CYBER ATHLETES: IDENTIFICATION, COMPETITION, AND AFFECT IMPLICATIONS

DISSERTATION

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ABSTRACT

Previous research has shown video games afford learning experiences, thus what occurs within the gaming realm is applicable to the real-world and vice-versa. Therefore, this study extends the video game effects literature by exposing the complexity of competitive gaming situations. In that spirit, this study incorporated a college football game to enact identification processes and direct competition to determine how player membership, opponent membership, and competition outcomes impact media effects variables such as enjoyment, presence, and state hostility. Two-hundred ninety four subjects participated in the 3 (opponent membership—main rival, conference opponent, other opponent) x 2 (player membership—identifier, non-identifier) x 2 (competitive outcome—win, loss) design. Overall, competition outcome significantly predicts levels of enjoyment and state hostility. Moreover, who the gamer plays as and against also influences these responses. Beating an emotionally relevant opponent solicited greater enjoyment than an irrelevant team. Further, losing while playing as an emotionally relevant team produced greater state hostility levels than losing as an emotionally irrelevant team. Similarly, losing to an emotionally relevant opponent generated higher state hostility levels than losing to an emotionally irrelevant team.
Dedicated to my wife, Rachel, and my family and friends

Καλέπα Τα Καλά
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CHAPTER 1
INTRODUCTION

Despite media options such as the Internet, television, and radio, video games quickly are becoming a favored media choice of Americans—so much so that they could be considered America’s new pastime (Barr, Noble, & Biddle, 2007; Kotick, 2001; Ondrejka, 2006; Wood, Griffiths, & Parke, 2007). As a testament to video games’ rapid growth, the gaming industry is a $10 billion (Slagle, 2004)–$12.5 billion (Riley, 2007)-a-year industry, which is approximately $2–4 billion more than movies (Palmer, 2004). To generate such high sales figures, a large percentage of the population plays games. Recent studies have shown more than 90% of American youth play computer or video games, and nearly 75% own a gaming console (McDonald & Kim, 2001; Sherry, 2001). Moreover, nearly 50% of the American population plays video games (ESA, 2005, 2006)—with the average gamer being 33 years old (ESA, 2006).

Even greater evidence regarding the impact of gaming derives from the amount of game play. As shown, the gaming industry sells millions of consoles and games indicating its pervasiveness in society; however, games are considerable time consumers, as well. Those who play video games tend to manipulate their controllers on average 10–30 hours each week (Castel, Pratt, & Drummond, 2005; Gentile, Lynch, Linder, & Walsh, 2004; Jansz & Tanis, 2007; Malliet, 2006; Nelson, 2002; Wood et al., 2007), with
some research indicating play times more toward 50 hours per week (Griffiths, Davies, & Chappell, 2003). Considering heavy game play is “defined as more than two hours a day” (Roe & Muijs, 1998, p. 188), gamers readily could be amusing themselves to death (Postman, 1985).

With mounting evidence demonstrating such prominent resources put toward gaming, it could be deduced players spend more time with their gaming platform(s) than with guardians—and could be spending less time with cohorts than with games. Gaming has diffused into the culture and become such an integrated part of society that today’s American adolescents more readily identify Nintendo’s Super Mario than Disney’s Mickey Mouse (Bensley & Eenwyk, 2001). Although gaming research has increased exponentially during the past 20 years, communication-based research regarding this media effects arena still pales in comparison to traditional media options (Beasley & Standley, 2002).

Therefore, this study aims to further understand the communication process between gaming attributes and the participant in a single player environment. In sum, this study explores various gaming conditions occurring during natural game play situations, such as (1) the role of identification, (2) the role of competitive outcomes, and (3) the effect of gaming conditions on affective and psychological outcomes (e.g., enjoyment, presence, and state hostility)—thereby extending previous media effects literature by exposing the intricacy of gaming where gamer, opposition, and gaming resolution interact to create unique outcomes beyond what research has investigated in the past. For example, this study will help understand the nuances associated with competition
outcomes which much prior gaming research has eliminated by removing that element of
game play in the research design.

In that spirit, a college football game was used to enact or lessen identification
processes (in relation to team identification) in hopes of determining the role
identification plays within competitive gaming experiences on outcomes such as
enjoyment, presence, and state hostility. Thus far, identification has been used to
understand gender and race effects within gaming, but a more universal and less physical
identification attribute manipulation has yet to be studied in this medium—which is
surprising, especially with the high level of identification that occurs in the sports realm
(Branscombe & Wann, 1991; Gibson, Willming, & Holdnak, 2002; Wakefield, 1995;
Wakefield & Wann, 2006) and the popularity of sports games (ESA, 2006; Krcmar &
Farrar, 2006; Riley, 2006; Webster & Bulik, 2004).
CHAPTER 2
LITERATURE REVIEW

As a brief historical synopsis, video games first entered homes in 1972 (Anderson, 2003) with *Pong* (Loftus & Loftus, 1983) and struggled to maintain sales—even during the late 1970s and early 80s when mainstream systems such as Coleco-Vision and Atari were placed on store shelves. Some claim this lull occurred due to a lack of imagination and poor game design (Apperley, 2006), mostly due to the limiting technology of the time. Therefore, the video game industry did not find its roots until Nintendo made its historic debut in 1985 (Nintendo, 2007a). In that year, Nintendo brought home-gaming to new heights through its mass appeal and fresh game design with its Nintendo Entertainment System, beginning the video game revolution in earnest.

Almost immediately, researchers questioned what learning effects games like *Pac-Man* and *Super Mario Brothers* had on those who played them. With high-tech video game devices such as XBOX 360, Nintendo Wii, Playstation 3, or the latest gaming computers now being sold, gamers are playing in more realistic, detailed, and complex worlds than the first gaming experiences of Magnavox, Atari, Coleco-Vision, and Nintendo.

Video games enjoy distinctive attributes from other media, which makes them a fascinating media to study. Utilizing the six relevant attributes for defining media (Eveland, 2003), video games are defined based on where the attributes fall on each
continuum. For instance, gaming is high on the *interactivity* continuum due to the necessity of constant controller manipulation to experience the game (Barr et al., 2007; Jansz & Martis, 2007; Vorderer, Hartmann, & Klimmt, 2003). Second, media is evaluated on *organization*. Video games typically involve low levels of linear information (albeit a game progresses in timed segments or moves to the next level after completing a level) and employ a more nonlinear structure where the player may manipulate the action in infinite ways during play (Barr et al., 2007). Third, video games provide lots of *control* whereby the player can alter the pace, order, and amount of presentation (Barr et al., 2007). Fourth, video games typically are rich in *channel information*, such as video and stereo audio feedback and haptic experiences through gyroscopes in controllers (Newman, 2002). Fifth, *textuality*, differs mostly by game genre (e.g., action, role playing, simulator, sports) or classification, but typically games employ textual symbols to indicate purpose of play, game status, and so on (e.g., time remaining, points cumulated, health status, and so on) (Elverdam & Aarseth, 2007). The final attribute is *content*, which differs radically by gaming genre or classification (ESRB, 2007). Distinctive features within the video game realm, however, include competition (Vorderer et al., 2003), either against the self or against a machine via a machine (Loftus & Loftus, 1983), and increased levels of interactivity and manipulation over previous media.

With a basic understanding of where gaming falls on the six attribute continua, understanding what has been accomplished thus far in the gaming literature will afford the ability to determine what needs to be investigated. A rigorous research agenda of
gaming and its effects from a host of communication strategies—including the
technology used, the content being played, and the environment in which the games are
played—has begun. Much of the gaming literature derives from the media effects
paradigm and focuses on negative, anti-social aspects of game play, such as player
emulation subsequent to violent game play. Others have realized the underlying process
of general learning that occurs (Buckley & Anderson, 2006; FAS, 2006; Loftus & Loftus,
1983; Malliet, 2006; Steinkuehler, 2006) and the potential effects thereof—whether
antisocial or prosocial. Therefore, this study investigates relevant video game research by
addressing general lines of investigation—including the gaming content, the gaming
players, and gaming opponent—within individual game play.

2.1 Game content

Perhaps the greatest amount of research consists of gaming content—most
notably comparisons (or more aptly, differentiations) between violent and nonviolent
games on aggressive and hostile cognitions, affect, and behaviors (Anderson, 2003, 2004;
Anderson, Benjamin, & Bartholow, 1998; Anderson & Bushman, 2001; Anderson,
Deuser, & DeNeve, 1995; Anderson & Dill, 2000; Bushman & Anderson, 2002; Chory-
Assad & Mastro, 2000; Eastin, 2006; Eastin & Griffiths, 2006a; Schutte, Malouff, Post-
Garden, & Rodasta, 1988; Scott, 1995; Sherry, 2001; Tamborini et al., 2004). However,
there are also other content factors impacting the gaming experience, such as saliency of
the action and game perspective.

Gaming content, such as the salience or context of the situation (Witmer &
Singer, 1998), can influence presence levels. When behaviors performed in an
environment are more salient to the user, reported levels of presence increased. For example, as Witmer and Singer (1998) investigated environmental properties to help develop a presence questionnaire, they found as the virtual environment more resembled real life (i.e., movement qualities, localization of sound, real-time updating, and so on), greater levels of presence were achieved. Further, the more excitable the person becomes in the gaming environment, the greater physiological activation, which has been shown to increase emotional involvement (Baldaro et al., 2004).

Moreover, Eastin and Griffiths (2006a) investigated the saliency of gaming content beyond that of the first-person shooter game, which most often typifies violent gaming research. The authors agreed first-person shooter games increased presence and aggressive cognition (Schneider, Lang, Shin, & Bradley, 2004; Tamborini et al., 2004); however, they felt other games (e.g., boxing games) may be more salient than these shooting types of games. They predicted using a more salient action (or situational input) such as fist-fighting would provide an opportunity for players to activate preexisting knowledge scripts, thus allowing for stronger and potentially “transferable” behavioral responses outside the game environment; therefore, the action eliciting previously developed or commonly held “violent reaction scripts” such as punching will have the greatest impact due to the salience of action or situation.

A great benefit of this research came from exposing the assumption in gaming research that all violent game play is equivalent in terms of influence. In terms of the current study, the same justification is predicted to hold. The more the teams are salient for the participant (i.e., heightened emotional involvement), the greater levels of presence
and affect should be reported. Further, game play experiences should transfer into real-life with increased negative affect (e.g., state hostility) after losing and positive affect (e.g., enjoyment) after winning.

Gaming content also differs in the ability for the player to play from a first-person or third-person perspective. It is thought first-person based games increase identification with the gaming character through involvement, which subsequently increases short-term outcomes such as aggression (Leyens & Picus, 1973; Schneider et al., 2004). When playing from a first-person perspective, the decision to aggress leads to greater involvement, which is reflected in the engaging nature of the medium. Characteristics of advanced gaming technologies, such as virtual reality (in terms of vividness and interactivity) also increase identification through increased presence (Tamborini et al., 2004). Additionally, gamers exposed to a game involving a story also felt greater presence (Schneider et al., 2004). Thus, those games garnering the deepest levels of presence should have greater effects on the player—most often studied in the form of hostile expectations or aggression (Tamborini et al., 2004)—although newer research indicates presence and hostile outcomes are independent of one another (Eastin & Griffiths, 2006a).

Further, recent research has shown no significant difference in arousal or involvement between first- and third-person perspectives (Chory-Assad, Goodboy, Hixson, & Baker, 2006; Lim & Reeves, 2006). Third-person is a “a perspective that refers to seeing oneself from the outside as an external observer standing back with respect to the visual scene with a larger field of view available onto the environment”
In their study, Amorim et al. (2000) found an increase in cognitive workload from a first-person (i.e., from the eyes of the character on the screen) perspective. Therefore, third-person perspectives may lessen cognitive effort in interpreting the video game message, thereby allowing the message to more freely be absorbed—and visually reinforced (Lim & Reeves, 2006). Since messages will be more readily accepted, emphasis can be placed on the identification-building aspect of playing video games.

2.2 Game player

One of the most fundamental avenues in which to understand differing media effects is by investigating gender effects. Past studies consistently have shown men play more than females (Griffiths, 1997; Jansz & Martis, 2007; Kirsh, Olczak, & Mounts, 2005; Tejeiro Salguero & Bersabe Moran, 2002), although the disparity has closed more recently (ESA, 2005, 2006). Other gender-based findings suggest although males and females react to violent content similarly (Anderson & Bushman, 2001), males prefer violent content more so than females (ESA, 2005; Gentile et al., 2004; Griffiths, 1997; Lucas & Sherry, 2004) and males are generally more aggressive. Thus, increasing aggressive tendencies through violent game play results in greater aggression related outcomes by males, although there is some indication males experience more positive affect than females while playing video games (Kubey & Larson, 1990). Typically, however, men may increase their punitive behavior and decrease their reward behavior toward others subsequent to violent game play (Ballard & Lineberger, 1999). Additionally, other research found differential gender effects on emotional response.
measures to video games (Lang, Schneider, & Deitz, 1999). Smith, Lachlan, and Tamborini (2003) found male characters are more likely to be the perpetrator and target of game violence.

Anderson and Murphy (2003) explicitly addressed violent video game effects on female players. The study veered from traditional gaming research by emphasizing the gender of the game character, one of the first attempts to realize the power of a mediating variable—identification. The authors found participants who played the violent game reported higher levels of aggressive motivation than those who played the nonviolent game, but the character manipulation was not significant.

A player’s trait also plays a role in video game effects. For instance, research has shown a positive correlation between a person with aggressive tendencies and their exposure to violent media (Anderson & Dill, 2000; Lindsay & Anderson, 2000; Paik & Comstock, 1994). Moreover, those cited with an aggressive personality are more inclined to expose themselves to violent media content throughout life (Allport & Allport, 1921; Cantor & Nathanson, 1997).

Finally, the game player’s skill can play a role in the effects of video game play. Those who play games many hours per week do not need to think about the controller or combinations of buttons to press in order for seamless advancement in the game. In fact, these players can intuitively respond to conditions on the screen and do not need to consciously determine what to do (Bodker, 1989; Sherry, Curtis, & Sparks, 2001). In this way, Chory-Assad and Mastro (2000) indicated “as skill level increases, players can ‘last’ longer in the game, leading to increased frequencies of violence exposure and the
increased likelihood of encountering even more difficult and possibly more violent challenges as the game proceeds” (p. 7). Alternatively, a novice player may need to think about the controller, consciously determine a combination of buttons—thus lessening the concentration on and awareness of the gaming content. In this light, heavy gamers may more readily experience functional interactivity, or the visual connection to game play through simple joystick use producing a greater sense of presence (Eastin & Griffiths, 2006a; Sundar, Kalyanaraman, & Brown, 2003). Not only may heavy gamers experience more presence, but they likely will experience greater doses of the gaming content by playing the game longer and achieving greater success in the game.

