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Understanding the Desire to Play Violent Video Games: An Integrative Motivational Theory

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The effects of playing violent video games are well-documented; however, relatively little research has investigated why much of the world's population plays these games. We present a novel theory to explain the motivational pull of violent video games: the integrative motivational theory of violent video games (IMT-VVG). Violent video games resonate with players because they offer opportunities to fulfill psychological needs and motivations for obtaining status, feeling dominant, and feeling like a high-quality intimate partner. Violent video games may also provide psychological protection against the fear of death by allowing players to inure themselves to dangerous situations. They may also allow for the expression and regulation of anger. Unlike traditional play fighting, violent video games can be played by nearly everyone regardless of physical capacities. Thus, a much broader swathe of humanity can experience these effects of violent video games. The IMT-VVG explains potential negative effects elicited by violent video game play such as the tendency for sexism in some male gamers. Individual differences contribute to the motivation to play violent video games; people more likely to play are from low status groups, desire to maintain their high status through dominance, and have a strong interest in sex. Future directions informed by the IMT-VVG may investigate possible prosocial effects of violent video games (e.g., leadership, helping team members) and whether violent video games can be beneficial to people from low status groups (e.g., increasing agency).

Keywords: violent video games, the integrative motivational theory of violent video games (IMG-VVG), motivation, dominance, mate value

Prolific research programs devoted to determining the effects of violent video games on numerous psychological outcomes have proven fruitful (e.g., Anderson et al., 2010). However, relatively little scholarly work has investigated the motivational underpinnings of playing these games. That is, why do individuals play these games? To help address this gap, we present a novel theoretical model for understanding why, and for whom, playing violent video games is highly attractive. We present an integrative theory for understanding both the effects of violent video games and why these effects drive people to play them. This integrative theory builds on previous theories and hypotheses, including evolutionary psychology, cognitive evaluation theory, and terror management theory.

Overview of Motivations to Play Violent Video Games

Approximately 85% of all video games contain violence (APA, 2020). Violent video games are the focus of this article. Violent video games are played by people of all ages and genders and are available in nearly every home, handbag, and pocket all over the world. When trying to understand the motivations underlying violent video game play, we first need to understand why individuals play video games in general. We can then seek to understand why individuals play violent games in particular and for longer. One useful framework for understanding the motivational underpinnings of video game play in general is cognitive evaluation theory, which is an element of self-determination theory (Deci & Ryan, 2012). Cognitive evaluation theory has been applied to understanding motivations behind gaming and other competitive contexts such as sports (Ryan et al., 2006; Standage & Ryan, 2020). At the core of cognitive evaluation theory are three basic psychological needs that, when fulfilled, enhance wellbeing. These needs are autonomy (feeling in control), social relatedness (feeling connected with others), and competence (feeling efficacious).

In the video game context, *autonomy* may include the feeling of free choice to play a desired game and make choices within the game (e.g., choosing which weapon to upgrade or which mission to complete). Similarly, autonomy may be derived by being able to design one's character and being empowered to do things that people would not do in real life, such as being a superhero or committing violent crimes. *Relatedness* is the fundamental need to feel connected to other people. Relatedness can be achieved by playing with others in person or remotely over the Internet. *Competence* refers to being challenged at the optimal level. The player will

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experience low competence if the challenges are too great (e.g., game controls are difficult to use or enemies are too numerous; Przybylski et al., 2010). Johnson et al. (2016) found that relatedness was the strongest correlate of duration of play, although autonomy and competence were also significant correlates. Ryan et al. (2006) suggested that competence is the most important need to satisfy because achieving competence brings a sense of control and accomplishment. Fulfilling these three needs in the video game context should elicit feelings of fun and wellbeing in players, which further enhances motivation to play (Przybylski et al., 2010). Consistent with this needs-fulfillment approach of cognitive evaluation theory, people with unmet needs in daily life reported more symptoms of pathological gaming than people with fulfilled needs (Przybylski & Weinstein, 2019).

In addition to fulfilling fundamental psychological needs, we hypothesize that many people are attracted to violent video games because they allow nearly everyone the opportunity to: (a) find out where they stand in the social hierarchy of players; (b) try to improve their standing through practice; (c) allow them to overcome and prepare themselves for dangerous situations (i.e., fear of violence and death); and (d) express their anger or regulate it. We thus provide a viable new integrative theory for understanding both the effects of violent video games and why and which people choose to play them. We call this theory the integrative motivational theory of violent video games (IMT-VVG). Figure 1 displays the key conceptual components of the theory.

Our theory thus acknowledges and extends prior work on video games and the fulfillment of basic psychological needs of autonomy, competence, and relatedness (Przybylski et al., 2010; Ryan al., 2006), but is also informed by evolutionary psychology, terror management theory, and theories of emotion. Before considering these motivations in detail, we briefly discuss how playing violent video games may relate to play fighting. We feel this discussion of play fighting is highly relevant as the practice that occurs through play fighting is fundamental to video games and the theories we are discussing.

Violent Video Games as a Form of Play Fighting

Evolutionary theory has much to say about the adaptive value of play. Childhood play is intrinsically enjoyable. It allows for the rehearsal of skills that enhance the ability to survive, obtain status, and have reproductive success as adults. Play fighting, in particular, allows children to practice aggression with low risk of injury. Sports are often considered a form of play fighting or ritualized warfare that can enhance abilities useful for real-world aggression like throwing, running, jumping, and kicking (e.g., Lombardo, 2012). Other forms of play fighting, such as rough and tumble play, have long been a part of human life in foraging, pastoralist, and large-scale modern cultures (Huizinga, 1938). Play fighting is not limited to humans as many mammals including rats, pigs, dogs, and nonhuman primates engage in play fighting (Pellis & Pellis, 1998, 2017; Weller et al., 2019, 2020). In humans, rough and tumble play was positively related not only to greater observed aggressive behavior in early adolescents, but also greater dominance as rated by their teachers (Pellegrini, 2003). The competitive aspect of sports and play fighting allows players to assess their abilities against others and display their abilities to observers. In so doing, players develop a sense of their status in the social hierarchy of fellow players.

