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# Enjoyment: A Conceptual Exploration and Overview of Experimental Evidence in the Context of Games for Health

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## Abstract

Enjoyment is consistently noted as important for engaging audiences in games for health. However, as a term, enjoyment is often used interchangeably with a host of other terms, some of which overlap conceptually. This obscures what does and what does not constitute enjoyment, and in turn slows scientific progress by making the study of enjoyment and the synthesis of enjoyment-related research difficult. This article is aimed at improving our understanding of enjoyment by distinguishing enjoyment from other important constructs, such as fun and engagement, and by providing an overview of the experimental evidence on the determinants of enjoyment in videogames. Competence, narrative transportation, and relevance are identified as key factors related to enjoyment, and future studies examining these factors using games for health are recommended.

## Introduction

ONE IMPORTANT REASON WHY people play videogames is because they enjoy doing so.<sup>1</sup> Enjoyment is therefore considered crucial for engaging audiences with games for health.<sup>2</sup> But what is enjoyment? And what causes enjoyment? In the videogame literature, enjoyment as a term is often used interchangeably with a host of other terms, such as flow, engagement, and fun. This profoundly obscures what does and what does not constitute enjoyment. In addition, there is lack of theorizing concerning the determinants of enjoyment: what can we do to make games for health more enjoyable?

The present article aims to distinguish enjoyment from other important constructs and thereby clarify the scientific debate. In the first section of the article, we distinguish enjoyment from engagement, anticipated enjoyment, and fun. In the second section of the article, we provide an overview of the experimental evidence on the determinants of enjoyment.

## The Déjà-Variable Phenomenon

It is generally acknowledged that videogames, much like several other types of new media, have unique capabilities to immerse players and motivate them to play.<sup>3</sup> The subjective experience that results from this immersion has been subject to much debate, however. Several years ago, Wirth et al.<sup>4</sup>

noted “theoretical confusions” in the literature regarding the psychological processes involved in the subjective experience of new immersive media use. They argued that there was a need for more definitional and conceptual consensus if the study of these phenomena was to move further. Alas, 8 years later a systematic review has shown that player–game interactions are still described with multiple constructs that are sometimes similar and almost always related.<sup>5</sup> The call for articles for this special issue on Fun and Games circumvents this problem by using “fun” as shorthand for “fun/enjoyment/engagement.”

One could argue that the literature on videogames is plagued by the “déjà-variable phenomenon,” which refers to “the feeling that one has seen a variable with the same definition and content before only referred to by a different term.”<sup>6</sup> Using different terminology to refer to the same underlying construct poses problems, as this can make it difficult to empirically distinguish constructs and to synthesize data in reviews and meta-analyses. In fact, a plethora of labels and definitions arising from the literature makes it hard to arrive at a definitive conclusion as to what fun, enjoyment, and engagement are and which factors constitute their determinants and consequences. Therefore, we present an overview of the literature that aims to clarify several important conceptual issues surrounding fun/enjoyment/engagement.

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## Enjoyment

In the Oxford English Dictionary, enjoyment is defined as “the action or state of deriving gratification from an object.” This is articulated in the videogame literature in which enjoyment is seen as a positive affective state during and as a result of gameplay.<sup>5</sup> The experience of enjoyment includes physiological, cognitive, and affective components that are heavily intertwined.<sup>7</sup>

A construct related to enjoyment is flow, which is used to describe the feelings of enjoyment that occur when a balance between skill and challenge is achieved in the process of performing an activity.<sup>8,9</sup> Flow states include a perception of control, being one with the activity, and losing track of time. However, even a less challenging gameplay may still be experienced as enjoyable.<sup>9</sup>

## Engagement

Engagement is usually defined as the level of motivation that a player displays in gameplay (i.e., reflecting a psychological process),<sup>5</sup> or otherwise as the extent to which the player is involved in the game (which is reflected by actual use as an outcome).<sup>10</sup> Engagement is a critical issue in the context of games for health because even if games for health can potentially change relevant outcomes,<sup>11</sup> they will not have a public health impact if people only briefly use them.<sup>12</sup>

Two terms that are frequently used in relation to engagement and that are associated with the psychological process are immersion and presence. Immersion typically refers to a state of high motivation to play the game, while retaining some awareness of one's surroundings.<sup>13,14</sup> Presence, on the other hand, refers to the experience of being personally and physically inside a virtual environment.<sup>4</sup> It should be noted that the pathological condition of game addiction is not usually included in the definition of “normal” engagement.<sup>10</sup> Likewise, “psychological absorption,”<sup>15</sup> a state of total engagement in which players keep playing despite the frequent occurrence of negative affect, is mostly not seen as a normal part of engagement.