2.3 Game opponent

In one of the few studies investigating the role of opponent, Williams and Clippinger (2002) examined the level of frustration and aggression in regards to a person or computer opponent (i.e., category of opponent, media or human). In their study, they used a computer-based Monopoly game as the competition stimulus. When looking at face-to-face stranger interactions versus computer opponents, Williams and Clippinger (2002) found facing a computer opponent increased aggression beyond that of the face-to-face encounter—despite examining competitive play outside the scope of violent content (e.g., Monopoly). To further examine the role of competitor, Eastin (2006) and Eastin and Griffiths (2006a) manipulated the salience of the competitor believing the greater the saliency, the increased hostile effect of competition. Simply put, they thought perceiving playing against another person would incite stronger hostile expectation bias than playing against the computer. However, they found competition against a computer
or against a person did not significantly differ on measures such as hostile expectations, aggressive thoughts, aggressive behaviors, or aggressive feelings. Further, recent research indicated playing against another human generated greater presence, engagement, arousal, and positively valenced emotional responses than a computer (Ravaja et al., 2006)—and playing against a known human elicited greater presence, engagement, arousal, and positively valenced emotional responses than a stranger. The current study follows a similar logic in that playing against a more salient other will incite stronger affect.

During the past 20 years, research also has focused on the dyadic relationship between player and game. Games inherently form a competitive environment in which a player is actively pursuing goals and consistently experiencing opposition to attaining those goals. Research has shown competition increases hostility (Anderson & Morrow, 1995; Berkowitz, 1990; Eastin & Griffiths, 2006b; Sheese & Graziano, 2005). Further, prior research indicates no gender differences in the experience of hostility in competitive gaming environments (Anderson & Morrow, 1995). “Competitive encounters are at least partly frustrating as the contestants block each other’s attempts to reach the disputed goal and threaten each other with a total loss” (Berkowitz, 1989, p. 66) even though game play is done within specified rules and frustration is justified.

2.4 Summary

As shown, there is research delving into communicative avenues of gaming effects, based on content (violent or nonviolent, perspective), player (gender or ethnicity, traits, skills), and opponent (human or computer, competition). Much of the research has
focused on violent game play (e.g., first person shooter and boxing games); however, while research in the violent content domain is important and worthwhile, especially in regard to potential cumulative exposure effects on children, the literature has neglected how gaming can be used as a vehicle to address affective and learning outcomes from socially constructed identifiers, such as sports teams—and how varying the gaming situation is impacted by the identification of competitors and competition outcomes. As such, much of the gaming literature has placed players in “God” mode when investigating gaming effects (Eastin, 2006; Eastin & Griffiths, 2006a, 2006b; Tamborini et al., 2004) and has negated the relevance of competition outcomes within the inherently competitive environments. This study provides a needed step in understanding these various gaming situations in common, natural game play. Sports games are a fruitful genre to invoke identification, as well as competitive situations.

Evidence of sport games popularity is from the NPD Group (Riley, 2006), which stated half of the top 10 selling games for 2005 were directly sports games (e.g., Madden NFL 06 PS2, Madden NFL 06 XBX, NCAA Football 06 PS2, MVP Baseball 2005 PS2, and NBA Live 06 PS2)—and through 2007, sales have remained congruent with past years. One of the most successful video game franchises belongs to EA Sports’ Madden football series (and its offshoot, NCAA football). This franchise annually holds the top spots in overall video game sales (Riley, 2006, 2007; Webster & Bulik, 2004). Given their popularity and the paucity of research, investigations are needed to understand the outcomes from these learning environments.
In sum, the use of this particular game genre will help determine how identification (i.e., for this study, identification with a sports team) and competition outcome impacts communication-based gaming constructs such as enjoyment, presence, and state hostility. In this way, a more basic understanding may be garnered of how relevance and internalization of content may generally affect the gamer and the gaming experience both within and beyond the gaming episode.
CHAPTER 3
THEORY

3.1 Identification

According to Zillmann (1994), identification occurs through the incorporation of an external object’s qualities into one’s own personality—consequently promoting emulation and trait adoption. In the instance of media use, Cohen (2001) has described identification as a “mechanism through which audience members experience reception and interpretation of the text from the inside, as if the events were happening to them” (p. 245). Cohen interpreted identification through the television medium, but the effects from gaming may be the same, possibly even more pronounced, due to high levels of interactivity. For instance, research into video games combine aspects of newspaper and television research since players actively engage in information retrieval like a newspaper but also passively watch like television. In this regard, video games are a particular kind of media that transform a message rather than simply transmitting it (Bodker, 1997; Malliet, 2006). “Television and film are frequently thought of as benign sources of behaviors to be imitated, and although video games imitate the visual and audio elements of films, they go a step further in allowing the media user to interact with the text” (Beasley & Standley, 2002, p. 282).
Further, video games are not just one-and-done events either—nor are video games designed for short time periods of play like their arcade ancestors (Barr et al., 2007; Howells, 2002). “Because video games are designed for repeated play (the more deluxe games are designed for more than 100 hours of play), the games cannot be considered a one-time experience but an ongoing experience that reinforces its social messages” (Beasley & Standley, 2002, p. 280). In this regard, players may become intimately involved through interaction with the gaming content, allowing greater effects to occur.

Morley (1992) claims the idea of identification is so central to media that it would be hard to imagine media having any effect without identification because it incorporates internal processes, such as learning and acquiring information vicariously or through an external point of view. In this way, identification is a motivation for, and an outcome from, media exposure (Cohen, 2001)—thus helping shape a person’s attitudes. Interestingly, identification during media exposure varies—whereby a media consumer alternates (both in time and intensity) between the self and “other” perspective. Identification occurs and strengthens primarily when information is processed from the media content perspective and is then transformed into empathetic emotions (Cohen, 2001; Howells, 2002; Jansz & Martis, 2007; Zillmann, 1994). When this occurs, there is a decrease in the distance felt between the consumer and the media—in other words, the consumer temporarily losses self-awareness in creating a connection with another entity and feels “what it is like to be that person” (Cupchik, 2001, p. 20) or be part of that team in that environment or situation.
From this connection, identification has been shown to positively impact affinity, attachment, affect orientation, emotional reactions, similarity, and imitation of content (Chory-Assad & Cicchirillo, 2005; Cohen, 2001; Eyal & Rubin, 2003; Jansz & Martis, 2007; Konijn & Hoorn, 2005; Zillmann, 1994). Additionally, when participants feel close identification with media content, they exhibit better learning and recall (Basil, 1996; Huesmann, Lagerspetz, & Eron, 1984; Maccoby & Wilson, 1957), as well as greater motivation (Foote, 1951). Investigations in the sports domain have found team identification is the “strongest explanatory factor in predicting repatronage” (Wakefield, 1995, p. 349; Wakefield & Wann, 2006) and has additional positive correlations with a sense of belonging (Gibson et al., 2002), a general positive outlook on life (Branscombe & Wann, 1991), and a better quality of life (Smith, 1988), as well as purchasing associative products (End, 2001; Wakefield & Wann, 2006). Based upon this prior research, it could be expected that those with a higher identification level will experience greater gaming enjoyment.

Within the media effects domain, identification research traditionally has focused on investigating race and ethnic identification (Phinney, 1990; Plummer, 1995; Ying & Lee, 1999) in television and online advertising (Appiah, 2001, 2004; Appiah & Liu, 2005; DelVecchio & Goodstein, 2004; Green, 1999; Seiter, 1994; Spira & Whittler, 2004; Whittler, 1991; Wolsko, Park, Judd, & Wittenbrink, 2004). However, research regarding the role of identification in gaming effects is a recent research agenda. One of the first studies of this agenda manipulated avatar gender to understand the role of sex identification on antisocial behavior (Anderson & Murphy, 2003). Consistent with the
general concept of identification, the authors found those who readily identified with their controlled avatar generally experienced increased effects from the gaming content. Subsequent research supported these findings, as well as found increased identification led to greater perceptions of presence (Eastin, 2006). Similarly, within this study, it is thought identification level is positively related with presence.

Interestingly, prior studies did not include identification measures because the investigators assumed increased identification with gender saliency (e.g., females are assumed to identify with females). In more vague situations of identification (e.g., where simply viewing the individual does not readily associate that person to certain membership, also referred to as an in-group, such as political affiliation or sport team identification), measures assessing psychological ties to others are necessary, and are accomplished through questionnaires appraising the degree of psychological connection between the person and identification object. Prior research has found that “one’s school identification is an important part of self-definition” (Reeves & Tesser, 1985, p. 329) of which a school’s sport team is an extension (Dietz-Uhler & Murrell, 1999). Further evidence is seen in a study where students wore more school-related clothing following a home team victory than defeat (Cialdini et al., 1976). In this spirit, and for the purposes of this study, identification refers to the degree of psychological and emotional connection to a team (Wakefield, 1995; Wakefield & Wann, 2006; Wann, Melnick, Russell, & Pease, 2001).

Identification in this manner also relates to the opponent—also referred to as a comparison group or out-group. This entity (or entities) would receive a low degree of
psychological connection. According to prior research, accessibility and salience of out-
group identification varies (Bruner, 1957; Taylor & Moriarty, 1987; Voci, 2006), often
depending upon the social meaning of similarities and differences. Socially, certain
groupings and distinctions should come to a person’s mind more readily than others,
perhaps from historical intergroup contexts such as competition (Worchel, Axsom, Ferris,
Samaha, & Schweizer, 1978). When this occurs, the identification effects are enhanced.

In this manner, opponents or competitors faced yearly and who readily conjure
memories of great victories and defeats for a conference championship should be most
salient—hence competing against this opponent should produce more extreme effects
levels. An opponent played as part of a conference and most every year should follow
second. Finally, an opponent rarely played with little context should be least salient and
produce the least effects levels. Since saliency levels differ based on the opponent, it
could be deduced effects becomes more pronounced depending upon the opponent;
therefore, it is thought effects will be greatest against a main rival, followed by a
conference opponent, and finally an “other” opponent.

3.2 Social identity theory

This notion of identification through in-grouping and out-grouping also may be
positioned under the social identity theory. The social identity theory developed to
explain why members of groups associated more strongly with in-group members (i.e.,
other group members or teammates) than persons outside the group (known as the out-
group) (Doosje, Spears, & Koomen, 1995; Douglas & McGarty, 2001; Hogg, 2003;
Turner, Brown, & Tajfel 1979). “Social identity is defined as that part of the individuals’ self-concept which derives from their knowledge of their membership of a social group (or groups) together with the value and emotional significance of that membership” (Tajfel, 1982, p. 24). Because humans belong to numerous potential identities, self-concept may be heightened or accentuated under certain conditions (Harwood, 1999; Hogg, 2003; Mastro, 2003; Roccas & Brewer, 2002). For instance, membership must be subjectively important, the person must be a member of that group, and the person should have few alternate, and favorable, identifiers to categorize him or herself. The salience of a person’s identity relies upon a person’s category accessibility and fit—a favorable, valued, or chronically used categorization is “self-evident and perceptually salient in the immediate situation” (Hogg, 2003, p. 469); therefore, these categorization techniques are used to establish which one is triggered in any given social situation (Tajfel, 1981).

Once an identity has been triggered in a given situation, individuals begin to categorize themselves into groups. People tend to demonstrate strong in-group favoritism and by another group merely existing, people demonstrate intergroup behavior (Mastro, 2003) and selectivity of messages (Harwood & Roy, 2005). Intergroup behavior, such as competition, has shown to enhance in-group solidarity, as well as stereotyping and hostility toward the out-group (Worchel & Austin, 1986). Further, as a member of an in-group, greater distinctions against an out-group lead to overall larger effects. However, “no social group in a complex society lives in isolation from others, and therefore the processes underlying the ways in which it compares itself with other groups are crucial to the manner in which it is defined by its members” (Tajfel, 1981, p. 165). In the current
situation, defining groups as fans of a college sports team promotes group membership by an already-established and salient college affiliation (Cialdini et al., 1976; Hirt, Zillmann, Erickson, & Kennedy, 1992)—and the competition between teams increases distinction and solidarity. This is because there is great value and social significance from the association of being part of the group to the point of what occurs to the team directly affects the fans of that team (Hirt et al., 1992).

Moreover, prior research has indicated when certain social identity traits are triggered in media messages, receivers tend to experience greater enjoyment, although that is not always the case for every individual (Harwood, 1999). Because individuals wish to seek out greater enjoyment from these messages, social identity may be used to seek out media programs—such as video games. More specifically, social identity may be used to explain choices for and use of certain games, avatars, or teams (Harwood, 1999).

3.3 Enjoyment

Experiencing enjoyment (a positive affective state) is considered by many to be the core outcome from entertainment (Raney, 2003; Vorderer, Klimmt, & Ritterfield, 2004; Zillmann & Bryant, 1994). Entertainment literature, however, lacks in definitively defining the construct, as noted by Oliver and Nabi (2004). Much of the confusion stems from years of media scholars considering media enjoyment as being outwardly obvious in that media consumption inherently implies enjoyment (Oliver & Nabi, 2004). With that said, however, researchers have been investigating enjoyment in complex and interesting ways because enjoyment involves a variety of factors such as cognitive, affective, social,
and physiological elements. In fact, “numerous theoretical models have been developed that relate to media enjoyment, including those related to disposition, parasocial interaction, involvement, and affect, among others” (Oliver & Nabi, 2004, p. 285).

Much less research has investigated how enjoyment is experienced by media consumers and what can predict an enjoyable outcome. For instance, identification with media characters (Raney, 2003) or within social contexts (Denham, 2004) can lead to increased enjoyment. Further, research has found arousal exacerbates the gaming experience (Anderson & Dill, 2000) which could lead to greater enjoyment. Moreover, increased presence also can raise enjoyment levels (Klimmt & Vorderer, 2003; Sherry, 2004). Much of the current enjoyment research use simple questionnaires assessing self-reported use of enjoyment (Raney & Bryant, 2002; Vansteenkiste & Deci, 2003).

Relevant to the current study is the enjoyment of play. Although often studied in children engaged in playground behavior rather than video games, similarities exist. For instance, play has three major aspects: it is intrinsically motivating and highly attractive, it implies a change in perceived reality, and it is frequently repeated (Klimmt & Vorderer, 2003). As noted, video games are notorious time-consumers with games designed for repeated play (Barr et al., 2007; Beasley & Standley, 2002) and are motivating to play (Malone, 1981; Ziegler, 2007). In this regard, playing games serves psychological needs, including building self-efficacy (Bandura, 1977) and mastery (which may lead to victory in competitive situations), since players actively influence the course of events (Malliet, 2006; Vorderer, 2000; however, Vorderer, Knobloch, & Schramm, 2001, would indicate enjoyment in interactive environments is dependent upon cognitive capacity). Important
to note is players do not worry about potential variation from real-life due to a different set of expectations (Klimmt & Vorderer, 2003) but still interact in a stable, rules-based world (Malliet, 2006).

Enjoyment may be more than just presence or arousal. Much like identification with a media character through empathy (Zillmann, 1991) or parasocial interaction (Horton & Wohl, 1956), enjoyment may be specifically tied into important group identification, such as a sports team; however, research suggests enjoyment should be proportional to the risk of failure, with greater identification more incentive not to lose (Wann et al., 2001). For this study, enjoyment is considered a positive reaction (affective and cognitive) toward the content of the video game (Raney, 2003; Vorderer, Klimmt et al., 2004).

3.4 Presence

The presence literature consists of numerous definitions and measurements. Most often, presence is tied to concepts such as involvement (Klimmt & Vorderer, 2003; Regenbrecht & Schubert, 2002), immersion (Witmer & Singer, 1998), and focus (Fontaine, 1992). As examples of differing definitions, some researchers consider presence as the illusion of non-mediation—or a situation in which a person fails to perceive a medium’s existence (Lombard & Ditton, 1997). Another (Lee, 2004) more recently defined presence as “a psychological state in which virtual (para-authentic or artificial) objects are experienced as actual objects in either sensory or nonsensory ways” (p. 37). Lee indicated three typologies of presence—spatial, social, and self. Spatial presence occurs when, psychologically, the objects in the virtual environment are
perceived as real. Social presence occurs when virtual actors or avatars are experienced as real. Finally, self-presence occurs when the virtual self is perceived as real. Perhaps the most parsimonious definition of presence stems from Slater and Usoh (1994) who describe presence as simply “being there” in the technological environment. A common undercurrent, though, indicates presence occurs in any locale due to its conception of being a psychological phenomenon.