Our analysis considers violent video games as a form of play fighting due to conceptual similarities. Both play fighting and violent video game play involve practicing fighting in a low-risk context; the use of defensive and offensive maneuvers (e.g., dodging, blocking, punching shooting); training physical abilities (e.g., reaction times, shooting accuracy); and training cognitive abilities (e.g., information processing). Indeed, studies have shown that the cognitive benefits of playing violent video games include improvements in attention and working memory (Barlett et al., 2009; Colzato et al., 2013). Play fighting, sports, and violent video game play are also similar because they occur during periods of leisure, when people are in a safe environment, and physiological needs are met (Scalise Sugiyama et al., 2018).

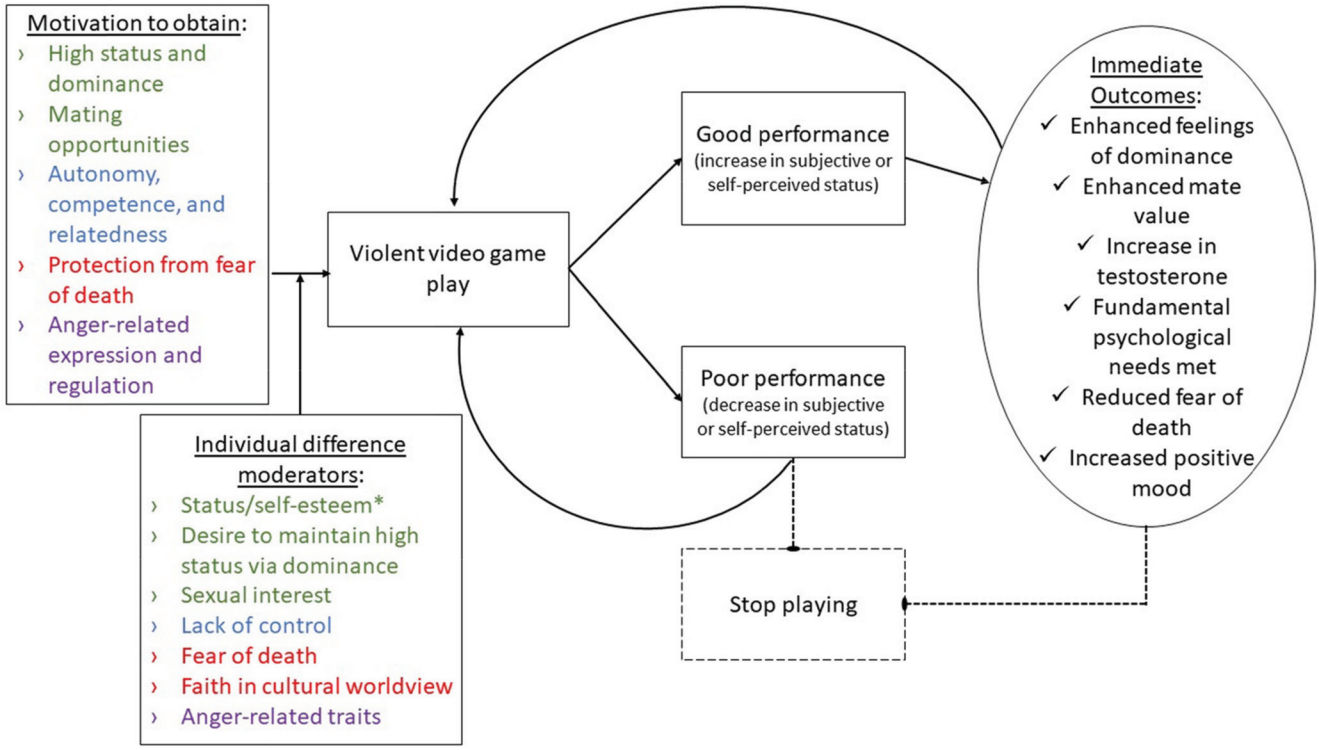
In contrast to play fighting, *coalitional* play fighting only occurs in humans (Scalise Sugiyama et al., 2018). During coalitional play fighting (i.e., play fighting in teams), "one coalition uses coordinated action and nonlethal physical force to attain, and prevent an opposing coalition from attaining, a predetermined physical objective (i.e., 'goal')" (Scalise Sugiyama et al., 2018, p. 223). Team sports have been described as one form of coalitional play fighting. In a review of ethnographic records of forager cultural groups, ethnographers mentioned that in nearly half of the records reviewed, people engaged in coalitional play fighting, which used the same body movements as those used in lethal raiding (Scalise Sugiyama et al., 2018).

A follow-up study found that in over half of the cultural clusters, coalitions played against other outgroups. This form of play fighting, known as *intergroup coalitional play fighting,* could be a means of assessing the formidability of the outgroup (Scalise Sugiyama et al., 2021). Thus, multiplayer violent video games involving opposing coalitions strongly mirrors coalitional play fighting. Indeed, Oxford, Ponzi, and Geary (2010, p. 201) noted that "aggressive multiplayer video games are appealing to men because the games engage men's motivational disposition to participate in coalitional male–male competition." Such coalitions likely fulfill the need for relatedness.

Features of violent video games are both similar and different from other forms of play fighting and intergroup coalitional play fighting. As with sports and other forms of coalitional play fighting, violent video game players compete for winning, which may provide outcomes relevant for dominance and status (e.g., a high rank among other players, social accolades among friends and online coplayers, money, power over other players) as well as feelings of competence and autonomy. Unlike older forms of dominance contests, one does not need to be strong to play violent video games. Thus, nearly everyone can play, and unlike play fighting, violent video game play extends far into adulthood (Entertainment Software Association, 2020). Similarly, because physical strength is not a prerequisite to play, all genders can and do play. A growing proportion of American women report playing violent video games and 46 million American video game players are people with disabilities (Entertainment Software Association, 2020).

The coalitional element of violent video games should make them attractive because playing these games can fulfill the fundamental need of relatedness required for good mental health and well-being (Johnson et al., 2016; Przybylski et al., 2010). In multiplayer games, players are required to outwit opponents and coordinate action among teammates in order to win. These aspects of violent video games likely train social–cognitive abilities that would be useful in coordinated real-world violence.

