, or further game-play characteristics are 'provoking' reflection and contemplation, thus prompting the experience of *meaningfulness*. By doing so, a more externally valid classification could be developed.

Nevertheless, we would argue that the present study furthers our theoretical understanding of (interactive) media entertainment and is able to show how the interplay of factors internal and external to a game shapes the overall game entertainment experience. One avenue for future research would be to consider how the distinct entertainment experiences—HEE, EEE and TEE—may act as mediators between digital game use and behavioural or attitudinal effects. For example, EEE might influence the relationship between violent video

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game play and anti-social outcomes such as aggressive cognitions and decreasing empathy (Anderson et al. 2010, Greitemeyer and Mügge 2014) as they lead to contemplation and reflection of violent content. Besides, as the results indicate that different game types are abandoned due to distinct considerations, studies could further elaborate on differences in gratifications sought and obtained for meaningful and nonmeaningful games. Building on a longitudinal design, gamers might be surveyed (1) prior to a game's release and asked about their expectations (gratifications *sought*), (2) shortly after the game's release and (3) several months afterwards. This would allow investigating which gratifications could actually be obtained, whether certain entertainment experiences emerged over the course of engagement with the game although they were not initially sought and how expectations about the game and intensity of playing shape entertainment experience over time.

References

- Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., Rothstein, H. R. and Saleem, M. (2010), 'Violent Video Game Effects on Aggression, Empathy, and Prosocial Behavior in Eastern and Western Countries: A Meta-Analytic Review', *Psychological Bulletin*, 136: 2, pp. 151–73.
- Bartsch, A. (2012), 'Emotional Gratification in Entertainment Experience. Why Viewers of Movies and Television Series Find It Rewarding to Experience Emotions', *Media Psychology*, 15: 3, pp. 267–302.
- Bartsch, A. and Hartmann, T. (2015), 'The Role of Cognitive and Affective Challenge in Entertainment Experience', *Communication Research* [Advance online publication].
- Bartsch, A., Kalch, A. and Oliver, M. B. (2014), 'Moved to Think. The Role of Emotional Media Experiences in Stimulating Reflective Thoughts', *Journal of Media Psychology*, 26: 3, pp. 125–40.
- Brosius, H.-B. and Kepplinger, H. M. (1991), 'Der Einfluß von Musik auf die Wahrnehmung und Interpretation einer symbolisierten Filmhandlung', *Rundfunk und Fernsehen*, 39: 4, pp. 487–505.
- Bungie (2014), *Destiny*, Santa Monica, CA: Activision.
- CD Projekt RED (2015), *The Witcher 3: Wild Hunt*, Warsaw: CD Projekt RED.
- De Schutter, B. and Brown, J. A. (2016), 'Digital Games as a Source of Enjoyment in Later Life', *Games and Culture*, 11: 1–2, 28–52.
- Dontnod Entertainment (2015), *Life Is Strange*, Tokyo: Square Enix.
- Elson, M., Breuer, J., Ivory, J. D. and Quandt, T. (2014), 'More than Stories with Buttons: Narrative, Mechanics, and Context as Determinants of Player Experience in Digital Games', *Journal of Communication*, 64: 3, pp. 521–42.
- ESA (2015), *Essential Facts about the Computer and Video Game Industry - 2015: Sales, Demographic and Usage Data*. Entertainment Software Association, <http://www.theesa.com/wp-content/uploads/2015/04/ESA-Essential-Facts-2015.pdf>. Accessed 29 November 2016.
- Green, A. M. (2016), 'The Reconstruction of Morality and the Evolution of Naturalism in The Last of Us', *Games and Culture*, 11: 7–8, pp. 745–63.
- Greitemeyer, T. and Mügge, D. O. (2014), 'Video Games Do Affect Social Outcomes: A Meta-Analytic Review of the Effects of Violent and Prosocial Video Game Play', *Personality and Social Psychology Bulletin*, 40: 5, pp. 578–89.
- Hartmann, T. and Klimmt, C. (2006), 'Gender and Computer Games: Exploring Females' Dislikes', *Journal of Computer-Mediated Communication*, 11: 4, pp. 910–31.