Analogous to identification, presence is experienced via interaction (Heeter, 1992) and manipulation (Bolter & Grusin, 1999). It is through interaction between the technology and individual (Regenbrecht & Schubert, 2002; Tamborini et al., 2004) that elicit concepts such as involvement (a psychological state in which attention and energy are focused on the medium) and immersion (extent to which the player perceives disconnection from the physical environment) (Witmer & Singer, 1998). The more these concepts engage the individual, the greater the attention given to the gaming content (Vorderer, Wirth et al., 2004) due to easing the player’s mental strain. In this regard, presence can increase the effects of the experience.

Another example of presence increasing an effect may be found in terms of enjoyment (Heeter, 1992; Sabri, Ball, Fabian, Bhatia, & North, 2007); however, there is little research investigating the effect of presence-on-enjoyment connection due to it being taken for granted (Lombard & Ditton, 1997). This is likely due to the thought that congruent audio and visual information will be easier to process and engage with than conflicting information—or involvement with technology that seamlessly produces simulated real-world experiences will generate a more pleasant experience than
technology producing sickness (Bolter & Grusin, 1999; Kennedy, Lane, Berbaum, & Lilienthal, 1993; Malliet, 2006). Therefore, in line with the research, it is expected those experiencing higher levels of presence will enjoy the games more. Moreover, because saliency may differ by opponent, it is thought presence levels will differ by opponent with main rival (most salient) garnering the highest levels of presence, followed by conference opponent (middle saliency) and “other” opponent (low saliency).

Presence has been measured in numerous ways (see van Baren & IJsselsteijn, 2006). One way has been to investigate naturalistic behaviors (or reactions) such as facial expressions (Huang & Alessi, 1999), startle response (Nichols, Haldane, & Wilson, 2000), postural sway (Freeman, Avons, Meddis, Pearson, & IJsselsteijn, 2000), and other conditioned social responses (IJsselsteijn, De Ridder, Freeman, & Avons, 2000; Prothero & Parker, 2003). These measures are free from subjective bias and can indicate continuous measures of presence instead of an overall measure. However, behavioral measures are not without criticism. For instance, the researcher investigating behavioral responses may be sensitive to bias or analysis may be too time-intensive. Further, presence has been described as a subjective experience (Witmer & Singer, 1998) to the point of indicating that “subjective report is the essential basic measurement” (Sheridan, 1992, p. 121). Moreover, use of questionnaires (Vorderer, Wirth et al., 2004; Witmer & Singer, 1998) have shown consistent and accurate results in tapping into a person’s presence experience. However, some researchers (Vorderer, Wirth et al., 2004) indicate not enough presence scales have been built upon theoretical backbone. In this regard, and for the purposes of parsimony and this study, presence is considered the psychological
degree to which objects in the gaming environment are experienced as actual objects (Lee, 2004) through the intensity of attention given to the medium and suspension of disbelief (Vorderer, Wirth et al., 2004). Thus, this study taps into the two levels of spatial presence—process (attention allocation) and state (suspension of disbelief) factors (Vorderer, Wirth et al., 2004)—to provide theoretical backing into presence results.

3.5 Competition

Competition is an important aspect of video games, as well to America’s society in general (Bonta, 1997). A majority of American citizens strongly believe in competition and believe it to be a basic component of society—a necessary factor for achievement in economics, arts, science, and sports (Bonta, 1997). A basic element to competition is the inverse relationship of goal attainment between two people—as one advances toward achieving a given goal, the other moves further from it. All sporting events consist of competition, either being interactive (e.g., football) or noninteractive (e.g., figure skating) (Deci & Olson, 1989). Interestingly, “competition is said to promote comradery and friendship, and the mastery of general and unique motor skills, attained through disciplined training” and is essential for character formation (Zillmann, Bryant, & Sapolsky, 1989, p. 244). Further, competition affords the ability for people to experience solidarity.

Much of the research has centered on the spectators of competitive situations; however, these competition concepts (e.g., comradery, friendship, skills) are deemed unattainable through spectatorship (i.e., passive viewing). Research has gone so far as to indicate a multitude of negative aspects from sports spectatorship—from riots, lootings,
and killings to the halting of nation relations (Sloan, 1989; Zillmann et al., 1989); furthermore, no evidence exists that viewing sports concludes with a cathartic release (Goldstein & Arms, 1971; Turner, 1970) despite hypotheses to the contrary (Dollard, Doob, Miller, Mowrer, & Sears, 1939; Storr, 1968). Granted, however, sensational stories of spectators run amok are easily conjured despite there being billions of spectators and so few incidences.

Research has shown, however, spectatorship helps integrate and cement social circles, be it a community, town, state, region, country, or world by bolstering self worth and societal belongingness (Branscombe & Wann, 1991; Smith, 1988). Sport is a universally employable conversation topic (Zillmann et al., 1989) and common denominator (Cozens & Stumpf, 1953), which is in little doubt considering how much attention is given to sports in media (e.g., dedicated cable networks, entire newspaper sections, sports radio, electronic resources, and so on) and in Americans’ daily ritual where nearly three quarters discuss, watch, or read sports daily (Branscombe & Wann, 1991; Iso-Ahola & Hatfield, 1986; Sloan, 1989; Wann & Branscombe, 1992). More specifically, American football for the citizens of the United States represents the “competitive ethos” of the nation, thus binds people together (Bonta, 1997). Football “provides a civil religion for the people of the United States that touches ‘a deep, vital core within the national soul, perhaps because of its aggressiveness, territoriality and fluid interplay between community and individualism’” (c.f., Bonta, 1997, p. 309; Pope, 1993, p. 243).
Much research in the competition realm is based upon spectatorship since studying the impact of participation as a favored identity has been lacking due to methodological constraints. However, gaming combines passive media (e.g., television), as well as interactive media (e.g., newspapers) — representing a union of participation and spectatorship. With that said, engaging in a sports video game is neither full participation nor complete spectatorship since it is a simulation (Malliet, 2006). A player is not literally engaged in the physical space of the game’s physical boundaries; however, a gamer is not idly and passively viewing events as they unfold, either. In competition there are winners and losers and a gamer must take credit for defeat as much as victory — thus a person cannot engage in mental maneuvering to distance the self from a losing team (Cialdini et al., 1976). In this way, a football video game encompasses interactivity, involvement, manipulation of play, and competition outcomes, as well as identification processes.

Important to note in competition is the relevancy of the teams playing (Vorderer et al., 2003). In football, two teams compete during a contest; however, accessibility and salience of the player and opponent varies (Bruner, 1957; Taylor & Moriarty, 1987; Voci, 2006). In this manner, certain groupings come to a person’s mind more readily than others, enhancing categorization and identification effects. For instance, prior research regarding competition indicates, “Seeing a liked player struggle with a tough rival not only should be more suspenseful, but should also liberate more enjoyment than the safe play against a weak opponent” (Zillmann et al., 1989, p. 266) — meaning enjoyment increases in intensity as saliency of player and opponent increases (Vorderer et al., 2003).
Few researchers have included sports as a gaming genre in gaming effects research; however, recent work provided one of the first relationships between sports games and physical aggression. It was shown this type of game was related to physical aggression ($r = .28$, $p < .001$) but not verbal aggression (Krcmar & Farrar, 2006). More generally, prior research has consistently linked competition with aggression (Anderson & Morrow, 1995; Bales & Borgatta, 1955; Benson, Gordon, & Roy, 2000; Berkowitz, 1989; Bonta, 1997; Mahood & Linz, 2006). Competition is inherently frustrating because of continual resistance toward obtaining a desired goal. Further, Berkowitz (1989; 1990) has shown aggression develops as a response to frustration. Moreover, frustration has been linked to priming aggressive thoughts and behavior (Anderson & Morrow, 1995). However, competition also has shown to liberate gaming enjoyment from defeating an opponent (Vorderer et al., 2003). For purposes of this study, competition is considered the outcome (Goff, 1996) in the video game.

3.6 Hypotheses

Based upon prior media research, as well as the theoretical backbones explicated above, several hypotheses are addressed. First, due to saliency differences associated with identification (Branscombe & Wann, 1991; Wann & Branscombe, 1993), it is thought stronger identification increases enjoyment. Because increased identification has shown to increase enjoyment levels (Klimmt & Vorderer, 2003) and winning in competitive situations increases enjoyment (Vorderer et al., 2003), the following are hypothesized regarding the relationships to enjoyment:
H₁a: Player identification predicts enjoyment levels where playing as an identified team is more enjoyable than playing as a non-identified team.

H₁b: Opponent identification predicts enjoyment levels where playing against a salient team (e.g., main rival) will garner greatest enjoyment levels, followed by conference team and an “other” team respectively.

H₁c: Competition outcome predicts enjoyment levels where winning the competition will garner greater enjoyment levels than losing.

Second, due to saliency differences associated with identification (Branscombe & Wann, 1991; Wann & Branscombe, 1993), it is thought stronger identification would increase presence. Further, prior research has indicated salience of the opponent varies (Bruner, 1957; Taylor & Moriarty, 1987; Voci, 2006), thus it is thought presence would increase with the saliency of the opponent. Also, competitive games must be attended to until the conclusion in order to achieve the desired resolution, which should exacerbate gaming presence. Therefore, it is predicted that winning would achieve greater presence levels than losing. The following are hypothesized regarding the relationships to presence:

H₂a: Player identification predicts presence levels where playing as an identified team garners greater presence levels than playing as a non-identified team.
H2b. Opponent identification predicts presence levels where playing against a salient team (e.g., main rival) garners greatest presence levels, followed by conference team and an “other” team respectively.

H2c. Competition outcome predicts presence where winning the competition will garner greater presence levels than losing.

Finally, due to saliency differences with the team played as (Branscombe & Wann, 1991; Wann & Branscombe, 1993), as well as against (Bruner, 1957; Taylor & Moriarty, 1987; Voci, 2006), it is predicted state hostility levels will increase as saliency of identification increases. Further, because state hostility levels have shown to increase in competitive situations (Berkowitz, 1989, 1990; Bonta, 1997; Wann et al., 2001), particularly through frustrating situations (i.e., a loss), the following are hypothesized regarding the relationships to state hostility:

H3a. Player identification predicts state hostility levels where playing as an identified team garners greater state hostility levels than playing as a non-identified team.

H3b. Opponent identification predicts state hostility levels where playing against a salient team (e.g., main rival) will garner greatest state hostility levels, followed by conference team and an “other” team respectively.

H3c. Competition outcome predicts state hostility where losing the competition will induce greater state hostility than winning.
CHAPTER 4

METHODS

4.1 Participants

According to an a priori power analysis, when choosing an alpha level at .05 and a medium effect size ($f = .25$), a total sample size of approximately 288 participants, or 24 persons per group, are needed to reach a power of .8 (Faul & Erdfelder, 1992).

4.2 Design

This study required a 3 (opponent membership) X 2 (competition outcome) X 2 (player membership) experimental design (see Table 4.1).

<table>
<thead>
<tr>
<th>Player membership</th>
<th>Identifier</th>
<th>Non-identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opponent membership</td>
<td>Main rival</td>
<td>Conference opponent</td>
</tr>
<tr>
<td>Win</td>
<td>Loss</td>
<td>Win</td>
</tr>
</tbody>
</table>

Table 4.1: Study factorial design—3 (opponent membership) X 2 (competition outcome) X 2 (player membership)
Opponent membership consisted of three factors: main rival, conference opponent, and other opponent (see Table 4.2). A pilot survey given to the general demographic was used to determine the opponent teams for each category. Main rival (Michigan, which is Ohio State’s final conference opponent every year and often determines the conference championship) is considered the opponent to which participants have high emotional regard, and the participants believe winning against is imperative—a loss to the main rival may constitute a failure of a season ($M = 1.63, SD = .89$, where one represents low identification and seven represents high identification). Conference opponent (Indiana, another Big Ten team played annually) is an opponent to which participants have emotional regard and winning against is important, but competition is not nearly as strong ($M = 1.20, SD = .41$). Other opponent (Northern Illinois, a team outside the Big Ten conference) indicates an opponent not played year-in and year-out and information regarding that team is scarce so emotional involvement and identification is considered low ($M = 1.13, SD = .52$).

Involvement with these teams were based upon previous literature indicating team sport involvement as “a psychological state of motivation, arousal, or interest in a team and related activities that is evoked by individual characteristics and situational factors that possess drive properties” (Funk, Ridinger, & Moorman, 2004, p. 40). These teams define varying levels of opponents against which the players competed. Further, pairwise comparisons indicate main rival was significantly greater from conference opponent, $t(99) = 4.68, p < .05$, main rival was significantly greater from other opponent, $t(99) = $
4.96, \( p < .05 \), and conference opponent was significantly greater from other opponent, 
\( t(99) = 3.54, p < .05 \).

<table>
<thead>
<tr>
<th>IV—Opponent membership</th>
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<tbody>
<tr>
<td>Main rival</td>
<td>High identification (Michigan)</td>
</tr>
<tr>
<td>Conference opponent</td>
<td>Medium identification (Indiana)</td>
</tr>
<tr>
<td>Other opponent</td>
<td>Low identification (Northern Illinois)</td>
</tr>
</tbody>
</table>

Table 4.2: *Manipulations of independent variable—Opponent membership*

Competition outcome included two main factors: *win* and *loss* (see Table 4.3). In competitor wins, the participant is the ultimate winner of the game whereas in competitor loses, the participant’s opponent is the ultimate winner of the game. Winning or losing was based on the total number of points scored during the game’s time frame (roughly 20 minutes generated from the natural game play of four, two-minute quarters). In the rules of college football, no ties can occur (Adams, 2006).

<table>
<thead>
<tr>
<th>IV—Competition outcome</th>
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<tbody>
<tr>
<td>Win</td>
<td>Scored more points than competitor at game’s conclusion</td>
</tr>
<tr>
<td>Loss</td>
<td>Scored less points than competitor at game’s conclusion</td>
</tr>
</tbody>
</table>

Table 4.3: *Manipulations of independent variable—Competition outcome*
Player membership situation included two factors: *identifier* and *non-identifier* (see Table 4.4). Identifier represented playing as the team most readily identified. Based upon pilot study information of the general demographic, Ohio State was the overwhelming response ($M = 5.86, SD = 1.83$). Non-identifier represented playing as a lowly identified team. As indicated in a pilot survey, San Diego State was low ($M = 1.06, SD = .21$) and thus was the team utilized for the non-identifier group. Identification distinctions allowed for strength of identification (e.g., high and low) to be manipulated. The difference between identifier and non-identifier was significant, $t(99) = 26.39, p < .05$.

<table>
<thead>
<tr>
<th>IV—Player Membership</th>
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</thead>
<tbody>
<tr>
<td>Identifier</td>
</tr>
<tr>
<td>Non-Identifier</td>
</tr>
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</table>

Table 4.4: *Manipulations of independent variable—Player membership*

### 4.3 Procedure

Students were recruited from communication classes at the main campus of a large Midwestern university (i.e., Ohio State) which is part of the Big Ten athletic conference. After orally presenting general information regarding the research (see Chesney, 2006), emphasizing the volunteer nature of participation, and describing
potential risks and benefits to participation, participants registered for any remaining available study session time slots as indicated on an online research calendar.