## Engagement versus the determinants of engagement

A closer look at the constructs and definitions discussed above reveals a conceptual oddity. Engagement refers to the motivation of the player to play and keep playing. This means that players can be highly engaged not only by the videogame during gameplay, but also when they are not playing, for example, when they keep thinking about the game during work hours or when they make arrangements to play the game some time later. The constructs of immersion and presence, on the other hand, refer to cognitive and affective processes that take place while the player is playing. Perhaps this is not surprising because the player's motivation to play the game can be in large part be determined by these cognitive and affective processes. Still, one could argue that a clearer and more useful conceptualization of engagement would envision engagement as a motivational construct that goes beyond the specific time that is spent playing (e.g., actual use as an outcome). In this way the remaining constructs, such as immersion and presence, which are veritable characteristics of the subjective gameplay experience, can be treated as determinants of engagement rather than as char-

acteristics of engagement itself. Enjoyment too may be conceptualized as a determinant of engagement. Previous studies in other fields, covering topics such as engagement in mobile commerce,<sup>16</sup> e-health interventions,<sup>17</sup> and tasks in online market places,<sup>18</sup> suggest this as well.

## Enjoyment versus anticipated enjoyment

The *experience* of enjoyment when a person is interacting with a game is different from *beliefs* concerning enjoyment.<sup>19</sup> Beliefs that a game could be enjoyable might be a motive for playing a game.<sup>20</sup> Previous research has found, for instance, that anticipated enjoyment is related to increased intention to play games,<sup>21</sup> higher frequency and duration of play,<sup>22</sup> and more loyalty toward a game.<sup>23</sup> This does not necessarily mean, however, that expectations concerning enjoyment are met. The extent to which such expectations are met can lead to changes in beliefs. For example, one might have high hopes that the new edition of a game in the “Need for Speed” series is enjoyable but be disappointed while playing the game for the first time. This can affect motives for playing the game in the future. Anticipated enjoyment, then, can be a motive for playing games, but it is quite distinct from the actual experience of enjoyment while playing the game, which can sometimes be at odds with a player's expectations. Anticipated enjoyment can be related to a specific game (e.g., the example above), a certain type of game (e.g., first-person shooters), or games in general. This is in contrast to the experience of enjoyment, which is the result of interacting with a specific game. The latter is also expressed in a narrative review based on the Design, Play, Experience (DPE) framework stating that enjoyment is “the ‘experience’ of game ‘design’ features, which someone ‘played.’”<sup>24</sup>

## Enjoyment versus fun

Enjoyment, as explained above, can be usefully distinguished from other constructs, such as engagement and anticipated enjoyment. But what about fun? One could argue that fun is a less appropriate term because it is used as an adjective to describe something that is enjoyable *and* as a noun for the experience of enjoyment (as in “having fun”). Because of this, the term fun has an undertone of objectivity to it, for instance, when a game is described as “fun.” If we want to stress the subjective nature of enjoyment, it would be preferable to use enjoyment. And if we want to avoid the déjà-variable phenomenon, we have to do so consistently.

## Measurement of enjoyment

Mekler et al.<sup>9</sup> found that subjective self-reports in the form of questionnaires are much more frequently used than physiological measures. Where self-reports were used to assess enjoyment, the most frequently used standardized questionnaires were the Intrinsic Motivation Inventory (e.g., Peng et al.<sup>25</sup>) the Game Experience Questionnaire (e.g., Chanel et al.<sup>26</sup>) and the Self-Assessment Manikin scale (e.g., Poels et al.<sup>27</sup>). However, only 31 out of the 82 studies that used self-reports provided psychometric indices (as explained by Crutzen and Peters<sup>28</sup>). In line with our view regarding the experiential nature of enjoyment, items measuring the subjective experience of enjoyment were most common.