Figure 1
The Integrative Motivational Theory of Violent Video Games (IMT-VVG)



Note. Five fundamental motivations increase the likelihood that people will desire to play violent video games. The theory also specifies relevant individual differences in motivations, which heighten the desire to play these games. Achieving the outcomes than can be derived from violent video game play will depend on performance. For people who are poor performers, they can either cease playing altogether (dashed line and box) or play more until they perform to a subjectively desired level. Good performance should increase the likelihood of achieving the outcomes and further game play. Because partial or full achievement of the outcomes is experienced positively, players are likely to play more. Should players become satisfied with their achieved outcomes, they may disengage from goal pursuit and cease playing. Similarly, obtaining all the desired outcomes may not be feasible, in which case, even good players may cease playing (e.g., Carver & Scheier, 1998; Klinger, 1975; Wrosch & Scheier, 2003). Green = evolutionary theory; blue = cognitive evaluation theory; red = terror management theory; purple = emotion theories. * Terror management theory would also consider self-esteem a moderator. See the online article for the color version of this figure.

This social element also allows players to try to dominate others, become a team leader, and protect the ingroup (e.g., other team members). As with other forms of intergroup coalitional play fighting, acting in a leadership role (such as a cricket team captain in the real world or a team leader in the video game world) reflects having high status within the ingroup.

The social reward of being good at multiplayer violent video games are apparent among e-sports players. E-sports have been defined as "organized video game competitions" (Jenny et al., 2017, p. 4). The very best violent video game players who play e-sports enjoy not only social accolades but sizable prize money and income. Indeed, team leaders of e-sports players ascribe high levels of importance to goals of power and social affiliation compared to other players (Martončik, 2015). Some people may find the notion of wealthy, high social status, video game players unusual; however, from our theoretical perspective, they are quite similar to acclaimed participants of other forms of intergroup coalitional play fighting (e.g., basketball or cricket stars). In fact, more people watched e-Sports than the Superbowl (CNBC, 2019).

In sum, we suggest that violent video game play may fulfill the evolved behavioral inclinations to practice social dominance and aggression. These games offer a safe, injury-free setting, fulfill basic psychological needs, allow people to demonstrate their dominance, abilities, attain status, and be a part of a coordinated group. Because nearly everyone can play, violent video games offer the opportunity to a wider range of people than other forms of play-fighting to practice dominant behavior and test their skill levels against fellow players.

The Integrative Motivational Theory of Violent Video Games (IMT-VVG)

Evidence suggests that people play video games to fulfill the basic psychological needs of autonomy, competence, and relatedness (Przybylski et al., 2010; Ryan et al., 2006). However, cognitive evaluation theory alone does not fully explain why so many people are driven to play violent video games in particular. Below, we propose that the addition of an evolutionary psychological and some emotional-motivational (e.g., terror management theory)

perspectives provides new testable explanations for why people are drawn to violent video games. We propose that violent video game play can enhance subjective dominance and social status, improve the perception of oneself as a valued intimate partner (i.e., mate value), buffer against the fear of death, and allow the expression and regulation of anger. The motivations to obtain these endpoints are not part of cognitive evaluation theory, which focuses on competence, autonomy, and relatedness.

Dominance- and Status-Related Processes

Although they are sometimes used interchangeably, status and dominance are related, yet distinct constructs. These constructs are also distinct from competence, because they are much more social. Having high status means having a valued social rank. One could have high status and gain the benefits of that status but not be dominant (von Rueden et al., 2011). Dominance, in contrast, entails having the power to achieve or maintain a position of high social status (Panchal & Gill, 2020). Like other primates, intrasexual competition has influenced motivation and behavior aimed at achieving mating opportunities and status. Generally speaking, high status provides access to resources, which increases the likelihood of mating and survival of one's offspring (Alvard & Gillespie, 2004; Gurven & von Rueden, 2006; von Rueden et al., 2011). Achieving high social status in video games may be achieved through performance (such as a high rank on a leader board), valued team leadership, or gaining many followers on online video game streaming sites (e.g., Twitch). This can translate to real-life benefits as they are associated with monetary and status gains.

Aggression can be a form of dominant behavior when used in the service of obtaining or maintaining one's status (e.g., Holekamp & Strauss, 2016). Meta-analyses have shown that violent video games can cause modest increases in aggressive behavior in laboratory experiments and prospective studies (for independent meta-analyses, see Anderson et al., 2010; Greitemeyer & Mügge, 2014; Mathur & VanderWeele, 2019; Prescott, Sargent, & Hull, 2018). As aggression can be used to exercise dominance, aggression within video games may reward players with boosted self-perceptions of dominance and self-esteem. Thus, aggressive behavior within the games may thereby fulfill the need for feeling dominant and having high self-esteem. If true, we should expect to see violent video games elicit not only aggression but other psychological effects that are consistent with feeling dominant (Cabral et al., 2016).

Feeling dominant from playing video games may manifest in several ways. If so, enhanced feelings of dominance may elicit a sense of toughness in violent video game players. To test this notion, in two experiments, participants played either a violent or nonviolent game for 15 minutes in the laboratory (Denson et al., 2020). They completed several tasks. One task involved viewing faces morphing from neutral to angry, sad, happy, and afraid. Participants were asked to stop the morph when they identified the facial emotion expression (e.g., van Honk & Schutter, 2007). Participants who played the violent game were less accurate at identifying the facial expression as it morphed. This finding is consistent with research in which people induced to feel powerful showed less accuracy in recognizing angry faces than people in the control groups (Blader et al., 2016; Galinsky et al., 2006; Lange et al., 2020). Angry facial expressions can signal dominance (Toscano et al., 2018; Ueda & Yoshikawa, 2018). Thus, these findings suggest that poor anger perception caused by violent video game play may lead gamers to view others as less dominant than if they had played a nonviolent game.

To the extent that violent video games enhance feelings of dominance, players may experience other social stimuli as relatively less threatening than nonplayers. One study found evidence consistent with this notion. Video game players and nonplayers were shown images of a man pointing a gun or neutral object at them while body movements were recorded (i.e., posturography; Santos et al., 2019). Heavy players of violent video games showed less fearful "freezing" responses than nonplayers when viewing the gun images, which is perhaps indicative of greater self-perceived dominance and/or reduced threat perception.