Upon registering for a study time-slot, participants were provided an e-mail indicating confirmation of research time, a Web site where the online pre-test may be located and completed (see Couper, 2000, for more regarding online surveys) prior to attending the lab session, and the laboratory location where participants were to arrive for the study. Additionally, the e-mail and Web site included the principle investigator’s contact information which could be used to request additional information or to cancel or reschedule a research time. Each participant received confirmation of his or her research time at sign-up, as well as two personal reminder e-mails regarding her or his research time (Chesney, 2006)—two days and one day before her or his scheduled participation.

Participants were required to complete the online pre-test questionnaire prior to arriving to the lab session. The questionnaire could be completed using any Internet-capable computer. If the participant had not completed the survey prior to arrival, the post manipulation data provided was not used in analysis.

Once arriving to the laboratory room, participants were directed toward the console, given verbal instructions in how to use the controls for approximately five minutes, and allowed to practice alone for approximately 10 minutes. Participants played a third-person football game, *EASports NCAA Football 2007* (EASports, 2007), on the XBOX 360 (xbox.com, 2007) connected to a Panasonic 42-inch high definition plasma television (with the XBOX 360 gaming output set at 1080i). During this training time,
participants practiced offense (e.g., play calling, running, and passing), defense (e.g., play calling and tackling), and kicking (e.g., field goals).

As mentioned above, the participants played the game from a third-person perspective. This is “a perspective that refers to seeing oneself from the outside as an external observer standing back with respect to the visual scene with a larger field of view available onto the environment” (Amorim et al., 2000, p. 166). In their study, Amorim and colleagues (2000) found an increase in cognitive workload from a first-person (i.e. from the eyes of the character on the screen) perspective. Limiting this study to the third-person perspective reduced any distraction effect, not to mention the novelty effect due to sports games’ convention of being third-person. Therefore, emphasis was placed on the identification-building aspect of the game through readily available visual cues.

After practice, the participants were led to a separate, private room with no gaming equipment for approximately one minute while the researcher set-up the game settings and XBOX Live (Microsoft, 2007) connection. Once the game was established, participants were brought back to the gaming room, given final instructions, and left “alone” to play.

Participants were randomly placed into one of the 12 experimental conditions. They played the game for approximately 20 minutes (a complete game with four, two-minute quarters) against an unknown human opponent (i.e., confederate) and perceived playing against the console opponent. The confederate was placed in a separate room with the gaming consoles linked via XBOX Live as to provide a private viewing of
content action and maintain the illusion the participant was competing against the console opponent, not a human. Informal manipulation checks indicated participants perceived playing against the console due to repeated unsolicited stories of gaming action to the confederate, as well as comments regarding the “computer” opponent—including from heavy XBOX 360 users.

After gaming exposure, participants were led into another room to complete the online posttest questionnaire. Once completed, the participants were read the debriefing statement, provided an opportunity to ask questions, thanked for their participation, and led from the research laboratory. Total time commitment took approximately 60 minutes (separated into 15 minutes for pretest, 15 minutes for training, 20 minutes for gaming manipulation, and 10 minutes for posttest).

Participants received either research participation credit or extra course credit, depending upon the structure of each individual class requirement. Participants also were provided an alternate non-research option to receive credit. Students were chosen because undergraduates are appropriate samples in video game research due to their level of play in comparison to other media (Jones, 2003), as well as they are closely tied to an educational institution, hence collegiate athletic teams (i.e., independent variable(s)).

4.4 Outcome measures

To address the hypotheses stated above, three dependent measures were assessed—enjoyment, presence, and state hostility (see Table 4.5 for raw descriptive statistics). All summed scales have been converted to their respective average sum. The dependent variables were measured as follows:
Enjoyment was assessed using an enjoyment scale used in sports research (Gan, Tuggle, Mitrook, Coussément, & Zillmann, 1997). The seven-item questionnaire used an 11 point Likert scale (1 = not at all, 11 = extremely) and included items such as “I enjoyed it”, “It excited me”, and “It bored me” (reverse coded). Prior research has demonstrated the scale to have a high alpha level ($\alpha = .95$) (Gan et al., 1997).

Presence experienced was assessed using the attention allocation and suspension of disbelief questionnaires (Vorderer, Wirth et al., 2004) to tap into the process factor (attention allocation) and state factor (suspension of disbelief) of spatial presence. The eight items of the attention allocation scale were assessed on a five point Likert-type scale ranging from 1 (I do not agree at all) to 5 (I fully agree) and has shown a good alpha ($\alpha = .93$). Example items include “I devoted my whole attention to the video game,” “I dedicated myself completely to the video game,” and “My attention was caught by the video game”. The eight items of the suspension of disbelief scale were assessed on a five point Likert-type scale ranging from 1 (I do not agree at all) to 5 (I fully agree) and has shown a good alpha ($\alpha = .83$). Example items include “I didn’t really pay attention to the existence of errors or inconsistencies in the video game” and “It was not important for me whether the video game contained errors or contradictions”. Six items of the suspension of disbelief scale required reversed coding (e.g., “I concentrated on whether there were any inconsistencies in the video game”).

State hostility was measured using the Anderson, Deuser, and DeNeve (1995) state hostility measure—also known as the current mood scale—which has shown to have a high alpha ($\alpha = .96$). Participants were asked to indicate the extent to which they agreed
with each mood statement through 35 Likert-type items. The items ranged from a score of 5 (strongly agree) to 1 (strongly disagree). Example items include “I feel furious” and “I feel angry.” Of the 35-items, eleven needed to be reversed scored (e.g., “I feel friendly”).

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoyment</td>
<td>7.82</td>
<td>2.03</td>
<td>1.67</td>
<td>11.00</td>
<td>.90</td>
</tr>
<tr>
<td>Attention allocation</td>
<td>4.39</td>
<td>.72</td>
<td>1.38</td>
<td>5.00</td>
<td>.92</td>
</tr>
<tr>
<td>Suspension of disbelief</td>
<td>3.33</td>
<td>.89</td>
<td>1.00</td>
<td>5.00</td>
<td>.86</td>
</tr>
<tr>
<td>State hostility</td>
<td>2.03</td>
<td>.52</td>
<td>1.23</td>
<td>3.94</td>
<td>.94</td>
</tr>
</tbody>
</table>

Note: N = 294

Table 4.5: Raw descriptive statistics—Dependent variables

4.5 Controlled variables

Competitiveness, trait aggression, immersive tendency, perceived arousal, and presence were controlled, when appropriate, as alternative explanations for the dependent variables (see Table 4.6 for raw descriptive statistics). For all analyses, gender was controlled. As indicated, past studies consistently have shown men play more than females (Griffiths, 1997; Jansz & Martis, 2007; Kirsh et al., 2005), men and women emotionally respond to games differently (Lang et al., 1999), women tend to avoid game genres featuring competition (Lucas & Sherry, 2004), and men are more competitive in general (Maccoby, 1990, 1998), which could impact gaming outcomes.
Regarding analyses investigating enjoyment, gender, presence, and perceived arousal were controlled. Prior research has shown presence increasing the effect of enjoyment (Bolter & Grusin, 1999; Heeter, 1992; Kennedy et al., 1993; Klimmt & Vorderer, 2003; Malliet, 2006; Sabri et al., 2007). Further, research has found perceived arousal positively impacts the gaming experience (Anderson & Dill, 2000), which could lead to greater enjoyment.

Concerning analyses with presence, gender, perceived arousal, and immersive tendency were controlled. Because perceived arousal can exacerbate gaming outcomes, it could impact presence. Further, as indicated, presence was measured as two factors. Analyses including attention allocation controlled for immersive tendency, as a predisposition toward attending the media has shown to be positively related to presence levels (Witmer & Singer, 1998). The measure of immersive tendency only taps into the process factor of presence.

Regarding state hostility, gender, presence, perceived arousal, trait hostility, and trait competitiveness were controlled. Prior research has demonstrated presence positively impacts gaming outcomes by increasing the involvement (Klimmt & Vorderer, 2003; Regenbrecht & Schubert, 2002) and immersion (Witmer & Singer, 1998) within the gaming context. Further, perceived arousal (Anderson & Bushman, 2001), trait hostility (Anderson & Bushman, 2001), and trait competitiveness (Anderson & Morrow, 1995; Berkowitz, 1989; Bonta, 1997; Mahood & Linz, 2006) have shown to positively impact state hostility.
These constructs were measured as follows (with presence factors already explicated above):

*Trait competitiveness* was measured from the Sports Orientation Questionnaire (Gill, 1988; Gill & Deeter, 1988; Giuliano, Popp, & Knight, 2000; Houston, McIntire, Kinnie, & Terry, 2002). Example items from the 25-item measure includes, “I am a determined competitor” and “I thrive on competition” with choices spanning from strongly disagree (1) to strongly agree (5). The competitive factor is consistently established and has acceptable reliability ($\alpha = .94$) (Houston et al., 2002).

*Trait aggression* was measured utilizing the 29-item Buss-Perry Aggression Questionnaire (Buss & Perry, 1992). Trait aggression was assessed via the questionnaire’s four scales: anger, hostility, physical aggression, and verbal aggression. The 29 items were measured on a seven point Likert-type scale where 1 indicates the item is extremely uncharacteristic of me and 7 is extremely characteristic of me and has been shown to have a high alpha ($\alpha = .91$) (Buss & Perry, 1992). A sample item includes, “Given enough provocation, I may hit another person.”

*Immersive tendency* was assessed from Witmer and Singer’s (1998) immersive tendency questionnaire (ITQ). The 34-item ITQ used a seven point semantic differential scale. Sample questions include, “Do you easily become deeply involved in movies or TV dramas?” and “Do you ever become so involved in doing something that you lose all track of time?” with choices from never (1) to often (7). Prior research has indicated a good reliability ($\alpha = .75$) (Witmer & Singer, 1998).
Perceived arousal was garnered from the perceived arousal scale (Anderson et al., 1995). The scale consists of 24 items of self-report arousal (e.g., “active”; “excited”) measured on a five point Likert-type scale (1 = very slightly or not at all, 5 = extremely). Fourteen items were reverse coded (e.g., “exhausted”). Previous research demonstrated a high alpha level (0.94) for the scale (Anderson et al., 1995).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait competitiveness</td>
<td>3.83</td>
<td>.72</td>
<td>1.00</td>
<td>5.00</td>
<td>.95</td>
</tr>
<tr>
<td>Trait aggression</td>
<td>3.10</td>
<td>.96</td>
<td>1.20</td>
<td>5.78</td>
<td>.92</td>
</tr>
<tr>
<td>Immersive tendency</td>
<td>4.01</td>
<td>.73</td>
<td>1.06</td>
<td>5.89</td>
<td>.78</td>
</tr>
<tr>
<td>Perceived arousal</td>
<td>3.62</td>
<td>.67</td>
<td>1.67</td>
<td>4.92</td>
<td>.94</td>
</tr>
<tr>
<td>Attention allocation</td>
<td>4.39</td>
<td>.72</td>
<td>1.38</td>
<td>5.00</td>
<td>.92</td>
</tr>
<tr>
<td>Suspension of disbelief</td>
<td>3.33</td>
<td>.89</td>
<td>1.00</td>
<td>5.00</td>
<td>.86</td>
</tr>
</tbody>
</table>

*Note: N = 294*

Table 4.6: Raw descriptive statistics—Controlled variables

4.6 Identification measures

To glean a general understanding of the participants and study, several other measures were included, such as identification with the teams (see Table 4.7 for raw descriptive statistics) and general demographics. Identification was measured as follows:

Identification was measured by the 7-item team identification measure (Wann & Branscombe, 1993). The measure includes questions such as “How important to YOU is
it that the Ohio State football team wins?”, “How strongly do your FRIENDS see YOU as a fan of the Ohio State football team?”, and “How often do YOU display the Ohio State football team’s name or insignia at your place of work, where you live, or on your clothing?”. Respondents then respond on an eight point Likert-type scale whether each item is not important (1) to very important (8). Identification for the teams played as and teams played against were assessed. Prior research has indicated a high reliability (α = .91) (Wann & Branscombe, 1993). In the current study, identifier (Ohio State; M = 6.25) was significantly greater than non-identifier (San Diego State; M = 1.07) in terms of identification, t(293) = 54.93, p < .05. Moreover, main rival (Michigan; M = 1.47) was significantly greater than conference opponent (Indiana; M = 1.21), t(293) = 6.28, p < .05, main rival was significantly greater than other opponent, t(293) = 10.09, p < .05, and conference opponent was significantly greater than other opponent (Northern Illinois; M = 1.12), t(293) = 3.33, p < .05.

Finally, demographics included questions addressing game play, age, gender, ethnicity, income, and education. Please refer to Appendix A for pretest and posttest questionnaires.
<table>
<thead>
<tr>
<th>Identification Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State identification</td>
<td>6.25</td>
<td>1.61</td>
<td>1.00</td>
<td>8.00</td>
<td>.93</td>
</tr>
<tr>
<td>San Diego State identification</td>
<td>1.07</td>
<td>.22</td>
<td>1.00</td>
<td>2.86</td>
<td>.41</td>
</tr>
<tr>
<td>Michigan identification</td>
<td>1.47</td>
<td>.59</td>
<td>1.00</td>
<td>4.14</td>
<td>.55</td>
</tr>
<tr>
<td>Indiana identification</td>
<td>1.21</td>
<td>.50</td>
<td>1.00</td>
<td>6.43</td>
<td>.79</td>
</tr>
<tr>
<td>Northern Illinois identification</td>
<td>1.12</td>
<td>.26</td>
<td>1.00</td>
<td>2.43</td>
<td>.40</td>
</tr>
</tbody>
</table>

*Note: N = 294*

Table 4.7: *Raw descriptive statistics—Identification variables*
CHAPTER 5

RESULTS

5.1 Research plan

Analysis was guided by the above theoretical framework and hypotheses and was calculated using a statistical program, SPSS 15.01 for Windows (SPSS, 2007) (see Table 5.1 for the test of each hypothesis and research question). All hypotheses were analyzed via ANCOVAs.

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>CV</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>H₁a Player membership</td>
<td>Enjoyment</td>
<td>Gender, presence, perceived arousal</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H₁b Opponent membership</td>
<td>Enjoyment</td>
<td>Gender, presence, perceived arousal</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H₁c Competition outcome</td>
<td>Enjoyment</td>
<td>Gender, presence, perceived arousal</td>
<td>ANCOVA</td>
</tr>
</tbody>
</table>

Table 5.1: Tests for hypotheses
<table>
<thead>
<tr>
<th></th>
<th>Category</th>
<th>Condition</th>
<th>Variables</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2a</td>
<td>Player membership</td>
<td>Presence</td>
<td>Gender, perceived arousal, immersive tendency (immersive tendency for attention allocation only)</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H2b</td>
<td>Opponent membership</td>
<td>Presence</td>
<td>Gender, perceived arousal, immersive tendency (immersive tendency for attention allocation only)</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H2c</td>
<td>Competition outcome</td>
<td>Presence</td>
<td>Gender, perceived arousal, immersive tendency (immersive tendency for attention allocation only)</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H3a</td>
<td>Player membership</td>
<td>State hostility</td>
<td>Gender, presence, perceived arousal, trait hostility, trait competitiveness</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H3b</td>
<td>Opponent membership</td>
<td>State hostility</td>
<td>Gender, presence, perceived arousal, trait hostility, trait competitiveness</td>
<td>ANCOVA</td>
</tr>
<tr>
<td>H3c</td>
<td>Competition outcome</td>
<td>State hostility</td>
<td>Gender, presence, perceived arousal, trait hostility, trait competitiveness</td>
<td>ANCOVA</td>
</tr>
</tbody>
</table>
5.2 Proposed alpha

For the purposes of this study, and in the social behavioral sciences tradition, the alpha level of .05 was selected for significant findings (Keppel & Wickens, 2004). Further, an alpha level of .1 was used to determine values approaching significance.

