Stone City—Cold Stone Creamery, Inc. [Digital game]. (2008). Persuasive Games. Retrieved March 1, 2008, from http://www.persuasivegames.com/games/game.aspx?game=coldstone

Urban science [Digital game]. (2006). The Epistemic Games Research Group. University of Wisconsin-Madison. Retrieved March 1, 2008, from http://epistemicgames.org/eg/?cat=14

Waterbusters [Digital game]. (2006). City of Seattle. Retrieved March 1, 2008, from http://www.savingwater.org/waterbusters.

Xtreme errands [Digital game]. (2008). Persuasive Games. Retrieved March 1, 2008, from http://www.persuasivegames.com/games/game.aspx?game=xtremeerrands

Chapter 3

Enjoyment of Digital Games

What Makes Them "Seriously" Fun?

Hua Wang, Cuihua Shen, and Ute Ritterfeld

Given the nature of their labeling, *games* are expected to be *fun*! Popular and commercially successful digital games are all fun entertainment games. But the fun appeal can be instantly diminished when a game is labeled a *serious* game—stereotyped by games designed for purposeful educational endeavors and prosocial causes. While Ratan and Ritterfeld (this volume, chapter 2) provided an overview of currently existing serious games, we focused on extracting fun factors in the context of *entertainment* games. What is fun may be contingent upon individual players and their play contexts; and what makes entertainment games enjoyable may not have the same magical effects in serious games. Yet, by identifying game elements that contribute to overall enjoyability, we can establish a useful frame of reference for understanding media enjoyment in both entertainment and serious games, and for exploring new strategies to improve the fun quality of serious games.

We begin this chapter by synthesizing the literature on enjoyment of media entertainment in general, and enjoyment of digital games in particular, providing a rationale for our unique expert-user approach and research methodology. We then describe in detail the procedure we adopted to develop a comprehensive list of game fun factors, using a combination of inductive and deductive reasoning. Finally, we discuss general trends, propose a potential "Big Five," and present the conceptualization of a three-level threshold model of digital game enjoyment.

Enjoyment: At the Heart of Digital Gaming

Communication scholars and media psychologists generally refer to *enjoyment* as the positive responses of individuals toward media technologies and content (e.g., Bryant, Roskos-Ewoldsen, & Cantor, 2003; Vorderer, Klimmt, & Ritterfeld, 2004). The same phenomenon has been studied under different terminology, such as *pleasure*, by researchers across the disciplines of communication, psychology, education, and neuroscience (e.g., Berridge, 2003; Bosshart & Macconi, 1998; Gee, 2005). Entertainment, via mass and interactive media, is a major source of enjoyment in contemporary societies (Bryant & Vorderer,

2006; Bryant & Zillmann, 2002; Zillmann & Vorderer, 2000). Enjoyment can come from unpleasant media entertainment experiences such as suspense, but most often from pleasant ones: (1) sensory pleasures, (2) ego-emotions, (3) cognitive competence, and (4) socioemotions (Bosshart & Macconi, 1998; Vorderer, 2001; c.f., Vorderer, Wulff, & Friedrichsen, 1996; Zillmann & Bryant, 1994). Vorderer, Klimmt, and Ritterfeld emphasized that enjoyment, which is at the heart of media entertainment, has multiple dimensions (i.e., physiological, affective, and cognitive). They further explicated a conceptual model that addresses the complex and dynamic nature of entertainment experiences, including specific prerequisites of enjoyment that must be fulfilled both by the media and the individual users (Vorderer, Klimmt, & Ritterfeld, 2004). Grounded in the above reviewed understandings of entertainment in general and enjoyment in media entertainment in particular, we focus on enjoyment in the context of digital games in this chapter.

Enjoyment Gaps between Game Developers and Players

Game developers intend to make games fun, and to this end for years they have been using heuristics as guiding tools for usability tests. These heuristics usually include game interface, game mechanics, game story, and game play (e.g., Clanton, 1998; Desurvire, Caplan, & Toth, 2004; Federoff, 2002; Fullerton, Swain, & Hoffman, 2004). However, what the game developers identify as key design factors for game enjoyment may not necessarily match with what the game players want. In fact, there can be substantial differences in fun factor preferences between the two groups (e.g., Choi, Kim, & Kim, 1999). Ultimately, what matters the most is how individual players feel about whether a game is fun or not. Therefore, it is not surprising to see that most of the scholarly discussions about game enjoyment come from the uses and gratifications perspective (e.g., Sherry, Lucas, Greenberg, & Lachlan, 2006). To summarize prior theoretical and empirical work, we organize the following review into three interrelated topical areas: *technological affordances*, *intrinsic motivations*, and *alternative reality*.