The few studies that compared self-reports with physiological measures found that in general facial electromyography corresponds with self-reports (e.g., Chanel et al.<sup>26</sup> and Poels et al.<sup>27</sup>). Findings regarding electrodermal activity, electrocardiography, and electroencephalography are less straightforward (e.g., Chanel et al.<sup>26</sup> and Nacke et al.<sup>29</sup>). Also, event-related functional magnetic resonance imaging has been used to expand the understanding of the neural correlates of motivation,<sup>30</sup> which might shed more light on the neural mechanisms of enjoyment in the context of games. At present, however, the limited freedom of movement while conducting such imaging studies might also affect the experience of enjoyment itself. Lu<sup>31</sup> suggested that enhanced portable monitoring devices that are resistant to body movement will facilitate future measurements.

### Increasing Enjoyment

Defining and using a term consistently are one thing, but an insight into how to increase enjoyment is another. In the games for health literature, this is a rather underexplored issue. To be sure, the importance of enjoyment is acknowledged. In fact, enjoyment has been described as the pivotal factor that can make games for health more effective than traditional interventions.<sup>2</sup> However, there is a dearth of experimental studies investigating the determinants of enjoyment in the context of games for health.

In the videogame literature, several factors are described as being related to enjoyment, such as realistic sound effects, high-quality realistic graphics, incorporating narrative, suspense, use of humor, character development over time, medium duration, rapid absorption rate, skills levels, and multiplayer features.<sup>32–34</sup> Some have investigated these factors from an overarching theoretical framework such as the Self-Determination Theory (SDT). According to SDT, enjoying a behavior is a defining characteristic of intrinsic motivation, which depends on the individuals' experience of autonomy, competence, and relatedness.<sup>35</sup> In SDT, autonomy refers to the perception of being in control of one's own actions, competence refers to the perception of increasing skills, and relatedness refers to the perceived development and maintenance of close personal relationships.

SDT provides a very valuable framework for studying the determinants of enjoyment. However, experimental evidence is needed to provide insight into causation besides association.<sup>36</sup> We hypothesize that especially *competence* is an important factor causing enjoyment, more so than autonomy and relatedness. With regard to autonomy, it is certainly the case that games can offer freedom of actions and choices.<sup>37</sup> In a previous study, for example, allowing the player to choose from a range of different answers when conversing with other characters was one of the autonomy-supportive game features that resulted in more enjoyment.<sup>25</sup> Nevertheless, this freedom is constrained by the rules of the game world as created by the game developer,<sup>38</sup> although this might still give the illusion of autonomy. With regard to relatedness, although people interact, collaborate, and form relationships with each other in many games and this might even lead to a higher intrinsic motivation to play a game,<sup>39</sup> videogame play can just as well be solitary. Competence, however, seems to be a crucial factor in the enjoyment of videogames. In addition, based on an overview of the liter-

ature, we suggest that narrative transportation and relevance can increase the enjoyment of games for health.

### Competence

With regard to competence, an experimental study used the casual game "Bloons Tower Defense" and randomly assigned participants to either an easy or a hard condition.<sup>40</sup> A path model demonstrated that participants in the hard condition felt less competent than participants in the easy condition, which reduced their sense of challenge-skill balance. This, in turn, diminished their enjoyment. Other studies (including experimental ones) found that perceived competence was positively related to gaming motivation<sup>41</sup> and enjoyment.<sup>42</sup> On top of that, competence-impeding play might even lead to higher levels of aggressive feelings and behaviors.<sup>43</sup>

But how can we increase players' sense of competence? Lyons<sup>41</sup> has reviewed evidence regarding three mechanisms to increase the player's sense of competence and thereby enjoyment: providing feedback, challenge, and rewards. These mechanisms contribute to perceptions of competence as they help players to improve their play and at the same time signal success when they have. A wealth of literature is cited by Lyons,<sup>41</sup> including an experimental study that compared different levels of feedback on body movement in an exergame (i.e., a game that combines physical exercise with gameplay). It was found that low (no evaluation of movement, with real-time video from a separate Webcam), medium (movement data evaluated by a balance board and avatar-based visual and audio feedback), and high (movement data evaluated by camera, with real-time video-based visual and audio feedback) levels of feedback resulted in different levels of enjoyment, with participants in the highest feedback condition enjoying the game more than in the low- and medium-feedback condition.<sup>44</sup>