5.3 Descriptive statistics

In all, 294 participants successfully completed the pretest, manipulation, and posttest (88% response rate). Of those in the final analysis, approximately 43% of the subjects were male and the average age was 20.50 years old ($SD = 3.27$, $min = 18$, $max = 54$). Moreover, 79% were Caucasian, 12% were African American, 3% were of Asian descent, and 2% were Latino/Hispanic. The remaining participants consisted of Native Americans, Pacific Islanders, and other ethnicities. A vast majority (91%) earned below $20,000 annually, while 23% were in their first year of college, 29% were sophomores, and 29% were juniors.

Prior gaming experience was similar to other gaming research (Eastin & Griffiths, 2006a). For instance, a small percentage of the sample had never played a video game, but the vast majority did (97%). Further, 85% of the sample has been playing for more than five years. For those who play regularly, 33% play mostly sports-themed games, 33% play action-oriented games, and only 7% play violent games.

Generally, the participants found the football game to be exciting ($M = 4.89$, $SD = 1.55$), fast-paced ($M = 4.50$, $SD = 1.20$), interesting ($M = 5.03$, $SD = 1.61$), and fun ($M = 5.42$, $SD = 1.45$). Further, participants found the game only moderately difficult ($M = $
3.70, SD = 1.44) or frustrating (M = 3.41, SD = 1.71)—and minimally violent in regard to game content (M = 1.77, SD = 1.00).

Please refer to Table 5.2 for the raw means and standard deviations for the entire factorial design.

5.4 Hypotheses results

With the general overview of the data provided, the hypotheses and research questions were assessed as indicated from Table 5.1.

Regarding the hypotheses related to enjoyment, neither H1a nor H1b were upheld—meaning, neither player membership, F(1, 278) = .06, p > .05, η² = .00, nor opponent membership, F(2, 278) = .95, p > .05, η² = .01, were significant predictors of enjoyment (see Table 5.3). However, the competition outcome did significantly predict enjoyment, F(1, 278) = 69.79, p < .05, η² = .20, thus supporting H1c. Participants who won the competition (M = 8.45) experienced significantly more enjoyment than after a loss (M = 7.20). Further, two controlled variables, the process factor of presence (attention allocation), F(1, 278) = 87.33, p < .05, η² = .24, and perceived arousal, F(1, 278) = 80.90, p < .05, η² = .23, were significant predictors of enjoyment.
<table>
<thead>
<tr>
<th></th>
<th>Identifier</th>
<th>Won</th>
<th>Lost</th>
<th>Non-identifier</th>
<th>Won</th>
<th>Lost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td><strong>Enjoyment</strong></td>
<td>147</td>
<td>8.85 (1.58)</td>
<td>6.63 (1.92)</td>
<td>8.79 (1.46)</td>
<td>7.03 (2.08)</td>
<td>7.39 (2.10)</td>
</tr>
<tr>
<td><strong>Attention allocation</strong></td>
<td></td>
<td>4.50 (.63)</td>
<td>4.18 (.82)</td>
<td>4.57 (.53)</td>
<td>4.32 (.81)</td>
<td>4.27 (.83)</td>
</tr>
<tr>
<td><strong>Suspension of disbelief</strong></td>
<td></td>
<td>3.35 (.95)</td>
<td>3.19 (.85)</td>
<td>3.45 (.80)</td>
<td>3.34 (.93)</td>
<td>3.24 (.94)</td>
</tr>
<tr>
<td><strong>State hostility</strong></td>
<td></td>
<td>1.78 (.33)</td>
<td>2.33 (.57)</td>
<td>1.85 (.42)</td>
<td>2.16 (.54)</td>
<td>2.24 (.54)</td>
</tr>
<tr>
<td><strong>Main rival</strong></td>
<td>25</td>
<td>8.96 (1.73)</td>
<td>7.18 (1.66)</td>
<td>9.13 (1.04)</td>
<td>7.39 (2.08)</td>
<td>6.90 (1.89)</td>
</tr>
<tr>
<td><strong>Conference opponent</strong></td>
<td>24</td>
<td>8.73 (.47)</td>
<td>8.70 (.74)</td>
<td>8.70 (.47)</td>
<td>8.54 (1.52)</td>
<td>6.80 (2.26)</td>
</tr>
<tr>
<td><strong>Other opponent</strong></td>
<td>24</td>
<td>8.86 (.57)</td>
<td>8.15 (.76)</td>
<td>8.86 (.80)</td>
<td>6.59 (.87)</td>
<td>6.59 (.87)</td>
</tr>
</tbody>
</table>

Table 5.2: Raw means and standard deviations for the 3x2x2 factorial design
<table>
<thead>
<tr>
<th></th>
<th>SS (Type III)</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>792.748⁵</td>
<td>15</td>
<td>52.850</td>
<td>34.962</td>
<td>.000</td>
<td>.654</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.004</td>
<td>1</td>
<td>1.004</td>
<td>.664</td>
<td>.416</td>
<td>.002</td>
</tr>
<tr>
<td>Gender</td>
<td>3.041</td>
<td>1</td>
<td>3.041</td>
<td>2.012</td>
<td>.157</td>
<td>.007</td>
</tr>
<tr>
<td>Attention allocation</td>
<td>132.006</td>
<td>1</td>
<td>132.006</td>
<td>87.327</td>
<td>.000</td>
<td>.239</td>
</tr>
<tr>
<td>Suspension of disbelief</td>
<td>.444</td>
<td>1</td>
<td>.444</td>
<td>.294</td>
<td>.588</td>
<td>.001</td>
</tr>
<tr>
<td>Perceived arousal</td>
<td>122.291</td>
<td>1</td>
<td>122.291</td>
<td>80.900</td>
<td>.000</td>
<td>.225</td>
</tr>
<tr>
<td>Player membership</td>
<td>.097</td>
<td>1</td>
<td>.097</td>
<td>.064</td>
<td>.800</td>
<td>.000</td>
</tr>
<tr>
<td>Opponent membership</td>
<td>2.881</td>
<td>2</td>
<td>1.441</td>
<td>.953</td>
<td>.387</td>
<td>.007</td>
</tr>
<tr>
<td>Competition outcome</td>
<td>105.491</td>
<td>1</td>
<td>105.491</td>
<td>69.786</td>
<td>.000</td>
<td>.201</td>
</tr>
<tr>
<td>Player membership*</td>
<td>2.044</td>
<td>2</td>
<td>1.022</td>
<td>.676</td>
<td>.509</td>
<td>.005</td>
</tr>
<tr>
<td>Opponent membership*</td>
<td>1.322</td>
<td>1</td>
<td>1.322</td>
<td>.875</td>
<td>.350</td>
<td>.003</td>
</tr>
<tr>
<td>Player membership *</td>
<td>6.127</td>
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<td>3.064</td>
<td>2.027</td>
<td>.134</td>
<td>.014</td>
</tr>
<tr>
<td>Competition outcome</td>
<td>.053</td>
<td>2</td>
<td>.026</td>
<td>.017</td>
<td>.983</td>
<td>.000</td>
</tr>
<tr>
<td>Error</td>
<td>420.234</td>
<td>278</td>
<td>1.512</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19194.012</td>
<td>294</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1212.982</td>
<td>293</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁵ R² = .654 (Adjusted R² = .635)

Table 5.3: ANCOVA results—Enjoyment
Regarding presence, no hypotheses were supported for either attention allocation—$F(1, 279) = .63, p > .05, \eta^2_p = .00$ (H2a, player membership); $F(2, 279) = 1.13, p > .05, \eta^2_p = .01$ (H2b, opponent membership); $F(1, 279) = 2.71, p > .05, \eta^2_p = .01$ (H2c, competition outcome)—or suspension of disbelief—$F(1, 280) = 1.34, p > .05, \eta^2_p = .01$ (H2a, player membership); $F(2, 280) = .08, p > .05, \eta^2_p = .00$ (H2b, opponent membership); $F(1, 280) = 3.02, p > .05, \eta^2_p = .01$ (H2c, competition outcome) (see Table 5.4 for the process factor of attention allocation ANCOVA and Table 5.5 for the state factor of suspension of disbelief ANCOVA)\textsuperscript{iii}. Only perceived arousal, $F(1, 279) = 55.83, p < .05, \eta^2_p = .17$, for attention allocation and gender, $F(1, 280) = 10.06, p < .05, \eta^2_p = .04$, for suspension of disbelief were significant predictors. However, competition outcome approached significance on attention allocation, $F(1, 279) = 2.71, p = .1, \eta^2_p = .01$, and suspension of disbelief, $F(1, 280) = 3.02, p < .1, \eta^2_p = .01$. Data indicate those who won ($M = 4.46$) tended to attend to the game more than those who lost ($M = 4.33$), and those who won ($M = 3.42$) tended to accept the content as real life-like more than those who lost ($M = 3.24$).
<table>
<thead>
<tr>
<th></th>
<th>SS (Type III)</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>ηp²</th>
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\(^a R^2 = .241\) (Adjusted \(R^2 = .202\)

Table 5.4: ANCOVA results—Attention allocation
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<td>.014</td>
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\(^{a} R^2 = .075\) (Adjusted \(R^2 = .032\)

Table 5.5: ANCOVA results—Suspension of disbelief
Regarding state hostility, neither player membership nor opponent membership predicted state hostility levels, thus failing to support H3a and H3b (see Table 5.6)\textsuperscript{iv}. It did not matter if the gamer played as an identified team, $F(1, 276) = 1.37, p > .05, \eta_p^2 = .01$, and it did not matter who the gamer played against, $F(2, 276) = 1.25, p > .05, \eta_p^2 = .01$, in terms of state hostility. However, the data support H3c, meaning the competition outcome did impact state hostility levels, $F(1, 276) = 54.25, p < .05, \eta_p^2 = .16$. Those who lost the competition experienced greater hostility levels ($M = 2.24$) than those who won ($M = 1.82$). Further, the interaction between player membership and competition outcome was significant, $F(1, 276) = 5.27, p < .05, \eta_p^2 = .02$ (see Figure 5.1). Playing as identifier and losing created the most state hostility levels ($M = 2.33$), followed in order by losing as non-identifier ($M = 2.15$), winning as non-identifier ($M = 1.85$), and winning as identifier ($M = 1.79$).
|                          | SS (Type III) | df | MS      | F     | p     | \(\eta^2_p\) |  \\
|--------------------------|--------------|----|---------|-------|-------|-------------|        \\
| Corrected Model          | 21.697*      | 17 | 1.276   | 5.985 | .000  | .269        |        \\
| Intercept                | 7.679        | 1  | 7.679   | 36.008| .000  | .115        |        \\
| Gender                   | .057         | 1  | .057    | .265  | .607  | .001        |        \\
| Perceived arousal        | .331         | 1  | .331    | 1.550 | .214  | .006        |        \\
| Attention allocation     | .261         | 1  | .261    | 1.225 | .269  | .004        |        \\
| Suspension of disbelief  | .262         | 1  | .262    | 1.227 | .269  | .004        |        \\
| Trait aggression         | 3.012        | 1  | 3.012   | 14.122| .000  | .049        |        \\
| Trait competitiveness    | .002         | 1  | .002    | .009  | .924  | .000        |        \\
| Player membership        | .292         | 1  | .292    | 1.370 | .243  | .005        |        \\
| Opponent membership      | .531         | 2  | .265    | 1.245 | .290  | .009        |        \\
| Competition outcome      | 11.570       | 1  | 11.570  | 54.254| .000  | .164        |        \\
| Player membership*       | .023         | 2  | .011    | .053  | .948  | .000        |        \\
| Opponent membership      | 1.124        | 1  | 1.124   | 5.269 | .022  | .019        |        \\
| Player membership*       | 1.278        | 2  | .639    | 2.996 | .052  | .021        |        \\
| Competition outcome      | .058         | 2  | .029    | .135  | .874  | .001        |        \\
| Error                    | 58.856       | 276| .213    |       |       |             |        \\
| Total                    | 1294.221     | 294|         |       |       |             |        \\
| Corrected Total          | 80.553       | 293|         |       |       |             |        \\

* \(R^2 = .269\) (Adjusted \(R^2 = .224\))

Table 5.6: ANCOVA results—State hostility
The interaction between opponent membership and competition outcome also was significant, $F(2, 276) = 3.00, p = .05, \eta^2_p = .02$ (see Figure 5.2). Losing to the main rival produced the highest state hostility levels ($M = 2.36$), followed in order by losing to other opponent ($M = 2.27$), losing to conference opponent ($M = 2.09$), winning against conference opponent ($M = 1.85$), winning against other opponent ($M = 1.82$), and winning against main rival ($M = 1.80$).
In addition to the main effect of competition outcome and the interaction effects just described, the controlled variable of trait aggression significantly predicted state hostility, $F(1, 276) = 14.12, p < .05, \eta_p^2 = .05$.

5.5 Results summary

In sum, overall the game was considered enjoyable, with winning producing more enjoyment than losing, regardless of who the gamer played as or against. Perceived arousal influenced the level of attention provided toward the gaming content and gender impacted the suspension of disbelief. Further, losing, including the interactions with
whom the gamer played as or against, influenced state hostility levels. Because
competition outcome influenced each of the dependent variables, especially enjoyment
and state hostility, further analyses were conducted to determine whether strength of win
or loss impacted these effects differently.

5.6 Post hoc analysis

A post hoc analysis regarding strength of win or loss was conducted. Prior
research has indicated tightly contested games generally are more enjoyable than “blow-
outs”, although women tend to not enjoy extremely close games as much as men (Gan et
al., 1997). Suspense research typically involves passive viewing of narrative texts (e.g.,
Carroll, 1984); therefore, what occurs during game play may be positioned differently
due to active manipulation of gaming content. A gaming outcome may be situated as a
magnitude of win or loss (i.e., closeness of the game). On a continuum of potential final
score magnitude outcomes, the closer the outcome falls to the midpoint (i.e., a tie game)
the greater competition increases due to the unpredictability of the game’s resolution.

Moreover, prior research has indicated enjoyment is dependent upon emotional
commitment (Bryant, Rockwell, & Owens, 1994; Zillmann, 1983); thus, close games are
shown to intensify the competition outcome whereby highly identified fans will
experience greatest enjoyment winning a close game. Although it could be argued close
games may be more enjoyable due to their unpredictability (Gan et al., 1997), evidence
exists that this may not matter as much as proposed. For instance, Nebraska fans
thoroughly enjoy “seeing their highly rated football team not just defeat, but trample and

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humiliate an unheralded Indiana team” (Zillmann et al., 1989, p. 271). Thus, analysis should determine the effect the strength of win and loss has on the gaming experience.