Some evidence also suggests that playing violent video games can make players discount a potential opponent's physical formidability, which would be indicative of a heightened sense of dominance in players (Denson et al., 2020). In these experiments, participants viewed photos of men and rated their toughness (i.e., how strong and how intimidating the man was), how well they would fare in a fight, and how much the man could bench press. Participants who played the violent video game reported that they viewed the target men as less tough and thought they would fare better in a fight than participants who played the nonviolent video game. Thus, violent video game play increased self-perceived fighting ability and reduced perceptions of the target men's threat. One caveat is that the effects were not replicated in all three experiments and some effects were moderated by sex and/or trait aggression. It also remains to be seen whether violent video game play actually improves real world fighting ability or simply elicits a biased self-perception of greater toughness. However, even if violent video game players do not become better fighters, enhanced feelings of toughness paired with an anger display may signal to potential opponents that a confrontation will be costly (Sell, Cosmides, & Tooby, 2014).

Testosterone is a physiological correlate of dominance motivation (Eisenegger et al., 2011). Among other physiological functions, testosterone is related to motivations for status and dominance rather than aggression, per se (Archer et al., 2005; Santos et al., 2019). In many species including humans, one way to achieve status is by intrasexual challenges in some form of competition. However, within video games, these dominance challenges are no longer specific to men. Video games can be considered a form of dominance contests that can be played with same-gender or mixed-gender players (Kasumovic et al., 2017).

One implication is that, if violent video game play induces feelings of dominance, winners should experience increases in testosterone, whereas losers should not show this change and may even show a decrease in testosterone. This hypothesis is known as the "challenge hypothesis" or "winner-loser" effect (Archer, 2006). A meta-analysis of 35 years of research confirmed the existence of the winner-loser effect (Geniole et al., 2017). Winners of competitions show a small increase in testosterone in men. However, the meta-analysis included only one violent video game study. In that study, undergraduate men played violent video games in competitions with another group and within a three-member team (Oxford et al., 2010). Men who won the between-group competition and were the best players showed increases in testosterone, but this effect occurred only among men who played the between-group

competition first. The authors suggested that the testosterone response may contribute to the attractiveness of coalitional competition between males. Another study of violent video game play found no change in testosterone, but did not examine winner-loser effects (Gray et al., 2018). According to the challenge hypotheses, this finding would be expected as increases in testosterone should only occur in winners (i.e., people with positive self-perceived performance). However, the small sample size of this study (N = 26) or omitting the win-lose variable may have produced this null result.

Another perspective on winner-loser effects and testosterone is known as the status instability hypothesis. This hypothesis suggests that competitions that do not produce a clear winner increase uncertainty in competitors (e.g., a tie in a soccer game; Zilioli, Mehta, & Watson, 2014). This uncertainty can increase testosterone in losers. Such status instability effects on testosterone are well documented in the nonhuman primate literature (Zilioli et al., 2014). As the social hierarchy becomes more uncertain, an increase in testosterone many facilitate behavior to obtain status in losers as they attempt to defeat opponents. For instance, one experiment found that administering testosterone to men prior to a nonviolent game competition increased the desire to compete again, but only among men assigned to be low-ranking and in an unstable hierarchy (Losecaat Vermeer et al., 2020). No one has examined the status instability hypothesis in violent video gamers.

To further highlight the attractiveness of dominance in video games, Ashworth, Pyle, and Pancer (2010) conducted an experiment in which participants were told they were viewing an advertisement for a violent video game. The protagonist in this "advertisement" was either a man or a woman and either portrayed as dominant (i.e., defeating many enemies) or nondominant (i.e., being attacked by others). Men showed a more positive attitude for the dominant male protagonist than women did. In a second experiment, the authors examined the attractiveness of dominant characters among gamers and nongamers. One interesting feature of this experiment is that they manipulated whether the protagonist dominated opponents or nonopponents. Gamers liked the game irrespective of who was being dominated, whereas nongamers were less favorable toward the game when the protagonist attacked nonopponents. Consistent with our hypotheses, these results show that the desire for dominance is a likely determinant of the desire to play violent video games.

Mating-Related Processes

One of the adaptive benefits of holding high status in humans and nonhuman animals is access to greater mating opportunities with high-quality mates (Gurven & von Rueden, 2006; von Rueden et al., 2011; van Vugt & Tybur, 2015). In men, dominance can be used to obtain and maintain high status (Mazur & Booth, 1998); in women, physical attractiveness can translate into high status (Blake, 2021). Thus, performing well should make male gamers feel dominant (and of high self-esteem) and therefore more attractive to potential mates. However, because nearly everyone can play violent video games, this effect should extend to female gamers as well.

Our initial empirical foray into testing these ideas partially confirmed these notions. That research involved two online, cross-sectional surveys of over 1,000 people (Kasumovic et al., 2015). The aim was to ascertain the relevant strengths of association of violent video game exposure (level of violence in the games and frequency of play) with demographics (gender, age); status-related variables (trait dominance, intelligence, income); and variables related to mating (self-perceived value as a mate, sexual interest, intimate partner violence, mating motivation).[1]

In multiple regression analyses, violent video game play was positively related to mate value, sexual interest, and mating motivation. Mating motivation was operationalized as the extent to which respondents reported playing video games to make them feel "sexy and strong" and "more attractive to the opposite sex." In addition, violent video game play mediated the relationship between mating motivation and mate value (i.e., the belief that one is a "good catch"). Thus, women who reported positive mating-related effects of violent gaming reported playing more because it likely enhances feelings of value to current or potential partners. This finding is consistent with our hypothesis; however, the lack of this mediation in men was inconsistent with predictions.

In another set of three online experiments, we tested the effects of playing violent video games on several mating-related variables among male and female video game players (N = 1,616; Kasumovic et al., 2021). In each experiment, participants were randomly assigned to play a violent or nonviolent video game for five minutes. Participants reported their self-perceived mate value, the degree to which they play violent video games, their self-perceived performance in the game, desire for sex after they played the game, and general interest in sexual behavior. Participants who reported performing well in the game reported feeling like a better-quality romantic partner (i.e., greater mate value). In one of the experiments, we manipulated status by randomly assigning participants to a rank among other players (i.e., a leaderboard). Participants assigned a relatively higher rank reported higher mate value than participants assigned to a relatively lower rank, although self-perceived performance still had the strongest effect. These findings provide further evidence of a link between violent video game play, and performance in particular, with heightened mate value.