## THE EFFECTS OF DIGITAL GAMES ON ENTERTAINMENT EXPERIENCES

- Hofer, M. (2013), 'Appreciation and Enjoyment of Meaningful Entertainment: The Role of Mortality Salience and Search for Meaning in Life', *Journal of Media Psychology: Theories, Methods, and Applications*, 25: 3, pp. 109–17.
- I-Cheng, C., Chuang-Chun, L. and Kuanchin, C. (2014), 'The Effects of Hedonic/utilitarian Expectations and Social Influence on Continuance Intention to Play Online Games', *Internet Research*, 24: 1, pp. 21–45.
- Naughty Dog (2013), *The Last of Us*, Tokyo: Sony Computer Entertainment.
- Oliver, M. B. and Bartsch, A. (2011), 'Appreciation of Entertainment: The Importance of Meaningfulness via Virtue and Wisdom', *Journal of Media Psychology: Theories, Methods, and Applications*, 23: 1, pp. 29–33.
- (2010), 'Appreciation as Audience Response: Exploring Entertainment Gratifications beyond Hedonism', *Human Communication Research*, 36: 1, pp. 53–81.
- Oliver, M. B., Bowman, N. D., Woolley, J. K., Rogers, R., Sherrick, B. I. and Chung, M.-Y. (2016), 'Video Games as Meaningful Entertainment Experiences', *Psychology of Popular Media Culture*, 5: 4, pp. 390–405.
- Oliver, M. B. and Hartmann, T. (2010), 'Exploring the Role of Meaningful Experiences in Users' Appreciation of 'good Movies'', *Projections*, 4: 2, pp. 128–50.
- Oliver, M. B. and Raney, A. A. (2011), 'Entertainment as Pleasurable and Meaningful: Identifying Hedonic and Eudaimonic Motivations for Entertainment Consumption', *Journal of Communication*, 61: 5, pp. 984–1004.
- Parkin, S. (2015), *Witcher 3: Wild Hunt Review – a Rich Adventure Born in Literature*, <http://www.theguardian.com/technology/2015/may/13/witcher-3-wild-hunt-review-xbox-ps4-pc>. Accessed 29 November 2016.
- Peng, W., Lin, J.-H., Pfeiffer, K. A. and Winn, B. (2012), 'Need Satisfaction Supportive Game Features as Motivational Determinants: An Experimental Study of a Self-Determination Theory Guided Exergame', *Media Psychology*, 15: 2, pp. 175–96.
- Przybylski, A. K., Weinstein, N., Murayama, K., Lynch, M. F. and Ryan, R. M. (2012), 'The Ideal Self at Play. The Appeal of Video Games That Let You Be All You Can Be', *Psychological Science*, 23: 1, pp. 69–76.
- Ryan, R. M. and Deci, E. L. (2000a), 'Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being', *American Psychologist*, 55: 1, pp. 68–78.
- (2000b), 'The Darker and Brighter Sides of Human Existence: Basic Psychological Needs as a Unifying Concept', *Psychological Inquiry*, 11: 4, pp. 319–38.