Therefore, winning and losing was delineated further by incorporated the strength of win and loss (Gan et al., 1997). For instance, football incorporates many scoring options, such that a team may score in steps of 2, 3, 6, 7, or 8 points at a time (Adams, 2006; Stern, 1998). Close scores were defined as a game with the possibility of the player having a chance to win or tie within one possession. Big wins were considered more than one possession ahead (with big losses more than one possession behind). Hence, the following score strength distinctions were made: big win (winning by nine or more points), close win (winning by one to eight points), close loss (losing by one to eight points), and big loss (losing by nine or more points) (see Table 5.7). In the rules of college football, no ties can occur (Adams, 2006).

<p>| | |</p>
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</thead>
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<td>IV—Score strength</td>
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<tr>
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<td>Within one possession (one to eight points) and won</td>
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<tr>
<td>Close Loss</td>
<td>Within one possession (one to eight points) and lost</td>
</tr>
<tr>
<td>Big Loss</td>
<td>More than one possession behind (nine or more points)</td>
</tr>
</tbody>
</table>

Table 5.7: Delineation of competition outcome
Further, as a game’s final score difference decreases, engagement and involvement should increase, as well. In order to direct the competition outcome in desired direction (i.e., to win), the player must be more intensely involved (and for a longer duration) with the game when the final score is close and in doubt. This is because these types of games must be attended until the very end in order to achieve resolution, which should exacerbate gaming outcomes (e.g., presence). Similarly, a greater score differential should decrease intensity and involvement levels.

To conduct the analyses, the ANCOVAs were rerun replacing competition outcome with score strength (see Table 5.8 for raw means and standard deviations).

Regarding enjoyment, score strength was a significant predictor, $F(3, 266) = 23.93, p < .05, \eta^2_p = .21$ (see Table 5.9). Winning big produced the greatest levels of enjoyment ($M = 8.51$), followed by close win ($M = 8.48$), close loss ($M = 7.31$), and big loss ($M = 7.09$) respectively. Using the Bonferroni group comparisons test, only close loss and big loss, and big win and close win, did not significantly differ from one another.

Attention allocation, $F(1, 266) = 84.13, p < .05, \eta^2_p = .24$, and perceived arousal, $F(1, 266) = 75.47, p < .05, \eta^2_p = .22$, also predicted enjoyment. All significant and nonsignificant relationships were consistent with previously reported findings for enjoyment (see Table 5.3 for original enjoyment ANCOVA).
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(continued)

Table 5.8: Raw means and standard deviations for the post-hoc 3x4x2 factorial design
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$^a R^2 = .668$ (Adjusted $R^2 = .634$)

Table 5.9: Post-hoc ANCOVA results—Enjoyment
Regarding attention allocation, only perceived arousal was a significant predictor, \(F(1, 267) = 49.99, p < .05, \eta^2_p = .16\), with immersive tendency approaching significance, \(F(1, 267) = 2.92, p < .1, \eta^2_p = .01\) (see Table 5.10)\(^vi\)—this was similar to the original competition outcome of win and loss. All significant and nonsignificant relationships were consistent with previously reported findings for attention allocation; however, competition outcome (score strength) no longer was approaching significance, \(F(3, 267) = 1.29, p > .05, \eta^2_p = .02\) (see Table 5.4 for original attention allocation ANCOVA).

Regarding suspension of disbelief, only gender predicted was a significant predictor, \(F(1, 268) = 9.74, p < .05, \eta^2_p = .04\) (see Table 5.11)\(^vii\). All significant and nonsignificant relationships were consistent with previously reported findings for suspension of disbelief; however, competition outcome (score strength) no longer was approaching significance, \(F(3, 268) = 1.14, p > .05, \eta^2_p = .01\) (see Table 5.5 for original ANCOVA).

Finally, regarding state hostility, score strength was a significant predictor, \(F(3, 264) = 18.64, p < .05, \eta^2_p = .18\) (see Table 5.12)\(^viii\). Hostility was reported greatest for big loss \((M = 2.26)\), followed by close loss \((M = 2.23)\), close win \((M = 1.88)\), and big win \((M = 1.71)\) respectively. Using the Bonferroni group comparisons test, only big loss and close loss, as well as big win and close win, were not significantly different from one another. Finally, trait aggression was a significant predictor to state hostility, \(F(1, 264) = 12.80, p < .05, \eta^2_p = .05\). All significant and nonsignificant relationships were consistent with previously reported findings for state hostility; however, the competition outcome interactions with player membership, \(F(3, 264) = 1.66, p > .05, \eta^2_p = .02\), and opponent membership, \(F(6, 264) = 1.45, p > .05, \eta^2_p = .03\), no longer were significant (Table 5.6).
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$^a$ R$^2 = .275$ (Adjusted R$^2 = .204$)

Table 5.10: *Post-hoc ANCOVA results—Attention allocation*
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\(^a\) \( R^2 = .085 \) (Adjusted \( R^2 = .001 \))

Table 5.11: Post-hoc ANCOVA results—Suspension of disbelief
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**Table 5.12: Post-hoc ANCOVA results—State hostility**

a $R^2 = .296$ (Adjusted $R^2 = .218$)
CHAPTER 6
CONCLUSION

6.1 Summary

This research is a needed step toward understanding how gaming components, such as identification and competition outcomes, impact affect and the gaming experience. Perhaps the most informative finding from this study derives from the implications of competition outcomes. As expected, losing the match produced greater hostility scores than winning. This result further supports prior research addressing frustration, competition, and hostility (Berkowitz, 1989, 1990); however, this rather simple finding provides a profound advancement for the gaming literature. For instance, several meta analyses of video game play (Anderson, 2004; Anderson & Bushman, 2001; Sherry, 2001) indicate small, yet consistent, connections between violent game play and aggression levels; nonetheless, the studies included in these analyses, plus more studies completed since (e.g., Eastin & Griffiths, 2006a; Mahood & Linz, 2006; Tamborini et al., 2004), simply view the difference between violent and nonviolent content after continuous play. Studies such as these may only find small effect sizes simply because they do not consider the ramifications of competition outcome. As indicated, this study did not use a video game considered violent by either the gaming industry (NCAA 07 is rated “‘E’ for Everyone” by the Entertainment Software Rating Board (ESRB, 2007)) or
by the study participants, yet merely adding whether the gamer ultimately won or lost provided strong main effects for both enjoyment and state hostility, and approached significance for both factors of presence.

Since prior research designs employed a “God” mode, gaming action never ended (Bushman & Anderson, 2002; Eastin, 2006; Eastin & Griffiths, 2006a, 2006b; Tamborini et al., 2004). In this manner, the gamer is exposed to shooting, killing, and other aggression-inducing content, non stop, for the duration of game play. However, this type of design lacks ecological validity of winning or losing. As shown in this study, competition outcome is a significant component of the affective response to the gaming experience. Winning produces enjoyment and losing produces hostility; however, it is possible being placed in a situation where not being able to have resolution may inherently lessen the condition manipulation—hence producing small effects. Some players may feel frustrated by being placed in an unsolvable conflict—thus, these gamers feel increased state hostility in all conditions because of the study design, not necessarily the gaming action or content. Or, gamers may feel relaxed knowing they cannot lose, thereby attenuating hostility levels across all conditions. Prior research has not shown how gamers interpret never-ending gaming action in games that normally have natural resolutions. Thus, small effects from prior research may indicate greater effects when encompassing the competition outcome.

Researchers have indicated negative gaming effects are smaller than that of television or movies, but it was thought that may simply be due to lack of funding or because gaming is a newer medium (Anderson, 2004). Ultimately, though, as explicated
above, gaming is fundamentally different than watching TV or movies because of interactivity and involvement in competition. Generally, a television viewer cannot win or lose, but simply passively observes action—whereas in gaming, whether the protagonist wins or loses is dependent upon the player. This inherent function of competition is a necessary component to gaming effects research due to its dramatic influence. In this regard, competition outcome may be best posited as a situational input within the general aggression model (Anderson et al., 1995; Bushman & Anderson, 2002), or more universally, the general learning model (GLM) (Buckley & Anderson, 2006) (see Figure 6.1).

Figure 6.1: General learning model
As indicated, the GLM accounts for the situational context of exposure with a person’s individual attributes as a framework for understanding media effects. The single episode model, as presented, demonstrates how two distinct inputs, situation and person, influence a person’s internal state—consisting of cognition, affect, and arousal. Through the GLM, person variables can include inputs such as traits, attitudes, long-term goals, gender, gaming experience, and so on. Most often in gaming research, the situational (contextual) inputs regard simply violent versus nonviolent content. It is here that the current study proposes the necessity of incorporating the game’s competitive outcome as a situational condition to the model.

Understanding conditions influencing greater effects is imperative because negative reactions to video game outcomes could solicit similar affective responses in real-life competitive situations. As an example from the current study, poor sportsmanship and hostile reactions may be fostered and strengthened from game play, but more generally, losing in a violent gaming situation could intensify violent reactions—thus producing stronger, violent, real-life reactions to frustrating situations.

Regarding identification, understanding who the gamer is playing as or against influences affective outcomes. Although initially this was not taken into consideration in gaming research (Anderson, 2004), recent research has started to manipulate the player’s avatar (Eastin, 2006). According to identification literature, it was expected greater effects to occur when manipulating a relevant team (as with the case of this study). Although player membership was not significant regarding the dependent variables, a clear interaction between player membership and competition outcome indicates that
including identification with gaming characters is an important element in understanding game play. Simply, losing when playing as an emotionally relevant gaming avatar increases state hostility more than playing as an irrelevant gaming avatar. Moreover, the interaction of opponent membership and competition outcome was significant—demonstrating who the player competes against also is influential regarding state hostility.

Relevant to the social identity theory (Tajfel, 1981, 1982; Tajfel & Turner, 1986), it has been shown intergroup behavior, such as competition, enhances in-group solidarity, as well as hostility toward the out-group (Worchel & Austin, 1986). The greatest state hostility was found when losing to the main rival, the most salient out-group. So not only does hostility toward out-group occur, but saliency of out-group matters in affective reactions to competitive situations. Furthermore, social identity has shown to influence uses and gratifications of media (Harwood, 1999). Being able to play as a favored identity or having a chance to beat a hated rival could help explain the immense popularity of games, particularly sports games.

In sum, simply placing participants in a gaming situation for 20 minutes in either a violent or nonviolent situation with no resolution wholly underestimates the intricacy of game play as competition outcome and identification impacts affective reactions.

Additionally, aspects of this project further strengthen the theoretical framework presented. For instance, the level of attention the content solicits from the gamer the more enjoyable the experience. Further, perceived arousal influences the enjoyment of the game—more arousing content is more enjoyable. And, winning simply is more enjoyable
than losing. Although not significant in the current study, data patterned toward the interaction between opponent membership and competition outcome also influencing enjoyment. This finding generally supports the identification research regarding saliency. Interestingly, beating the conference opponent solicited greatest enjoyment, followed by main rival and other opponent respectively. Perhaps if there is little emotional investment against the competitor, it is difficult to enjoy the competition in general. Also, playing against a main rival may involve certain levels of angst which prohibit full enjoyment, so competing against a team that has relevancy, but the player is not so occupied with the need to win, produces the most fun.

Attention toward the game was predicted by perceived arousal, as been shown by prior research. However, although only approaching significance in the current study, data tended toward demonstrating an effect from the competition outcome of the match. Winning produced greater attention than losing. It is possible that as the match progresses and becomes more fun while winning, greater attention resources are placed toward the game. The only significant predictor in suspension of disbelief (state factor) derived from gender with females ($M = 3.47$) reporting greater ability to believe in the content than males ($M = 3.14$).

Perhaps because men enjoy and play sports games more than women (Lucas & Sherry, 2004), and men consider themselves to be greater sports fans and football fans (Dietz-Uhler, Harrick, End, & Jacquemotte, 2000) by watching on TV and in person, men are more likely to detect and focus on the differences between real-life and the game. In this manner, women may more readily accept the game as a simulation and accept the
content as-is thereby accepting an alternative reality while playing the game. Moreover, because the gaming experience in football may be new to women, more readily accepting the content allows for more focus on what to do, rather than what is happening. This has important implications to the general learning processes of games (Buckley & Anderson, 2006). Because women may more readily engage in the game and feel greater presence levels, women may be learning more from the gaming experience, which could yield stronger priming effects when in the real-world.

6.2 Limitations

Similar to most gaming situations, it is difficult to control the natural flux of action and content during the game. This study did well in manipulating win and loss, and tracking degree of win and loss; however, it is possible that a score of 21-10 (considered a big win) could have multiple interpretations. For instance, the score could have been 14-10 in the waning moments of the contest with the opponent having a chance to score a touchdown and win only for the player to intercept the ball and return it for a touchdown—making an almost close loss into a big win. Likewise, a score of 17-10 (considered a close win) could have been 17-3 for much of the game with little to no chance for the competitor to win, but happened to score with almost no time left to make the game appear closer than it was (e.g., mentally the game was a big win, but coded as a close win). Although these scenarios were not tracked, coding the essence of the outcome degree could provide useful information regarding affective outcomes from competition.

Another limitation of the study may come from a participant’s inexperience with the game, although the confederate competitor did not utilize any actions or techniques
not taught to the participants—thus reducing any potential “unfair” advantage. The training provided enough practice and guidance to be familiar with the controls and enabled all participants to successfully navigate play calling and game action; however, the quarter length was set at two minutes, creating a truncated gaming experience. Perhaps providing a longer play length could help inexperienced players overcome potential initial mistakes and provide more comfort with gaming controls.

Further, just prior to the start of the study, the identified team (Ohio State) lost the 2007 national football championship game. The defeat generally impacted the university since the team had high expectations to win after an undefeated season, including a thrilling victory over their main rival (Michigan). Although the responses within the current data do not reveal recency effects, the overall impact on the study is unknown. Ironically, midway through data collection, the identified men’s basketball team lost in the 2007 national championship after experiencing high expectations to win, as well.

Finally, this study did not include a control condition. The teams chosen for this study only differed within the context of the university institution where the study was conducted. Conducting this study at another institution would utilize different teams that represented the general identification distinctions specified within this study. This study is generally applicable to all gaming research, however, by demonstrating the necessity of understanding the gamers’ identification with game characters.

6.3 Future research

As stated above, the game utilized for this study has been deemed acceptable for play by everyone. Moreover, game raters, as well participants in this study, do not
consider football games to be violent. Therefore, the current research could be enhanced by understanding how identification and, more specifically, competition outcomes impact violent gaming situations. Understanding whether violent gaming effects are simply a result from competition outcome could substantially progress the gaming field. At the very least, future gaming effects research should control for competition outcome.

Further, by investigating how children identify with gaming characters within competitive environments, a better understanding of how gaming impacts children and developmental learning could be better understood. Just because the game is not labeled as aggressive or violent, the inherent competitiveness, as well as identification with media characters, show state hostility can arise from seemingly nonviolent situations—for example, simply competing against a salient other (e.g., a sibling or best friend) could induce greater hostility than against anyone else. Another fruitful research direction would be to incorporate many newer games’ capability of creating the players’ own team. Perhaps there is a more pronounced impact when competing with the gamers’ own name, favorite colors, and logos. More generally, with the increased focus on personalization, games including digitized images of the game player (such as with the Wii console’s ability to create a Mii (Nintendo, 2007b)) could show dramatic increases in gaming effects in the coming years.