People generally have a good sense of their mate value, and use that self-perception to inform their mate preferences (e.g., "I am moderately attractive, so I prefer an equivalently attractive mate"; Buston & Emlen, 2003). However, if good performance in violent video games induces heightened mate value, participants should feel like they can attract a relatively more attractive partner. For instance, one experiment found this predicted link between violent video game performance and mate selection in men (Welling et al., 2013). In that experiment, men were randomly assigned to win or lose a shooter game against a male confederate and subsequently indicate preferences for short-term and long-term mates. Participants in the win condition showed a greater preference for feminized women than participants in the lose condition. Consistent with the hypotheses, the authors suggested elevated mate value from winning the violent video game competition led to the selection of more attractive women in winners than losers. However, one of our experiments did not find the predicted effects. Thus,

[1] Kasumovic et al. (2015) found that trait dominance was not significantly associated with violent video game play. This null effect was contrary to our hypothesis. It may be that a global self-evaluation of trait dominance may be too coarse of a construct to correlate with violent video game play.

because of these mixed findings, further study is warranted to determine whether good performance in violent video games enhances feelings of being a "good catch" and alters mate preferences.

Although the motivations to gain dominance, status, and mate value may underlie the motivation to play violent video games, these motivations may also underlie the desire to play nonviolent video games as well as other competitive games and sports. However, it should also be noted that "killing" an opponent in a violent video game may establish more dominance over that opponent than other types of winning in nonviolent games (e.g., killing the character removes the player from the game). In any event, the question remains: why do so many humans play violent video games in particular? The following two sections suggest some possible motivations of the desire to play violent video games even more specifically.

Death-Related Processes

The fear of death motivates much individual and social behavior, as revealed by three decades of terror management theory research (Pyszczynski et al., 2015). The theory posits that the combination of a biological proclivity for self-perseveration coupled with humans' awareness that they will inevitability die creates the potential for paralyzing terror. However, most people are not paralyzed with anxiety, and the theory posits that self-esteem and faith in a cultural worldview buffer this anxiety. According to the theory, a cultural worldview is a set of beliefs that give one's life meaning, order, stability, and permanence (promise of immortality; Harmon-Jones et al., 1997). Self-esteem is further defined as an individual's belief about how well they are meeting the standards of the cultural worldview. Experimental tests of the theory have found that when individuals are reminded of their mortality, they engage in attempts to increase their self-esteem and become stronger supporters of their cultural worldview. According to the theory and its research, much of human behavior is motivated by this unconscious fear of death.

Fenichel (1939) proposed that individuals may be motivated to engage in death-defying actions (e.g., parachute jumping) and expose themselves to feared objects so that they can master these experiences and thus experience a "functional pleasure" that reduces the fear of the event. He cited the example of a child who recreated through play a situation he actually feared in reality so that he would learn to overcome his fear. If we are constantly motivated by an unconscious fear of death, then we might expose ourselves to the "threat" of death provided by violent video games so that we can master our fear in a safe environment.

Unfortunately, terror management theory research has not directly tested this idea. However, one study provided some support for this idea in the context of viewing violent movies (Boyanowsky et al., 1974). In this naturalistic field study, a murder of a female student occurred at a university. One week prior to the murder, two movies had started at cinemas near the university. One movie depicted murderers and the other depicted a romantic relationship. Consistent with the counterphobic attitude prediction, attendance at the murder movie increased following the murder at the university, whereas attendance at the other movie did not increase. In addition, women who lived in the same dorm as the murder victim were even more likely to attend the murder movie 1 week) after the murder; women in a control dorm did not show this increase.

These results suggest that individuals may attempt to cope with their fear by exposing themselves to a feared situation in a relatively safe way. A similar account may be witnessed in apocalyptic films, which portray circumstances in which the elimination of humankind is possible (Lieberman & Fergus, 2013). Perhaps this counterphobic reaction explains in part why individuals play violent video games. And playing violent video games may evoke even more functional pleasure than watching violent movies because the players get to kill the threats to their virtual lives.

Violent video games may prime death-related cognition. Being exposed to death and severe violence inherent in violent video games increases aggressive cognition (Anderson et al., 2010). Aggressive cognition is often measured implicitly such as completing words with missing letters. The words can either be completed as aggression-related words or words unrelated to aggression. Many of these aggressive words may reflect death-related cognition induced by violent video games. For instance, the word "k i _ _" could be completed as "kill" or "kiss" (e.g., Gentile et al., 2017). Because these effects seem unconscious as are mortality salience processes, both may create a reciprocal tendency to play violent video games to obtain functional pleasure and stave off the fear of death.

Emotion-Related Processes

A preference for playing violent video games may also be motivated by other emotion-related processes. We characterize these processes along two broad classes: emotional expression and emotion regulation. Emotional expression occurs when an individual's emotional or affective state or trait motivates them to engage in related actions. For example, anger automatically primes aggressive action tendencies. Applied to playing violent video games, individuals who are angry (as a state or trait) may be more motivated to play these games because the anger primes aggressive actions, and playing violent video games is aggressive, if only a fantasy. Thus, we would predict that anger should increase interest in playing violent video games.

Some evidence is consistent with this general prediction. For instance, participants who score higher in aggressiveness (or lower in agreeableness) are more likely to play violent video games (Chory & Goodboy, 2011; Slater et al., 2003). Because agreeableness is inversely correlated with trait anger and aggression, these results suggest that anger-related traits are associated with a motivation to play violent video games.

Perspectives on emotion regulation often emphasize intrapsychic processes such as reappraising the causes and consequences of an emotional episode or suppressing an emotional response (Gross & Thompson, 2007). However, emotion regulation can also occur when an individual engages in a particular behavior to alter their emotional or affective state. Applied to playing violent video games, individuals may play violent video games to change their affective states. Boredom likely motivates violent video game play, but boredom probably motivates interest in playing a wide variety of games in addition to violent ones. On the other hand, "everyday sadism", which is defined as obtaining pleasure from acting in a cruel manner, is associated with a specific interest in playing violent video games (Greitemeyer, 2015). Sadism is related to interest in playing violent video games but not nonviolent video games, and sadism appears to motivate this interest in

violent video games because it increases positive mood (Greitemeyer, Weiß, & Heuberger, 2019).

