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The effect of an avatar's emotional expressions on players' fear reactions: The mediating role of embodiment



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ABSTRACT

This research aimed to demonstrate the effects of an avatar's emotional expressions on players' fear reactions during horror gameplay. In Study 1, we found that the emotional expressions of an avatar decreased fear reactions among players. This effect was mediated by avatar embodiment. More precisely, avatar emotional expressions lower avatar embodiment, which, in turn, positively predicts players' fear reactions. In Study 2, we replicated the findings of Study 1. In addition, we found that the effects observed in Study 1 were only present in interactive gameplay—not when players watched screen-captured footage of the game. In other words, we found evidence of a moderated mediation model in which interactivity moderates the effects of an avatar's emotional expressions on players' fear reactions through avatar embodiment.

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1. Introduction

The most fundamental goal of entertainment media is to create emotions in its users. Various forms of media, including movies and video games, can produce strong emotions such as hope, sadness, joy, and fear. (Tan, 1996; Zillman & Cantor, 1977; Zillmann, 2011). In dramas, we hope and fear for our beloved protagonist; we weep when adored characters fail. We laugh at comedies, and we feel frightened to death by horror movies. Undoubtedly, the horror genre provides one of the best examples of how media are capable of moving viewers to strong emotional reactions, namely fear. A number of factors contribute to viewers' fear reactions. For instance, Harrison and Cantor (1999) report the depiction of blood or injury, as well as the use of suspenseful music, as triggers of fear reactions in the audience. Previous entertainment theory related to film has stressed the role of characters' emotional expressions in the generation of strong emotions in users. The mechanism through which a character's emotional expressions affect a viewer's emotional reactions has been referred to as empathy (Tamborini, Stiff, & Heidel, 1990; Wilson & Cantor, 1985; Zillmann, 2011).

Emotions are also a central part of the experience of playing video games. Therefore, it is unsurprising that the developers of

horror games, such as the *Silent Hill* series (Toyama, 1999–2012) and *Slender: The Eight Pages* (Hadley, 2012), also intend to create strong emotional experiences for players by producing dark and scary environments with eerie sounds, horrifying creatures, and fearful emotional expressions of the avatar (e.g., shrieks of pains or heavy breathing) (Freeman, 2004; Grimshaw, Lindley, & Nacke, 2008). In a recent study by Lynch and Martins (2015), players of horror games reported feeling frightened during gameplay because of a host of stimuli, such as darkness, music, or the death or injury of the avatar. The emotional expressions of the avatar were not included in the list of frightening stimuli in this study (Lynch & Martins, 2015). At first glance, one would expect that—just like in movies—the stronger the emotional expressions by a mediated character in a game (i.e., the avatar), the more intense the player's emotional experiences. However, it is unknown whether the emotional expressions of a mediated character in a video game have the same effect on fear reactions as is seen in traditional linear media such as movies. While watching a horror movie, emotions most likely arise indirectly from empathic reactions to the protagonist, as the viewer is a mere witness to what happens on the screen (Madsen, 2016; Zillman & Cantor, 1977; Zillmann, 1991). However, while playing a horror game, fear most likely arises through a process that has been referred to as *identification*, *self-presence*, or *embodiment* (Biocca, 1997; Kilteni, Groten, & Slater, 2012; Ratan & Sah, 2015), because the player experiences the environment as an *active role-player* through his or her avatar (Klimmt, Hefner, & Vorderer, 2009; Lin, 2013b; Lynch & Martins, 2015; Peng, 2008).

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In other words, in video games, the avatar and the player are not distinct entities; rather, they merge into each other. This implies that the emotional expressions of a mediated character in a video game have a different effect on players' emotional reactions than they have in films: Emotional expressions of the avatar may (at least temporarily) disrupt the strong connection between the player and the avatar. As a result, the player realizes that it is not him or her who is in danger, and this, in turn, should decrease his or her fear.

To our knowledge, no existing empirical studies have examined the emotional effect of an avatar's emotional expression in video games. Therefore, in the first study presented here, we sought to contribute to research on emotional reactions to video games by examining (a) the effect of an avatar's emotional expressions on players' emotional reactions while playing a survival horror game and (b) the mediating role of embodiment in the generation of fear (Study 1). In the second study (Study 2), we aimed to (c) corroborate the findings of Study 1 and (d) show that the hypothesized effect of Study 1 is only present when the game is played rather than just watched.

1.1. Entertainment media and fear

Fear or fright, as Lazarus (1994) refers to this response, is an emotional reaction to “concrete and sudden danger of imminent physical harm” (p. 234). Lynch and Martins (2015, p. 299) point out that fear is a “stimulus-evoked reaction”. This reaction goes along with physiological processes and behavioral responses. The former include increased heart rate or increased breathing frequency, whereas the latter comprise avoidance and defensive behavior (Kreibig, Wilhelm, Roth, & Gross, 2007; Smith & Lazarus, 1993). Both traditional media, such as films or books, and interactive computer games have the potential to cause users to feel frightened (Lynch & Martins, 2015; Madsen, 2016; Perron, 2009). In the following sections, we first outline the fear-eliciting mechanisms in traditional media and then turn to explaining how emotions arise during gameplay.