Future research should focus on this type of play in a group setting. Potentially, contagion effects or excitation transfer could elicit more pronounced effects from the gaming experience. Moreover, much of the selling points of the most recent gaming consoles derive from the ability to connect online and play against friends and strangers.
Determining potential effects from playing against another human or within groups of varying sizes could provide productive information.

Finally, future research in the genre also could extend the general learning aspect of games whereby to study how playing sports games can contribute to skills for real-life sports. Likewise, this research could expand to actual sport competitors to determine if similar situations as this study impact athletes in the same way. Moreover, determining conditions conducive for learning and engagement may aid in prosocial endeavors, such as teaching visual literacy and message design, understanding mood management, or benefiting therapeutic efforts in terms of escape. Therefore, there are various rewarding avenues in which to investigate one of the most popular, entertaining, and profitable genres in the market today and relate findings that can have great implications for the individual, community, and society.

6.4 Conclusions

With the capability of playing as a favorite sports team year-round, the results of playing may have great effects both within and outside the gaming realm due to the general learning gaming affords (Anderson & Dill, 2000; Bushman & Anderson, 2002; Eastin, 2006; Eastin & Griffiths, 2006a; Tamborini et al., 2004; Ziegler, 2007). In one regard, this study provides another piece of general understanding in how the player, content, and opponent impact gaming and person effects. In another regard, the study provides specific real-life insight, such as potential consequences for a college or university (Boginski, Butenko, & Pardalos, 2006). Through the process of identification, playing consistently as a certain team could further form that school as an emotionally
significant one. This capability to entice and engrain potential and current students
toward the college throughout the year, not just during a sports season, could have great
benefit for the continuing, and long-term, success of not only the college sport team, but
the institution in general through ticket sales, merchandise, and actual student enrollment.

As indicated, gamers are spending increasing quantities of time playing games,
inherently exhibiting time displacement from other activities, such as work, school,
family, friends, and civic participation. These games are an increasing priority in the lives
of both youth and young adults—and the consequences of game play impact society as a
whole. For instance, it is clear schools have long struggled with keeping fans at bay after
a game against a rival where looting, burning couches, and other destructive behavior
engulfs the community; however, it has been a puzzle why the same destructive results
occur after a win, as well as a loss, but seemingly only transpires against certain teams.

This study provides a glimpse into the affective reactions to competitive situations which
are continually built upon, stored, and strengthened over time—and because games afford
general learning behavior, what reactions are experienced during gaming transcend into
fan behavior and general personality traits triggered by competitive events.

---

i The video game rating scale ranged from least (1) to most (7)—for example, “How
violent was the content of NCAA 2007?” (No violent content = 1, Very violent content =

ii A customized model was run including interactions of independent variables and
covariates. No interactions between independent variables and covariates were found,
thus the covariate interactions were dropped from analyses.

iii A customized model was run including interactions of independent variables and
covariates. Only the interaction between player membership and perceived arousal was
significant for the process factor of attention allocation, $F(1, 267) = 6.36, p < .05, \eta_p^2 =
.02$, and suspension of disbelief, $F(1, 272) = 4.52, p < .05, \eta_p^2 = .02$, thus the covariate
interactions were dropped from analyses.
iv A customized model was run including interactions of independent variables and covariates. Only the interaction between player membership and suspension of disbelief was significant, $F(1, 252) = 4.69, p < .05, \eta_p^2 = .02$, thus the covariate interactions were dropped from analyses.

v A customized model was run including interactions of independent variables and covariates. No interactions between independent variables and covariates were found, thus the covariate interactions were dropped from analyses.

vi A customized model was run including interactions of independent variables and covariates. Only the interaction between player membership and perceived arousal was significant for the process factor of attention allocation, $F(1, 249) = 5.25, p < .05, \eta_p^2 = .02$, thus the covariate interactions were dropped from analyses.

vii A customized model was run including interactions of independent variables and covariates. No interactions between independent variables and covariates were found, thus the covariate interactions were dropped from analyses.

viii A customized model was run including interactions of independent variables and covariates. Only the interaction between perceived arousal and score strength, $F(3, 245) = 3.91, p < .05, \eta_p^2 = .05$, as well as player membership and suspension of disbelief, $F(1, 245) = 5.79, p < .05, \eta_p^2 = .02$, were significant for state hostility, thus the covariate interactions were dropped from analyses.
LIST OF REFERENCES


APPENDIX A

QUESTIONNAIRES
Pretest

Trait competitiveness.

Please indicate the level you agree or disagree with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Undecided</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a determined competitor.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I am a competitive person.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I try my hardest to win.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I look forward to competing.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I enjoy competing against others.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I thrive on competition.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>My goal is to be the best athlete possible.</td>
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<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>I want to be successful in sports.</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>I work hard to be successful in sports.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The best test of my ability is competing against others.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>I look forward to the opportunity to test my skills in competition.</td>
<td>○</td>
<td>○</td>
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<td>○</td>
</tr>
<tr>
<td>Statement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>I perform my best when competing against an opponent.</td>
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<td></td>
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<tr>
<td>I want to be the best every time I compete.</td>
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</tr>
<tr>
<td>Winning is important.</td>
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</tr>
<tr>
<td>Scoring more points than my opponent is very important to me.</td>
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<tr>
<td>I hate to lose.</td>
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<tr>
<td>The only time I am satisfied is when I win.</td>
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<tr>
<td>Losing upsets me.</td>
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<tr>
<td>I have the most fun when I win.</td>
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<td></td>
</tr>
<tr>
<td>I set goals for myself when I compete.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am most competitive when I try to achieve personal goals.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I try hardest when I have a specific goal.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Performing to the best of my ability is very important to me.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Reaching personal performance goals is very important to me.</td>
<td></td>
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</tr>
<tr>
<td>The best way to determine my ability is to set a goal and try to reach it.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
**Trait aggression.**

The following questions ask you about how you feel in certain situations.

<table>
<thead>
<tr>
<th></th>
<th>Extremely Uncharacteristic of Me</th>
<th>Neutral</th>
<th>Extremely Characteristic of Me</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once in a while I can’t control the urge to strike another person.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given enough provocation, I may hit another person.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If somebody hits me, I hit back.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get into fights a little more often than the average person.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I have to resort to violence to protect my rights, I will.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are people who pushed me so far that we came to blows.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can think of no good reason for ever hitting a person.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
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<tr>
<td>I have threatened people I know.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
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</tr>
<tr>
<td>I have become so mad that I have broken things.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I tell my friends openly when I disagree with them.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
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<td></td>
</tr>
<tr>
<td>I often find myself disagreeing with people.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When people annoy me, I may tell them what I think of them.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can’t help getting into arguments when people disagree with me.</td>
<td>○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○</td>
<td></td>
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<tr>
<td>My friends say that I’m somewhat argumentative.</td>
<td></td>
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<tr>
<td>I flare up quickly but get over it quickly.</td>
<td></td>
<td></td>
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<tr>
<td>When frustrated, I let my irritation show.</td>
<td></td>
<td></td>
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<tr>
<td>I sometimes feel like a powder keg ready to explode.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I am an even-tempered person.</td>
<td></td>
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<tr>
<td>Some of my friends think I’m a hothead.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sometimes I fly off the handle for no good reason.</td>
<td></td>
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</tr>
<tr>
<td>I have trouble controlling my temper.</td>
<td></td>
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<tr>
<td>I am sometimes eaten up with jealousy.</td>
<td></td>
<td></td>
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<tr>
<td>At times I feel I have gotten a raw deal out of life.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Other people always seem to get the breaks.</td>
<td></td>
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</tr>
<tr>
<td>I wonder why sometimes I feel so bitter about things.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know that “friends” talk about me behind my back.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am suspicious of overly friendly strangers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I sometimes feel that people are laughing at me behind my back.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When people are especially nice, I wonder what they want.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Game play.

Please indicate your video game use.

How often do you use a video game system (at home, work, school, or at an arcade)?
- Never
- Less than Once a Month
- 1-4 Times a Month
- 5-10 Times a Month
- 11-20 Times a Month
- More than 20 Times a Month

In general, I play video games that are:
- Violent
- Educational
- Action-Oriented
- Sports-themed
- I Don’t Play Video Games
- Other _______________

When did you start playing video games?
- This will be the first time I’ve played a video game
- During the past six months
- Six months to a year ago
- More than a year ago, but less than three years ago
- Three to five years ago
- More than five years ago

How much time would you estimate you personally play video games?
- I don’t play video games
- Less than an hour per week
- One to six hours per week
- About an hour per day
- One to three hours per day
- More than three hours per day

In the coming year, how much do you expect to play video games, compared to your current level of usage?
- A lot less than I play now
- A little less than I play now
- Not much difference in my game playing
- A little more than I play now
- A lot more than I play now
Next are a few questions about the types of home video games you play. Video games are defined as all computer-based and console games. Please respond to each of the following questions. We would like to ask you to describe some of your favorite video games. Please tell us about your five favorite games:

Game 1

What is the name of game one? ___________________________________

What type of game is this?
- Computer only
- Online
- Game Console (e.g., PS2, Xbox, etc.)

How often do you play this game?
- 1 Rarely
- 2
- 3
- 4 Occasionally
- 5
- 6
- 7 Often

Which of the following best describes this game?
- education
- fighting with hands
- sports
- fighting with weapons
- fantasy
- skill

Game 2

What is the name of game two? ___________________________________

What type of game is this?
- Computer only
- Online
- Game Console (e.g., PS2, Xbox, etc.)
How often do you play this game?
- 1 Rarely
- 2
- 3
- 4 Occasionally
- 5
- 6
- 7 Often

Which of the following best describes this game?
- education
- fighting with hands
- sports
- fighting with weapons
- fantasy
- skill

Game 3

What is the name of game three? ___________________________________

What type of game is this?
- Computer only
- Online
- Game Console (e.g., PS2, Xbox, etc.)

How often do you play this game?
- 1 Rarely
- 2
- 3
- 4 Occasionally
- 5
- 6
- 7 Often

Which of the following best describes this game?
- education
- fighting with hands
- sports
- fighting with weapons
- fantasy
- skill
Game 4

What is the name of game four? ___________________________________

What type of game is this?
- Computer only
- Online
- Game Console (e.g., PS2, Xbox, etc.)

How often do you play this game?
- 1 Rarely
- 2
- 3
- 4 Occasionally
- 5
- 6
- 7 Often

Which of the following best describes this game?
- education
- fighting with hands
- sports
- fighting with weapons
- fantasy
- skill

Game 5

What is the name of game five? ___________________________________

What type of game is this?
- Computer only
- Online
- Game Console (e.g., PS2, Xbox, etc.)

How often do you play this game?
- 1 Rarely
- 2
- 3
- 4 Occasionally
- 5
- 6
- 7 Often
Which of the following best describes this game?

- education
- fighting with hands
- sports
- fighting with weapons
- fantasy
- skill

Please tell us a little more about your video game use.

When you play sports games, if you do, do you usually play with your team (i.e., you are a big fan of this team in real life) or another?

- Your team
- Another team
- I don't play sports games

When you play sports games, how do you normally pick the team you play as?

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

When you play sports games, how do you normally pick the team you play against?

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Identification.

Please specify your response to the following questions regarding Ohio State.

How important to YOU is it that the Ohio State football team wins?

- 1 - Not important
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Important
How strongly do YOU see YOURSELF as a fan of the Ohio State football team?
   ☐ 1 - Not at all a Fan
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - Very Much a Fan

How strongly do your FRIENDS see YOU as a fan of the Ohio State football team?
   ☐ 1 - Not at all a Fan
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - Very Much a Fan

During the season, how closely do you follow the Ohio State football team via ANY of the following: a) in person or on television, b) on the radio, or c) television news, Internet, or a newspaper?
   ☐ 1 - Never
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - All the Time

How important is being a fan of Ohio State football to YOU?
   ☐ 1 - Not important
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - Very Important
How much do YOU dislike Ohio State football’s greatest rivals?
- 1 - Do Not Dislike
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Dislike Very Much

How often do YOU display the Ohio State football team’s name or insignia at your place of work, where you live, or on your clothing?
- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how often did you want to go to an Ohio State game?
- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how often did you go to an Ohio State game?
- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always
During the past season, how frequently did you tailgate near Ohio State's stadium during gameday?

☐ 1 - Never
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Always

Please specify your response to the following questions regarding Michigan.

How important to YOU is it that the Michigan football team wins?

☐ 1 - Not important
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Very Important

How strongly do YOU see YOURSELF as a fan of the Michigan football team?

☐ 1 - Not at all a Fan
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Very Much a Fan

How strongly do your FRIENDS see YOU as a fan of the Michigan football team?

☐ 1 - Not at all a Fan
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Very Much a Fan
During the season, how closely do you follow the Michigan football team via ANY of the following: a) in person or on television, b) on the radio, or c) television news, Internet, or a newspaper?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - All the Time

How important is being a fan of Michigan football to YOU?

- 1 - Not important
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Important

How much do YOU dislike Michigan football’s greatest rivals?

- 1 - Do Not Dislike
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Dislike Very Much

How often do YOU display the Michigan football team’s name or insignia at your place of work, where you live, or on your clothing?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always
During the past season, how often did you want to go to a Michigan game?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how often did you go to a Michigan game?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how frequently did you tailgate near Michigan's stadium during gameday?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

Please specify your response to the following questions regarding Indiana.

How important to YOU is it that the Indiana football team wins?

- 1 - Not important
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Important
How strongly do YOU see YOURSELF as a fan of the Indiana football team?
- 1 - Not at all a Fan
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Much a Fan

How strongly do your FRIENDS see YOU as a fan of the Indiana football team?
- 1 - Not at all a Fan
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Much a Fan

During the season, how closely do you follow the Indiana football team via ANY of the following: a) in person or on television, b) on the radio, or c) television news, Internet, or a newspaper?
- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - All the Time

How important is being a fan of Indiana football to YOU?
- 1 - Not important
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Important
How much do YOU dislike Indiana football’s greatest rivals?

☐ 1 - Do Not Dislike
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Dislike Very Much

How often do YOU display the Indiana football team’s name or insignia at your place of work, where you live, or on your clothing?

☐ 1 - Never
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Always

During the past season, how often did you want to go to an Indiana game?

☐ 1 - Never
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Always

During the past season, how often did you go to an Indiana game?

☐ 1 - Never
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Always
During the past season, how frequently did you tailgate near Indiana's stadium during gameday?

☐ 1 - Never
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Always

Please specify your response to the following questions regarding Northern Illinois.

How important to YOU is it that the Northern Illinois football team wins?

☐ 1 - Not important
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Very Important

How strongly do YOU see YOURSELF as a fan of the Northern Illinois football team?

☐ 1 - Not at all a Fan
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8 - Very Much a Fan
How strongly do your FRIENDS see YOU as a fan of the Northern Illinois football team?
   ☐ 1 - Not at all a Fan
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - Very Much a Fan

During the season, how closely do you follow the Northern Illinois football team via ANY of the following: a) in person or on television, b) on the radio, or c) television news, Internet, or a newspaper?
   ☐ 1 - Never
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - All the Time

How important is being a fan of Northern Illinois football to YOU?
   ☐ 1 - Not important
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - Very Important

How much do YOU dislike Northern Illinois football’s greatest rivals?
   ☐ 1 - Do Not Dislike
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5
   ☐ 6
   ☐ 7
   ☐ 8 - Dislike Very Much
How often do YOU display the Northern Illinois football team’s name or insignia at your place of work, where you live, or on your clothing?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how often did you want to go to a Northern Illinois game?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how often did you go to a Northern Illinois game?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how frequently did you tailgate near Northern Illinois' stadium during gameday?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always
Please specify your response to the following questions regarding San Diego State.