## THE EFFECTS OF DIGITAL GAMES ON ENTERTAINMENT EXPERIENCES

- Ryan, R. M., Rigby, C. S. and Przybylski, A. (2006), 'The Motivational Pull of Video Games: A Self-Determination Theory Approach', *Motivation and Emotion*, 30: 4, 344–60.
- Scimeca, D. (2013), *The Gender Inequality in Core Gaming Is Worse than You Think*, <http://venturebeat.com/2013/09/19/gender-inequality/view-all/>. Accessed 29 November 2016.
- Shelley, B. (2001), *Guidelines for Developing Successful Games*, [http://www.gamasutra.com/view/feature/131450/guidelines\\_for\\_developing\\_.php](http://www.gamasutra.com/view/feature/131450/guidelines_for_developing_.php). Accessed 29 November 2016.
- Shin, D.-H. (2011), 'Understanding E-Book Users: Uses and Gratification Expectancy Model', *New Media & Society*, 13: 2, pp. 260–78.
- Sicart, M. (2008), 'Defining Game Mechanics', *Game Studies*, 8: 2, <http://gamestudies.org/0802/articles/sicart>. Accessed 29 November 2016.
- Simpson, R. (2015), 'Finding Your Moral Compass in The Witcher 3', <http://www.godisageek.com/2015/06/the-witcher-3-moral-compass/>. Accessed 29 November 2016.
- Sledgehammer Games (2014), *Call of Duty: Advanced Warfare*, Santa Monica: Activision.
- Tamborini, R., Bowman, N. D., Eden, A., Grizzard, M. and Organ, A. (2010), 'Defining Media Enjoyment as the Satisfaction of Intrinsic Needs', *Journal of Communication*, 60: 4, pp. 758–77.
- Tamborini, R., Grizzard, M., Bowman, N. D., Reinecke, L., Lewis, R. J. and Eden, A. (2011), 'Media Enjoyment as Need Satisfaction: The Contribution of Hedonic and Nonhedonic Needs', *Journal of Communication*, 61: 6, pp. 1025–42.
- Telltale Games (2012), *The Walking Dead*, San Rafael: Telltale Games.
- Ubisoft Montreal (2014), *Assassin's Creed Unity*, Montreal: Ubisoft.
- Vorderer, P. (2011), 'What's next? Remarks on the Current Vitalization of Entertainment Theory', *Journal of Media Psychology*, 23: 1, pp. 60–63.
- Vorderer, P., Klimmt, C. and Ritterfeld, U. (2004), 'Enjoyment: At the Heart of Media Entertainment', *Communication Theory*, 14: 4, pp. 388–408.
- Vorderer, P. and Reinecke, L. (2015), 'From Mood to Meaning: The Changing Model of the User in Entertainment Research', *Communication Theory*, 25: 4, pp. 447–53.
- Vorderer, P. and Ritterfeld, U. (2009), 'Digital Games', in R. L. Nabi and M. B. Oliver (eds.), *The SAGE Handbook of Media Processes and Effects*. Los Angeles: SAGE, pp. 455–68.

## THE EFFECTS OF DIGITAL GAMES ON ENTERTAINMENT EXPERIENCES

Wirth, W., Hofer, M. and Schramm, H. (2012), 'Beyond Pleasure: Exploring the Eudaimonic Entertainment Experience', *Human Communication Research*, 38: 4, pp. 406–28.

Yee, N. (2006), 'The Labor of Fun: How Video Games Blur the Boundaries of Work and Play', *Games and Culture*, 1: 1, 68–71.

Zillmann, D. (2000), 'Mood Management in the Context of Selective Exposure Theory', in M. E. Roloff (ed.), *Communication Yearbook*, 23, New York: Routledge, pp. 103–23.

Zillmann, D. (1988), 'Mood Management through Communication Choices', *American Behavioral Scientist*, 31: 3, pp. 327–40.

Footnotes

<sup>1</sup>The authors labelled the described outcome telic *enjoyment*. In the interest of consistency, however, we will use the term telic entertainment experiences (TEE).

<sup>2</sup>Participants who indicated that they had played at least two of the six games were semi-randomly assigned to one of the games selected, using a quota to ensure that about half of all participants were asked about a meaningful game, and the other half about a nonmeaningful game, respectively.

<sup>3</sup>The question further specified that this does not only include cooperative and competitive multiplayer modes, but also playing a single-player game together in front of the same screen, just as one would watch TV series and movies together.