Acting in accordance with catharsis beliefs is another type of behavioral emotion regulation associated with the motivation to play violent video games. Catharsis is the notion that engaging in aggressive actions or viewing aggressive media will "release" anger. Indeed, an analysis of online game forums found that 16% of the messages mentioned playing violent video games as a means to alleviate angry feelings and other negative emotions (Bourgonjon, Vandermeersche, De Wever, Soetaert, & Valcke, 2016; see also Olson, Kutner, & Warner, 2008). In an experimental demonstration of catharsis beliefs on the desire to play violent video games, participants read a bogus newspaper article that was either procatharsis, anticatharsis, or unrelated (Bushman & Whitaker, 2010). Participants were insulted by a fictitious participant or not. They then indicated their desire to play four violent and four nonviolent video games. Participants who were angered and read the procatharsis article showed greater desire to play the violent games than the remaining participants. The authors conceptually replicated the experiment using individual differences in catharsis beliefs rather than a manipulation. These findings suggest that people who believe playing violent video games can lower anger are more motivated to play them.

Predictions of the IMT-VVG: Individual Differences That Determine Violent Video Game Play

The strength of our model lies in the ability to predict which individuals will spend the most time playing violent video games and possibly develop pathological gaming problems. In brief, people with low social status (and of low self-esteem), who are angry-aggressive or sadistic, who have little faith in a cultural worldview, who strive to defend their high status with dominance, and/or who have strong interest in sexual activity will feel the strongest desire to play and play most often (given optimal situational allowances). For players who perform well, they achieve a boost in status (e.g., moving up on a leaderboard, number of kills, accolades from coplayers). Depending on the context of the game, these high-performing people should have increased testosterone and experience enhanced feelings of self-esteem, dominance, mate value, and fundamental psychological needs. These rewarding aspects of video game play should cause further play over time. However, these increases may only be transitory and only occur immediately after game play. Once these gamers rejoin the "real world" and go to schools, jobs, and other social events, they may receive other inputs that lower their increased dominance. As a result, they may long for a return to their games where they can experience the increased dominance once again.

In addition, video games are designed in such a way to encourage players to practice to improve their performance. Game designers also develop multiplayer games to ensure players are matched to individuals of their own level. This ensures that individuals experience an approximately equal number of wins and losses to encourage them to keep practicing. This, in turn, could lead to individuals continuing to play until their performance has reached a level to induce a feeling of satisfaction of these needs or they reach a threshold of their ability or performance that they are satisfied with. They may also play so much that they develop pathological gaming problems.

Low Perceived Social Status

People who are uncertain about their social status or perceive themselves to be of low social status can potentially benefit the most in terms of a subjective increase in social rank. They should therefore be motivated to play violent video games. To the extent that self-esteem indicates one's social status, stigmatized people may be more likely to play violent video games more than people from nonstigmatized groups. Consistent with this idea, African Americans spend more time playing violent video games than Latinos and Whites (Tortolero et al., 2014). The poor are also stigmatized as low status. Children who live in neighborhoods of disadvantaged socioeconomic status spend more time playing video games than their counterparts in wealthier neighborhoods (Carson et al., 2010). However, the authors did not distinguish between violent and nonviolent video games. Similarly, less educated boys played more violent and nonviolent games than more educated boys (Lemmens et al., 2006). Subjective social comparisons also influence attraction to violent video games. For instance, feelings of being unjustly placed in a position of disadvantage and low status relative to more advantaged, high status members of society (known as relative deprivation) are positively associated with violent video game play and aggression (Greitemeyer, 2019; Greitemeyer & Sagioglou, 2019). Although these findings are subject to alternative explanations, they are consistent with the prediction that low status may increase video game playing.

Poor psychological function and mental illness may also increase the desire to play violent video games. Stigma against the mentally ill is widely endorsed (Parcesepe & Cabassa, 2013). For instance, a longitudinal study of Dutch gamers found that mental health indicators of perceived low social status (i.e., loneliness, low self-esteem, and poor social competence) predicted pathological gaming six-months after study initiation (Lemmens et al., 2011). The authors concluded that these indicators of psychological wellbeing preceded pathological gaming. In light of our hypotheses, these findings suggest that people with poor psychosocial functioning could be driven toward pathological gaming for two separate reasons. First it is possible that these individuals may not easily obtain need fulfillment and a boost in status, feelings of dominance, and/or mate value from pathological gaming. As such, they may play excessively in an attempt to obtain the desired effects. Second, it's possible that people with poor psychosocial functioning may gain a boost in self-esteem and wellbeing and that this boost begins to create a positive reinforcement loop that, once entered, may be difficult to exit. Although both possibilities lead to the same outcome—pathological gaming—the potential mechanism, and therefore solution, will differ.

Attainment of higher status may be paradoxically difficult as pathological gamers are themselves stigmatized by others (Peter et al., 2019). Peter et al. (2019) asked participants to read a description of a pathological gamer and a gambling addict. Relative to a control vignette, the pathological gamer elicited more anger, pity, blame, and avoidance in participants, largely on par with the gambling addicts. Other types of low status are also associated with greater violent video game play. In the military, in which social ranks are explicit, one might expect lower ranking military personnel to play more games than higher ranked military personnel. Indeed, two surveys of over 10,000 American soldiers found that as rank increased, video game play decreased (Orvis et al., 2010).

Compared to adults, adolescents are typically considered lower in social status. Accordingly, adolescents may be especially attracted to violent video games as a means of improving their subjective social standing, mate value, and feelings of dominance. In this sense, low status should motivate game play as it likely does in other low status groups that we have mentioned. However, there are unique developmental aspects that comprise emotional and social development, which may further enhance the desire to play violent games during adolescence. For instance, a representative survey of British 10 – 15 year-olds reported that those who played three or more hours per day showed low levels of psychosocial adjustment (Przybylski, 2014). Given the importance of peers during adolescence, heightened game play in this group may be indicative of an effort to improve social standing and self-esteem. Indeed, poor self-esteem in adolescence positively predicted symptoms of Internet gaming disorder one year later, although the study was not limited to violent video game players (Wartberg et al., 2019).

Adolescence is also a time marked by the development of emotion regulation abilities, which can further enhance social relationships. Adolescents with anger control problems and experiencing emotional distress showed cross-sectional associations with symptoms of Internet gaming disorder (Wartberg et al., 2019). However, no prospective effects were observed for these constructs. Qualitative interviews with adolescent boys revealed that the boys played violent video games to gain status among peers and facilitate emotion regulation (e.g., anger; Olson et al., 2008). In summary, diverse forms of low status are associated with greater violent video game play and may therefore be risk factors for pathological gaming. The unique social and emotional challenges of adolescence may make violent games particularly attractive to this age group.