How important to YOU is it that the San Diego State football team wins?
- 1 - Not important
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Important

How strongly do YOU see YOURSELF as a fan of the San Diego State football team?
- 1 - Not at all a Fan
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Much a Fan

How strongly do your FRIENDS see YOU as a fan of the San Diego State football team?
- 1 - Not at all a Fan
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Very Much a Fan
During the season, how closely do you follow the San Diego State football team via ANY of the following: a) in person or on television, b) on the radio, or c) television news, Internet, or a newspaper?
   ○ 1 - Never
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8 - All the Time

How important is being a fan of San Diego State football to YOU?
   ○ 1 - Not important
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8 - Very Important

How much do YOU dislike San Diego State football’s greatest rivals?
   ○ 1 - Do Not Dislike
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8 - Dislike Very Much

How often do YOU display the San Diego State football team’s name or insignia at your place of work, where you live, or on your clothing?
   ○ 1 - Never
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8 - Always
During the past season, how often did you want to go to a San Diego State game?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how often did you go to a San Diego State game?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always

During the past season, how frequently did you tailgate near San Diego State's stadium during gameday?

- 1 - Never
- 2
- 3
- 4
- 5
- 6
- 7
- 8 - Always
Immersive tendency.

Indicate your preferred answer by selecting the appropriate response on the seven-point scale. Please consider the entire scale when making your responses, as the intermediate levels may apply.

Do you easily become deeply involved in movies or TV dramas?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Do you ever become so involved in a television program or book that people have problems getting your attention?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

How mentally alert do you feel at the present time?
- 1 - Not Alert
- 2
- 3
- 4 - Moderately
- 5
- 6
- 7 - Fully Alert

Do you ever become so involved in a movie that you are not aware of things happening around you?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often
How frequently do you find yourself closely identifying with the characters in a story line?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Do you ever become so involved in a video game that it is as if you are inside the game rather than moving a joystick and watching the screen?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

What kind of books do you read most frequently?

- Spy novels
- Fantasies
- Science fiction
- Adventure novels
- Romance novels
- Historical novels
- Westerns
- Mysteries
- Other fiction
- Biographies
- Autobiographies
- Other non-fiction

How physically fit do you feel today?

- 1 - Not Fit
- 2
- 3
- 4 - Moderately
- 5
- 6
- 7 - Extremely Fit
How good are you at blocking out external distractions when you are involved in something?
- 1 - Not Very Good
- 2
- 3
- 4 - Somewhat Good
- 5
- 6
- 7 - Very Good

When watching sports, do you ever become so involved in the game that you react as if you were one of the players?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Do you ever become so involved in a daydream that you are not aware of things happening around you?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Do you ever have dreams that are so real that you feel disoriented when you awake?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often
When playing sports, do you become so involved in the game that you lose track of time?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

How well do you concentrate on enjoyable activities?

- 1 - Not at All
- 2
- 3
- 4 - Moderately Well
- 5
- 6
- 7 - Very Well

How often do you play arcade or video games? (OFTEN should be taken to mean every day or every two days, on average.)

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Have you ever gotten excited during a chase or fight scene on TV or in the movies?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often
Have you ever gotten scared by something happening on a TV show or in a movie?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Have you ever remained apprehensive or fearful long after watching a scary movie?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Do you ever become so involved in doing something that you lose all track of time?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

On average, how many books do you read for enjoyment in a month?
- None
- 1
- 2
- 3
- 4
- 5
- 6 or More
Do you ever get involved in projects or tasks, to the exclusion of other activities?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

How easily can you switch attention from the activity in which you are currently involved to a new and completely different activity?

- 1 - Not so Easily
- 2
- 3
- 4 - Fairly Easily
- 5
- 6
- 7 - Quite Easily

How often do you try new restaurants or new foods when presented with the opportunity?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Frequently

How frequently do you volunteer to serve on committees, planning groups, or other civic or social groups?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often
How often do you try new things or seek out new experiences?
- Never 1
- Occasionally 4
- Often 7

Given the opportunity, would you travel to a country with a different culture and a different language?
- Never 1
- Maybe 4
- Absolutely 7

Do you go on carnival rides or participate in other leisure activities (horse back riding, bungee jumping, snow skiing, water sports) for the excitement of thrills that they provide?
- Never 1
- Occasionally 4
- Often 7

How well do you concentrate on disagreeable tasks?
- Not at All 1
- Moderately Well 4
- Very Well 7
How often do you play games on computers?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

How many different video, computer, or arcade games have you become reasonably good at playing?
- None
- 1
- 2
- 3
- 4
- 5
- 6 or More

Have you ever felt completely caught up in an experience, aware of everything going on and completely open to all of it?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Have you ever felt completely focused on something, so wrapped up in that one activity that nothing could distract you?
- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often
How frequently do you get emotionally involved (angry, sad, or happy) in news stories that you see, read, or hear?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

Are you easily distracted when involved in an activity or working on a task?

- 1 - Never
- 2
- 3
- 4 - Occasionally
- 5
- 6
- 7 - Often

*Football knowledge.*

Next we would like to ask you a few general questions about football.

In college football, who throws the football?

- Fullback
- Quarterback
- Halfback
- Middlelinebacker

In college football, a pass is ruled complete if one of the receiver's feet is inbounds at the time of catch.

- True
- False

In college football, after the referee declares the ball ready for play, how much time is the offense given to run the next play?

- 10 seconds
- 25 seconds
- 40 seconds
- 60 seconds
In college football, how many points is a touchdown worth?
- 2 points
- 3 points
- 6 points
- 7 points

In college football, there is a two-minute warning.
- True
- False

In college football, what is the correct term for the defense rushing the quarterback?
- Run
- Pass
- Blitz
- Prevent

In college football, Team A attempts a 48-yard field goal attempt against Team B. The ball is snapped from the 31-yard line and the kicker kicks the ball; however, the attempt is wide right and short, with the ball landing at the 2 yard line and rolling out the endzone. Where is the ball spotted for Team B?
- At Team B's 31 yard line
- At Team B's 20 yard line
- At Team B's 38 yard line
- At Team B's 2 yard line

Where is the football spotted for kickoff to start a college football game, or to start play after a touchdown or successful field goal try?
- 30-yard line
- 35-yard line
- 40-yard line
- 25-yard line

Which of the following is NOT true about overtime in college football?
- A two-point conversion attempt is mandatory after each touchdown
- Each team's possession begins at the 25-yard line
- Each team gets the ball at least once
- Play during overtime is untimed (i.e., no game clock)
In college football, after Team A kicks off, the ball travels into Team B's endzone where a member of Team B catches the ball. He then kneels, deciding not to run the ball out of the endzone. Where is the ball placed?

- At Team B's 2 yard line
- At Team B's 10 yard line
- At Team B's 20 yard line
- At Team B's 40 yard line

Demographics.

Please tell us about yourself.

How old were you on your last birthday?

- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45
- 46
- 47
- 48
What is your gender?
- Male
- Female

What is your ethnicity?
- Caucasian
- African American
- Latino/Hispanic
- Asian American
- Asian
- Native American
- Pacific Islander
- Other ___________________________________

What is your income?
- Under $20,000
- $20,001-$30,000
- $30,001-$50,000
- $50,001-$70,000
- $70,001-$100,000
- More than $100,000

What is your highest level of education?
- First year in college
- Sophomore in college
- Junior in college
- Senior in college
- Bachelor’s degree
- Some graduate school
- Master’s degree
- Ph.D.
**Posttest**

**Perceived arousal.**

Different people react very differently to the same situations. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following five point rating scale to indicate how you feel.

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<tr>
<td>sharp</td>
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<tr>
<td>tired</td>
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<tr>
<td>worn-out</td>
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</tbody>
</table>

State hostility.

Please indicate the extent to which you agree or disagree with each of the following mood statements. The following items will be scored Strongly Disagree to Strongly Agree.
<table>
<thead>
<tr>
<th>Feeling</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>I feel kindly.</td>
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<tr>
<td>I feel unsociable.</td>
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<tr>
<td>I feel outraged.</td>
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<tr>
<td>I feel agreeable.</td>
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<tr>
<td>I feel angry.</td>
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<tr>
<td>I feel offended.</td>
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<tr>
<td>I feel disgusted.</td>
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<tr>
<td>I feel tame.</td>
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<tr>
<td>I feel like I'm about to explode.</td>
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<tr>
<td>I feel friendly.</td>
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<tr>
<td>I feel understanding.</td>
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<tr>
<td>I feel amiable.</td>
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<tr>
<td>I feel mad.</td>
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<tr>
<td>I feel mean.</td>
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<tr>
<td>I feel bitter.</td>
<td></td>
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<tr>
<td>I feel burned up.</td>
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<tr>
<td>I feel like yelling at somebody.</td>
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<tr>
<td>I feel cooperative.</td>
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<tr>
<td>I feel like swearing.</td>
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<tr>
<td>I feel cruel.</td>
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<tr>
<td>I feel good-natured.</td>
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<tr>
<td>I feel disagreeable.</td>
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<tr>
<td>I feel enraged.</td>
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<tr>
<td>I feel sympathetic.</td>
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<tr>
<td>I feel vexed.</td>
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</tbody>
</table>
Presence experienced.

Please indicate your experience in the game. Please consider the entire scale when making your responses. Answer the questions independently in the order that they appear. Do not skip questions or return to a previous question to change your answer.

With regard to the video environment you just experienced

<table>
<thead>
<tr>
<th></th>
<th>I do not agree at all</th>
<th>I slightly disagree</th>
<th>Neutral</th>
<th>I slightly agree</th>
<th>I fully agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I devoted my whole attention to the video game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I concentrated on the video game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My attention was claimed by the video game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I directed my attention to the video game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The video game captured my senses.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>I dedicated myself completely to the video game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My attention was caught by the video game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My perception focused on the video game almost automatically.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>I was able to imagine the arrangement of the spaces presented in the video game very well.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I had a precise idea of the spatial surroundings presented in the video game.</td>
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<tr>
<td>I was able to make a good estimate of the size of the presented space.</td>
<td></td>
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<tr>
<td>Even now, I still have a concrete mental image of the spatial environment.</td>
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</tr>
<tr>
<td>I felt like I was actually there in the environment of the presentation.</td>
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<tr>
<td>It was as though my true location had shifted into the environment in the presentation.</td>
<td></td>
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<tr>
<td>I felt as though I was physically present in the environment of the presentation.</td>
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<tr>
<td>It seemed as though I actually took part in the action of the presentation.</td>
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<tr>
<td>I had the impression that I could be active in the environment of the presentation.</td>
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<tr>
<td>I felt like I could move around among the objects in the presentation.</td>
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<tr>
<td>The objects in the presentation gave me the feeling that I could do things with them.</td>
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<tr>
<td>It seemed to me that I could do whatever I wanted in the environment of the presentation.</td>
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<tr>
<td>I thought most about things having to do with the video game.</td>
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<tr>
<td>I thoroughly considered what the things in the presentation had to do with one another.</td>
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<tr>
<td>The video game presentation activated my thinking.</td>
<td></td>
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<tr>
<td>I thought about whether the video game presentation could be of use to me.</td>
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<tr>
<td>I concentrated on whether there were any inconsistencies in the video game.</td>
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</tr>
<tr>
<td>I didn't really pay attention to the existence of errors or inconsistencies in the video game.</td>
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</tr>
<tr>
<td>I directed my attention to possible errors or contradictions in the video game.</td>
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<tr>
<td>I thought about whether the action or the video game presentation was plausible.</td>
<td></td>
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<tr>
<td>I wondered whether the video game presentation could really exist like this.</td>
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<tr>
<td>I took a critical viewpoint of the video game presentation.</td>
<td></td>
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<tr>
<td>It was important for me to check whether inconsistencies were present in the video game.</td>
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</tr>
<tr>
<td>It was not important for me whether the video game contained errors or contradictions.</td>
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</tr>
<tr>
<td>I am generally interested in the topic of the video game.</td>
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</tr>
</tbody>
</table>
I have felt a strong affinity to the theme of the video game for a long time.

There was already a fondness in me for the topic of the video game before I was exposed to it.

I just love to think about the topic of the video game.

When someone shows me a blueprint, I am able to imagine the space easily.

It's easy for me to negotiate a space in my mind without actually being there.

When I read a text, I can usually easily imagine the arrangement of the objects described.

When someone describes a space to me, it's usually very easy of me to imagine it clearly.

Video game rating.

Next, please answer a few questions about the game you just played.

How difficult was NCAA Football 2007?

☐ 1 - Easy
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7 - Difficult
How enjoyable was NCAA Football 2007?
☐ 1 - Not Enjoyable
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7 - Enjoyable

How frustrating was NCAA Football 2007?
☐ 1 - Not Frustrating
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7 - Frustrating

How exciting was NCAA Football 2007?
☐ 1 - Not Exciting
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7 - Exciting

How fast was the action of NCAA Football 2007?
☐ 1 - Slow Action
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7 - Hectic Action

How interesting was the content of NCAA Football 2007?
☐ 1 - Not Interesting
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7 - Very Interesting
How fun was NCAA Football 2007?

- 1 - Not Fun
- 2
- 3
- 4
- 5
- 6
- 7 - Very Fun

How violent was NCAA Football 2007?

- 1 - Not Violent
- 2
- 3
- 4
- 5
- 6
- 7 - Very Violent

How violent was the content of NCAA Football 2007?

- 1 - Not Violent
- 2
- 3
- 4
- 5
- 6
- 7 - Very Violent
Enjoyment.

Just a few more questions regarding the game you just played...please indicate how you experienced the environment from not at all to extremely.

<table>
<thead>
<tr>
<th></th>
<th>Not at All</th>
<th>Neutral</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>The game excited me.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hated the game.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The game made me feel good.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The game bored me.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The game fascinated me.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoyed the game.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I loved the game.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
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</tr>
<tr>
<td>I enjoyed the outcome of the game.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playing the game was a positive experience.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Manipulation check.

How strongly did you identify with (or relate to) your team in the video game?
- 1 - Not at all
- 2
- 3
- 4 - Neutral
- 5
- 6
- 7 - Very strongly

How strongly did you identify with (or relate to) your competition in the video game?
- 1 - Not at all
- 2
- 3
- 4 - Neutral
- 5
- 6
- 7 - Very strongly

How competitive was your team in the video game?
- 1 - Not at all
- 2
- 3
- 4 - Neutral
- 5
- 6
- 7 - Very competitive

How competitive was your opponent in the video game?
- 1 - Not at all
- 2
- 3
- 4 - Neutral
- 5
- 6
- 7 - Very competitive
Finally, please tell us a little more about your gaming experience

Please indicate the team YOU just played AS.
The team I just played as was:
- Indiana
- Michigan
- Northern Illinois
- Ohio State
- San Diego State

Please indicate the team YOU just played AGAINST.
My opponent played as:
- Indiana
- Michigan
- Northern Illinois
- Ohio State
- San Diego State

With one minute remaining, how strongly did you feel you had an opportunity to win the game?
- I had no chance of winning
- My chances were bleak
- Neutral
- I felt confident I could win the game
- I already had it won

Please indicate whether you won or lost the competition you just played.
- Won
- Lost

Please indicate the score of the game when the study ended:

Your team's score: _________

The opponent’s score: _________