<sup>4</sup>While industry statistics show that almost half of all gamers are now female (in the US, female gamers make up 44 % of the market share, ESA 2015: 3), this does not factor in genre and platform preferences (cf. Hartmann and Klimmt 2006). Indeed, the audiences of console action and shooter games—the genres of most games used in this study—have been shown to be still around 80–85 % male (Scimeca 2013). Recruiting participants from websites and boards that mainly target this ‘(hard)core gamer’ demographic may have further amplified this gender divide.

<sup>5</sup>Values for HEE and EEE were corrected for unequal variances.

<sup>6</sup>*The Last of Us* (MS: 95, P: 90.86), *The Walking Dead* (MS<sub>Season1</sub>: 94, MS<sub>Season2</sub>: 81; P: 84.55) and *The Witcher 3: Wild Hunt* (MS: 92, P: 88.10) were rated very favourably both according to the *Metacritic* ‘Metascore’ (MS) as well as by our participants (P). *Call of Duty: Advanced Warfare* (MS: 83, P: 70.98), *Assassin’s Creed Unity* (MS: 70, P: 71.89), and *Destiny* (MS: 76, P: 73.70)—although also receiving generally favourable evaluations—were rated a little less positive.

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Tables

Table 1

*Predictors of eudaimonic, hedonic and telic entertainment experiences*

Predictor	<i>Entertainment experiences</i>		
	<i>Hedonic (HEE)</i>	<i>Eudaimonic (EEE)</i>	<i>Telic (TEE)</i>
<i>Game narrative</i>			
Plot	.19	<b>.24**</b>	.13
Characters	.03	-.04	-.01
<i>Game mechanics</i>			
Controls	<b>.14**</b>	.03	.14
Balance	.03	-.03	.06
Playing context	.13	-.02	.12
<i>Challenges</i>			
Cognitive	-.05	<b>.24***</b>	<b>.25***</b>
Affective	.03	.05	<b>-.15*</b>
<i>Need satisfaction</i>			
Autonomy	.07	.05	<b>.12*</b>
Competence	<b>.29***</b>	.05	<b>.26***</b>
Relatedness	<b>.36***</b>	<b>.35***</b>	<b>.20*</b>
<i>R<sup>2</sup> (adj.)</i>	.58	.56	.45
<i>F</i>	44.37***	41.77***	26.83***

*Note.*  $n_{HEE/EEE} = 319$ ,  $n_{TEE} = 317$ ; Coefficients are standardized Beta values;  $df_{HEE/EEE} = 10, 308$ ,  $df_{TEE} = 10, 306$

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$



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Table 2

*Predictors for discontinuing a game: Meaningful games vs. non-meaningful games*

Predictor	Game type					
	Meaningful game			Non-meaningful game		
	<i>b</i>	<i>W</i>	<i>OR</i>	<i>b</i>	<i>W</i>	<i>OR</i>
<i>Need satisfaction</i>						
Autonomy	.42	2.88	1.52	.20	0.67	1.23
Competence	.37	0.73	1.44	-.19	0.32	0.83
Relatedness	-.69	<b>6.61*</b>	0.50	.03	0.02	1.03
<i>Entertainment experience</i>						
Hedonic	-.19	0.23	0.83	-.77	<b>7.25**</b>	0.46
Eudaimonic	-.30	1.32	0.74	-.25	0.85	0.78
Telic	.31	1.41	0.74	.09	0.14	1.10
Constant	1.13	0.52	3.11	2.56	<b>5.13*</b>	12.85
Nagelkerke's R <sup>2</sup>		.22			.14	

*Note.*  $n_{MF} = 159$ ,  $n_{NMF} = 160$ ; *b* = regression coefficient; *W* = Wald statistic; *OR* = Odds ratio; Higher values indicate higher probability to discontinue the game.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Acknowledgements

The authors would like to thank the anonymous reviewers for their helpful comments and *Sony Interactive Entertainment Germany* for providing video game copies used as incentives for the participants.