1.1.1. Fear in traditional media

A large part of the research on media-induced fright reactions has examined developmental differences in those reactions (Cantor, 1994; Harrison & Cantor, 1999; Hoffner, 1997) or focused on individual differences in fright reactions and in coping strategies (Hoffner, 1995, 1997). Other research has emphasized the need to consider the role of content features affecting fright reactions (Cantor, 2006; Hoffner, 2009). Among other features, such as the depiction of blood and gore or supernatural creatures like zombies or ghosts, the emotional expressions of protagonists (i.e., the victims) have been shown to contribute to viewers' emotional experiences (e.g., Tamborini et al., 1990; Zillmann, 1991). Empathy has been shown to be the key mechanism through which emotional reactions to a protagonist's expressions of emotional experiences arise (for a thorough review on empathy, see Preston & De Waal, 2002). The *three factor theory of empathy* explains emotional reactions to witnessing the emotional expressions of mediated characters (Zillmann, 1991). According to this theory, emotional experiences from witnessing others' emotional reactions result from the interaction of three components: the dispositional, the excitatory, and the experiential component. The dispositional component is a mechanism that guides one's responses and is associated with reflexive skeletal-motor reactions to emotional stimuli. The excitatory component is associated with viewers' arousal. The experiential component is the conscious experience of the other two components. In the context of horror movies, Tamborini et al. (1990) outline how fear arises through empathic

reactions to a victim's emotional expressions. This empathic reaction results from the interaction of the three components mentioned above: First, a viewer experiences a reflexive reaction of distress because of the high iconicity of film. These feelings of distress then result in an excitatory reaction indicated by heightened sympathetic arousal. In the last step, the viewer appraises his or her reaction as concordant to that of the character in distress and generates the appropriate emotional reaction by reminding him- or herself of similar events he or she has experienced in the past. From this description, it becomes clear that the more intense the emotional expression of the mediated character, the higher the levels of fear the viewer experiences. However, while watching movies, the user plays a relatively passive role; she or he is clearly separated from the character and acts as a witness (Madsen, 2016; Zillmann, 1991). Accordingly, Zillmann (1991) and Tan (1996) refer to film-elicited emotional reactions as *witness emotions*. This is different in video games.

1.1.2. Fear in interactive media

Empirical research on fear reactions in video games is rather limited (Lynch & Martins, 2015; Madsen, 2016; Perron, 2004). Lynch and Martins (2015) identified several stimuli and features of video games that caused fright reactions in players. Among the most often reported fear-inducing features of video games were darkness, disfigured humans, zombies, and the unknown. However, another important feature participants reported characterizes the difference between horror movies and horror video games: *interactivity* or *agency*. That is, although horror games have largely built upon horror movies (Perron, 2009; Rouse, 2009), there is a fundamental difference between horror movies and horror games: Whereas, in horror movies, viewers are merely witnessing what is happening on screen, video game players experience the game through a character, the so-called *avatar* (Ahn, Fox, & Bailenson, 2012). Lin (2013a, 2013b), for instance, argues that an enemy attacking a character is perceived as more self-relevant for a player than for a viewer. He refers to the difference between *enactive experience* and *observational experience* (see also Peng, 2008). This difference between horror movies and horror games also has implications for the effect of the emotional expressions of the mediated character (i.e., the avatar). Whereas a movie character's emotional expressions increase viewers' empathic fear, an avatar's emotional expressions remind the player that he or she and the avatar are not the same entity. The emotional expressions of the avatar can be regarded as a form of “distance management” (Klimmt et al., 2009, p. 360). This leads to our first hypothesis:

H1. Emotional expressions of the avatar lead to lower fear reactions than are observed when the avatar is silent.

It has been shown above that empathy is the central mechanism through which the emotional expressions of a mediated character translate into emotions in the viewer. An important feature of the empathy concept is that the mediated character and the viewer remain separate entities. The viewer is a witness of what is happening to the character on screen (Tan, 1996; Zillmann, 1991). In contrast, in video games, the player is not a mere observer, but rather becomes an integral part of the mediated world and experiences it through the avatar (Klimmt et al., 2009). Klimmt et al. (2009) argue that the avatar and the player merge into each other: The dyad becomes a monad. There are different concepts describing this player–avatar connection. *Identification* is probably the most prominent of these concepts (Cohen, 2001; Hoffner & Buchanan, 2005; Klimmt et al., 2009; McLeod, Liu, & Axline, 2014; van Looy, Courtois, Vocht, & Marez, 2012). Cohen (2001, p. 261) regards identification as “an imaginative process through which an audience member assumes the identity, goals and

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