Different Approaches to Understanding Game Enjoyment

Vorderer (2001) suggested that Oerter's (1999) play theory offers a useful framework for understanding entertainment media experiences and proposed to (re) frame digital gaming as a form of play in coping with reality: "an intrinsically motivated action, accompanied by a change in perceived reality that is repeatedly used and highly attractive" (Vorderer, 2001, p. 256). Klimmt (2003) further proposed an integrated conceptual model of game enjoyment and argued that during game play the enjoyability of a game may be determined by different factors at three levels: At the first and basic level, the play process can be viewed as a series of quick and direct feedback loops between the player and the gaming system which result from unique technological affordances of digital games (e.g., interactivity) that enable players to have an experience of effectance. At the intermediate level, the play process is viewed as a sequence of interconnected episodes triggered by the player's intrinsic motivations (e.g., curiosity) that unfold with a sense of suspense-relief and increased self-esteem. At the last and most complex level, the play process is viewed as a whole, characterized by the player's active role in engaging with the narrative and their experience of perceived alternative reality in the gaming world (e.g., presence).

Gaming technologies include several features that are distinct from traditional media (for a comprehensive review on the technological affordances of digital games, see Klimmt, this volume, chapter 16; Wang & Singhal, this volume, chapter 17). One of the most obvious features is interactivity (Grodal, 2000; Vorderer, 2000). Based on their systematic review, Lee, Park, and Jin (2006) suggested adapting the concept of interactivity to capture the characteristics of digital games and define it as "a perceived degree that a person in a communication process with at least one more intelligent being can bring a reciprocal effect to other participants of the communication process by turn-taking, feedback, and choice behaviors" (p. 263). Compared with traditional leisure activities such as book reading and television watching, digital games engage more active and higher-level user participation by providing the player with opportunities (or sometimes require the player) to interact with elements in the gaming world and to experience the outcomes of their experimental decision making (Klimmt & Vorderer, 2007; Vorderer, 2000). Such experiences of effectance require only minimal input actions from the player but can result in immediate and multitude of responses from the gaming system, often providing the player a sense of control and empowerment (Klimmt, 2003; Klimmt & Hartmann, 2006). Recent experimental research has shown that game players enjoy watching the results of their own choices and actions in the gaming world (Klimmt, Hartmann, & Frey, 2007).

Intrinsic motivation is another approach of studying game enjoyment. Based on their pioneering work in the 1980s, Malone and Lepper developed a taxonomy of intrinsic motivations in the context of educational digital games for children with four theoretical categories: challenge, fantasy, curiosity, and control (Lepper & Malone, 1987; Malone, 1981a, 1981b; Malone & Lepper, 1987). Similarly, Cordova and Lepper (1996) summarized three basic underlying game factors as choice, fantasy, and challenge. Sherry et al. (2006) extracted six game uses and gratifications dimensions based on results from focus groups and surveys: competition, challenge, social interaction, diversion, fantasy, and arousal. With the increasing popularity of social computing, game researchers and practitioners have recently started to explore player motivations in the virtual worlds, such as massively multiplayer online gaming worlds. Bartle (1996, 2004) offered a typology of player types, placing four types of game players (i.e., killers, achievers, socializers, explorers) based on two intersecting behavioral dimensions (i.e., action vs. interaction, player vs. gaming world). Building on prior work, Yee (2005, 2007) adopted a factor analytic approach and classified three overarching motivations of play in online games: achieve-

ment, social, and immersion. Grounded in self-determination theory, Ryan, Rigby, and Przybylski (2006) looked into intrinsic motivations for digital game play, showing empirical evidence that players' perceived in-game autonomy, competence, and relatedness (i.e., sense of connection) are significant predictors of game enjoyment. Other theories such as mood management theory and affective disposition theory also hold potential for explaining game players' motives for selective media exposure and their association with game enjoyment (Bryant & Davies, 2006).

The last tenet of game enjoyment has to do with the digital gaming experience as a state of alternative reality. Scholars have approached this aspect from different, yet somewhat overlapping perspectives. For example, presence is a concept used to describe a psychological state in which virtual objects are experienced as actual objects, or perceptual illusion of non-mediation (e.g., Lee, 2004; Lombard & Ditton, 1997). Although how presence facilitates game play experience and contributes to game enjoyment is not yet clear, Tamborini and Skalski (2006) point out that the relationship between the two cannot be overlooked. Arguably, similar media phenomena have been studied under different terms with their own scholarly rationales and focuses: immersion (Hubbard, 1991), escapism (Oerter, 1999), absorption (Slater and Rouner, 2002), transportation (Green, Brock, & Kaufman, 2004), and realism (Shapiro, Peña-Herborn, & Hancock, 2006). However, the flow theory by Csikszentmihalyi (1997) is perhaps the most frequently adopted framework by game designers and researchers. Even a game-flow model was proposed with eight elements (i.e., concentration, challenge, skills, control, clear goals, feedback, immersion, and social interaction) as well as a set of criteria for evaluating player enjoyment in games (Sweetser & Wyeth, 2005). As well explained by Sherry (2004), although this theory was not developed with digital games in mind, enjoyment of media and game enjoyment in particular share many similar characteristics with the flow experience—"focused concentration, loss of self-consciousness, a sense that one is in control of the situation, distortion of temporal experience, and the experience of the activity as intrinsically rewarding" (p. 336). Sherry's version of media flow theory postulated that game enjoyment can be explained by the balance between individual differences in cognitive abilities and challenges presented by media messages.