### Narrative transportation

Narrative transportation is a second factor that contributes to enjoyment. Narrative transportation refers to a process in which someone (in this case the player) is mentally "transported" away from his or her physical world into the imaginary world that is presented in a story.<sup>45</sup> When people are transported as a result of a story, this results in increased attention, mental imagery, empathy, and emotion. Transportation has been well documented in the domain of literature, film, and television: readers and viewers sometimes forget their surrounding and imagine themselves in the narrative world. But stories can also be used in videogames, and previous research shows that narrative transportation is an important predictor of enjoyment.<sup>46</sup> Besides this, within the context of games for health, it is argued that narrative transportation promotes the suspension of disbelief and the reduction of counterarguments against the proposed behaviour change.<sup>47</sup> Lu et al.<sup>47</sup> stated that characters provide the driving force of a narrative. In addition, Lu et al.<sup>48</sup> showed that ethnic similarity between game characters and players also enhanced immersion.

So far, however, there is relatively little evidence on the association between narrative transportation and enjoyment in the context of games for health. One study reported positive associations between narrative transportation and

enjoyment of a game aimed at increasing milk consumption,<sup>49</sup> but more experimental studies are needed on the causal relationship between narrative transportation and enjoyment. The scarcity of experimental studies regarding narratives has been acknowledged before, and there is an ongoing debate about the feasibility of integrating narratives in games.<sup>31</sup>

### Relevance

In our view, relevance is another important factor to increase enjoyment. According to the Oxford English Dictionary, something is deemed relevant if it is “closely connected or appropriate to the matter at hand.” Relevance can be increased via self-identification with game characters. When players self-identify with the character in a game and find the role of the character appealing, they are more likely to experience enjoyment.<sup>33</sup> This is thought to be because identifying with a character allows the player to change his or her self-concept.<sup>33</sup> It is also thought to provide players with the opportunity to act in a way more aligned with their ideal self or the self they strive to be.<sup>50</sup>

This would suggest that “game world” relevance is important for facilitating enjoyment. For games for health, however, relevance takes on a quite distinct meaning as compared with entertainment games. It could be argued that, besides “game world” relevance, there is also “real world” relevance (or personal relevance), which is of particular concern in games for health. For example, a game focused on disease management of a serious illness is more likely to be perceived as being relevant to its target group than a game aimed at reducing binge drinking among adolescents, who are less concerned about long-term health consequences.<sup>51</sup> If a game is relevant for its players, they will be more likely to respond to such games openly and willingly, which may be conducive to a more enjoyable experience.<sup>52</sup> It might also reduce defensiveness and increase the ability to see multiple sides of the situation and switch attention among them,<sup>53</sup> which is likely to be beneficial when fostering behavior change. More in general, games are most intrinsically motivating when players’ experience of themselves during play are congruent with their conceptions of their ideal selves.<sup>50</sup>

Overall, the studies described above suggest that developers of games for health should strive to develop games that are relevant to a player’s self-concept and that allow the players to perform their role successfully. The studies cited here are not an exhaustive enumeration. However, we think that these studies are useful as a point of departure for future experimental studies that may provide more in-depth insight into the mechanisms related to the proposed key factors. In such studies, the game “design” features as depicted in the DPE framework<sup>24</sup> might be linked to these key factors. For example, challenge and rewards are mentioned within the DPE framework, which are mechanisms to improve competence.<sup>41</sup> These future studies should focus on using games for health as experimental playgrounds. This is linked to the current debate on how enjoyable games for health should be in order to be effective. On the one hand, it has been argued that health games (or, more broadly, serious games) will not be effective if they provide too little enjoyment; precisely because of this, they do not (necessarily) differ from entertainment games in terms of game type, design, or dissemination strategy.<sup>54</sup>

On the other hand, it has been argued that serious games should not compete with entertainment games in terms of enjoyment, but with its analogous alternative (e.g., school curricula, behavior change interventions delivered in other settings).<sup>55</sup>

### Conclusions

We would like to urge researchers to use enjoyment, and enjoyment only, to refer to the action or state of deriving gratification from a game. Moreover, we recommend using games for health as experimental playground in future studies focusing on enjoyment, its antecedents, and its consequences. Three key factors on which to focus are competence, narrative transportation, and relevance.

### Author Disclosure Statement

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