People Who Are Motivated to Maintain High Social Status via Dominance

Our discussion of people of low status assumes that the motivation to increase status motivates people of low status to play. However, some high-status individuals should also be prone to playing violent video games. We suggest that a subset of those players who are strongly invested in maintaining their rank will exercise dominance behavior over other players. In other words, because dominance is a tool to maintain one's social rank, one should expect that dominant individuals will seek to maintain their place in the hierarchy.

One clear prediction is derived from the fact that nearly everywhere, men hold higher status in most aspects of life and will exert dominance to protect that status. Correspondingly, men constitute a larger proportion of players than women (Entertainment Software Association, 2020). However, we suggest that this gap is shrinking because physical strength is unnecessary to achieve a high rank in violent video games and use dominance to protect that rank. Furthermore, the social acceptability of women playing violent video games has increased. Thus, men and women can compete for status on an equal footing, at least in theory. Despite these developments, women still face marginalization by male gamers (Paaßen et al., 2017).

The content of many games belittles women's social status. Female characters are rarer than male characters. Indeed, characters from high status groups (Whites, men, adults) are overrepresented in video games, but characters from low status groups (women, Latinos, Native Americans, children, and the elderly) are underrepresented (Williams et al., 2009). Challenging high status individuals is a hallmark of a dominance competition, which may make high-status opponents an attractive feature of violent video games for those who desire higher status. An overrepresentation of adult white men may serve as a reminder of who the dominant gamers are.

The desire for status and dominance derived from playing violent video games may produce some potentially damaging outcomes. For instance, men high in social dominance orientation and men who desire power over women are more sexist toward women gamers (Fox & Tang, 2014). Female gamers are frequently harassed by men (Cote, 2017). In a clever experimental demonstration of this phenomenon, Kuznekoff and Rose (2013) played a violent video game against 1,660 unique participants in 245 matches. The researchers manipulated the perceived gender of their character by having the character emit spoken, prerecorded messages in a woman's or man's voice. There was also a no-voice control condition. All of the gamers' responses were recorded and subsequently content analyzed. The primary finding was that the character with the female voice received approximately three times the number of negative comments as the character with the male voice.

This female-directed hostility may be due to the fact that coalitional play fighting (as in violent video game competitions) was until recently typically a male affair and women's foray into the male arena may represent a challenge to male hegemony. A secondary analysis of Kuznekoff and Rose's (2013) data showed a more nuanced view that is consistent with our integrative theory. Low performing men were the most hostile toward the woman's voice. The authors suggested that "female-initiated disruption of a male hierarchy incites hostile behavior from poor performing males who stand to lose the most status" (Kasumovic & Kuznekoff, 2015, p. 1). In contrast, high-performing males provided the most compliments to the female voice, suggesting that they may have been hoping to garner the attention of the female "player." In other words, higher status and feelings of dominance may have given a boost to high-performing participants' mate value and increased sexual interest. However, further research could examine whether these high-status men would continue to behave in a supportive manner if the female gamer outperformed them. In summary, traditionally dominant groups in society, especially men, engage in the most dominant behavior toward lower status players, especially women.

People Who Desire Mating Opportunities

The largest proportion of video game players is within the 18–34 age group, which coincides with the normative life period for dating and marriage. In our initial research, we observed that individual differences in sexual interest positively correlated with violent video game play (Kasumovic et al., 2015, 2021) and preferences for more attractive mates (Kasumovic et al., 2021; Welling et al., 2013). However, we know relatively little of the extent to which sexual interest predicts the desire to play violent video games.

Men have a relatively stronger sexual desire than women (Beutel et al., 2008). Interestingly, in a representative sample of Germans, men's sexual desire declined with unemployment and a low household income (Beutel et al., 2008). This finding suggests that

these low-SES men may be inclined to play violent video games if the games provide a boost in mate value and sexual interest.

Sexual interest is probably one of the stronger attractions for male gamers due to the depiction of women as sexual objects in many violent video games. Indeed, female characters in violent video games are usually depicted as hypersexualized objects and men as hypermasculinized and dominant (Burgess et al., 2007). Although such sexualization has declined since 1990; sexualized depictions of women may provide further impetus for men to play these games (Lynch et al., 2016). To illustrate this gender difference, one study found that 39% of female characters showed a mix of sexualization and violence, whereas only 1% of male characters were represented in this manner (Dill-Shackleford & Thill, 2007).

In addition to role of testosterone in dominance, we suggest that men high in testosterone will be attracted to violent video games because of the sexualized women characters. Circulating levels of testosterone in men are positively correlated with sexual arousal in response to pornographic films and viewing time for pornographic images (Rubin et al., 1979; Rupp & Wallen, 2007). We are less certain about the relationship between testosterone and desire to play violent video games in women. The link between testosterone and sexual desire is less clear in women and male characters are less sexualized than female characters. Further studies are required to explore gender, testosterone and the desire to play violent video games.

Sexualized female characters may have potentially dangerous implications for women's wellbeing. In one experiment, men and women played either a sexualized violent video game or a nonsexualized one (Burnay et al., 2019). Participants who played the sexualized game sent more sexist jokes to an ostensible female partner but not a male partner. This effect occurred equally in male and female participants. Similarly, in another study, boys and girls aged 12–15 played either a violent video game with a sexualized character or nonsexualized character (Driesmans et al., 2015). Both boys and girls reported a greater acceptance of rape myths and sexual harassment. The fact that these effects of sexualized characters on sexism extended to girls as well as boys suggests that these games increase acceptance of sexist behavior regardless of gender of the player. People who play violent video games with sexualized content also show arousal after exposure to a rape vignette, identification with the rapist or male character, and increases in masculine beliefs (Gabbiadini et al., 2016).

Other Individual Differences Based on Terror Management and Emotions

As noted above, terror management processes and anger-related emotion expression and regulation may influence the desire to play violent video games. As such, individual difference variables related to these processes may predict the desire to play violent video games. That is, according to terror management theory, variables related to fear of death, self-esteem, and faith in a cultural worldview may relate to interest in playing violent video games. For instance, individuals who dislike anger relative to other individuals (Harmon-Jones et al., 2011) may wish to play violent video games more, because they are less motivated to down-regulate their anger in a more socially acceptable manner.

Future Research Directions

We introduced an integrative theory and the extant data supporting our theory. However, before it can be considered a viable theory, more research targeted at testing the various aspects of the model is needed. Some of the data are inconsistent with hypotheses derived from the theory and deserve further study. Others have little support due to the lack of studies exploring the topic. In this section, we describe outstanding gaps in our knowledge and fruitful future research avenues.

Multivariate Approaches and the Measurement of Violent Video Game Play

As this article has illustrated, several variables likely contribute to the interest in playing video games in general and violent video games in particular. When attempting to systematically study why individuals play violent video games, we recommend that researchers, when possible, take a multivariate approach. For example, rather than simply measuring (or manipulating) dominance-related variables, researchers should also include measures related to terror management processes and anger-related expression and regulation. The inclusion of all of these variables in designs using experimental manipulations will unlikely be feasible, but collection of these variables as individual differences measures may increase our understanding of why individuals play these games. Moreover, well-matched comparisons of violent video games with nonviolent video games would aid in understanding which psychological variables are predictive of interest in violent video games specifically.

Another important issue for future research is the careful consideration of the measurement of playing violent video games. That is, do we measure amount of time played, self-reported interest or desire in play, choice to play, or something else? Laboratory experiments can be used to measure behavioral choices and actual game play, but experiments may be limited in terms of generalizability or they may fail to include the games most relevant to certain participants. Self-reports of interest or desire in playing various games may be contaminated by social desirability concerns, whereas self-reports of time spent playing various games may be influenced by many situational factors that are of less interest to testing psychological theories (e.g., finances, Internet stability, opportunities to use computer, free time). Consideration of these issues may aid in creating more valid measurements of game play.

Is Real-World Aggression an Artifact of Enhanced Dominance Behavior?

Aggression is often a means to exert dominance over others. In this case, aggression is used to protect or achieve social status. From our point of view, it would be unsurprising to find that some of the aggression observed after violent video game play in the laboratory may be a spillover effect of enhanced feelings of dominance experienced from game play. If true, this notion is consistent with the generally small effects of violent video games on laboratory aggression (Anderson et al., 2010; Greitemeyer & Mügge, 2014; Mathur & VanderWeele, 2019).

Can the IMT-VVG Be Extended to Prosocial Behavior?

It is well-documented that playing nonviolent video games with prosocial aims can increase prosocial behavior, whereas playing violent video games can reduce prosociality (for a meta-analysis, see Greitemeyer & Mügge, 2014). However, within violent video games, players may confer leadership status on individuals who risk their own "lives" or make sacrifices in the game to defend ingroup members or defeat enemies in the outgroup. In this sense, prosocial behavior toward one's team members may reward players with a boost in status. It remains to be seen whether this within-game prosociality transfers to the real-world and the extent to which leadership styles may moderate the degree of status achieved by the leader(s).

Are People Consciously Aware of the Motivations for Playing Violent Video Games?

Thus far, we have been agnostic in our discussion surrounding whether people consciously choose to play these games because of the impact the games have on dominance, mate value, and other emotional responses. For multiplayer games, the social connections required to fulfill the need for relatedness is likely an attractive feature for many players. Similarly, existential anxiety may motivate people to play these games. For the purposes of our model, it is unnecessary to take a stance on the conscious awareness that people might have regarding the perceived outcomes of the game. Rather game play is viewed here as a behavior motivated by several processes, and like many motivated behaviors, individuals may be unaware of these motivations.

Can Playing Violent Video Games Benefit People of Low Status?

People of low status are viewed as lacking assertiveness (agency) and competence (Louvet et al., 2019). To the extent that playing violent video games can fulfill these psychological needs, increase dominance, and subjective mate value, they might help low-status individuals become more agentic and competent. These effects might translate into improved self-esteem and status conferred by others. However, to be effective, such positive outcomes would need to persist into daily life. For instance, if an unemployed person fills out a job application after playing a violent video game, the boost in agency, competence, and dominance could produce a stronger application. One potential pitfall is that some low-status people might experience frustration if social constraints do not allow for social mobility among low status groups. Another feature of violent video games that may benefit low status people is that they are very accessible, even to low-income people as there are many low-cost and free games available. Nearly anyone can play, including people with limited mobility and the elderly.

Can the IMT-VVG Explain Pathological Gaming?

Excessive (also known as pathological) violent video game play is of concern among scholars and public health bodies (Ferguson & Colwell, 2020; Gentile et al., 2011). Both the World Health Organization and the American Psychiatric Association have considered adding video gaming disorders to their diagnostic manuals. These putative disorders resemble addictive behavior in the sense that people continue playing despite adverse social, academic, and occupational consequences. Assessment for these putative disorders does not differentiate between symptoms caused by violent versus nonviolent games. However, because most games are violent, it is safe to assume that the majority of people with a gaming disorder play violent games (APA, 2020). A meta-analysis of Internet gaming disorder prevalence rates reported that 4.6% of adolescents in various countries are considered to be pathological gamers (Fam, 2018). Another synthesis of 27 studies reported a very similar prevalence rate of 4.6% in among adolescents and adults (Feng et al., 2017).

There is no fixed criterion for how much time spent playing violent video games should be considered pathological. The DSM-V criteria for Internet gaming disorder emphasizes the adverse consequences of the preoccupation with gaming and the inability to stop or reduce gaming. Thus, gamers who play violent video games several hours per day may not be pathological gamers at all if they do not show adverse consequences (e.g., relationship difficulties, missing work commitments). With further research, the motivational processes in our model may help determine who is most likely to develop an Internet gaming disorder.

Conclusion

In this article, we introduced an integrative theory as a means of understanding the attraction of violent video games. Specifically, people are motivated to play violent video games to satisfy fundamental psychological needs (Przybylski et al., 2010), and to express and regulate emotions, particularly related to anger. In addition, they are motivated to play these games because of desires for achieving high status, improving mate value, and protecting themselves from the fear of death. Furthermore, we have examined individual differences that might further enhance these motivations. As such, some people may be more at risk for pathological gaming than others. We also speculate that violent video gaming may produce prosocial behavior under some circumstances and that people from low status groups may benefit from the boost in subjective dominance and mate value.

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