Identifying Fun Factors from Game Reviews

Taken together, a significant number of scholars have provided theoretical reasoning and empirical evidence from a user's perspective that help understand the core of game enjoyment. However, this so-called uses and gratifications approach is often limited by the eloquence and insightfulness of the research participants. The implicit assumption that individuals are able to report their true motivations for media selection is questionable. The same applies to individuals reporting not only if, but why a game play experience was fun.

We adopted a unique strategy to overcome these limitations. In using elaborative justifications of enjoyment in the form of regularly published professional game reviews, we still designed our study from a user's perspective, but that of an expert user. Our assumptions are that professional game reviewers are experts who have a broad subject matter knowledge background as well as a diverse gaming experience. When writing reviews of a game, they often draw upon their prior knowledge and experience in making their judgment less idiosyncratic. Moreover, they make explicit arguments about their subjective play experiences in deliberative written evaluations. Therefore, the goal of this study was to identify fun factors of digital games articulated by professional game reviewers.

We conducted a content analysis of 60 game reviews retrieved from two highly credible sources. Results of our analyses rendered a total of 27 fun-factor-related content categories as well as their relative importance based on their weighted frequencies and valence in reviewer comments. The rest of this chapter summarizes and discusses general patterns among these identified fun factors and their implications for serious games.

Methods

Data Retrieval and Sampling

Players often go to popular Web sites to learn about newly released digital games. In fact, many professional game magazines also provide free game reviews on their Web sites. *GamePro* is one of the most popular professional game magazines published monthly in the United States, with its readership reaching almost 4 million in 2007 (Integrated Media Network, 2007). The game reviews in the magazine are also published on their Web site: GamePro.com. For both the magazine and the Web site, reviewed games are rated on a 5-point scale with fractional increments of 0.25. A newly released game is often given three specific fun factor ratings on graphics, sound, and control, and an additional overall fun factor rating. A game is placed in the Editor's Choice category if it receives an overall fun factor score of 4.50 or above. The site also provides an average critic score for each game based on expert ratings from other popular game magazines and Web sites. Given its prominent focus on fun factors, GamePro.com was chosen to be our primary data source.

IGN.com is another popular source of news and reviews on entertainment games, although it exists solely online. Formerly known as Imagine Games Network, the Web site was launched in 1996 and later became a unit of Fox Interactive Media owned by News Corporation. IGN.com provides comprehensive reviews of newly released games with five specific scores on presentation, graphics, sound, game play, and lasting appeal, and an overall IGN rating score, all on a 10-point scale. Similar to the average critic score on GamePro.com, this site also provides an average press rating for each game based on

evaluations from other sources. To reduce the bias of a single source of game reviews and a limited number of in-house reviewers, IGN.com was selected as a complimentary data source in this study.

On both Web sites, game reviews are usually organized by game-playing platforms. The 10 most commonly listed game platforms are: PlayStation 2 (PS2), PlayStation 3 (PS3), Xbox, Xbox 360, Wii, GameCube, PlayStation Portable (PSP), DS, Game Boy Advance (GBA), and PC. For each of the 10 platforms the most recent 15 reviews by the end of January 2007 were retrieved from GamePro.com to create a primary data pool. Each review was assigned a unique identification number, such as 001.1, with the first three digits representing a particular game and the extension representing the source of database (i.e., .1 as from GamePro.com and .2 as from IGN.com). Then, three reviewed games on each platform were randomly sampled from the GamePro review data pool and retained when a review could also be retrieved from IGN.com for the same game. Thus, our final sample included 60 reviews for 30 games.

In terms of genre, 46.7% of our random sample was categorized by GamePro as action games, 20.0% were sports games, 13.3% were role playing games (RPGs), 6.7% were adventure games, 6.7% were simulations, and 6.7% were strategy games. In terms of ratings by the Entertainment Software Rating Board, 44.4% were rated as for "Teens," 22.2% for "Everyone," 22.2% for "Everyone 10+," and 11.1% for "Mature 17+." For all games reviewed we also obtained additional data on rating scores and sales ranking. From GamePro.com and IGN.com we compiled overall rating by their own experts, specific ratings focusing on different game play enjoyment dimensions by their own experts (appropriately delineated), and average ratings of other popular game Web sites. The games in our sample were rated by GamePro.com with overall fun factor ratings between 1.50 and 5.00, with a mean of 3.69. Amazon.com, a major American e-commerce company that often sells digital games, listed the sample's respective sales ranks as ranging from 140th to 5,366th with the smaller number indicating a higher sales rank. The average ranking of all games in the sample was 1,287th. For consistency, all sampled reviews were reformatted to contain only textual content with no graphics.

Coding Procedures

The coding schemes were created using both inductive and deductive approaches. Four experienced game players were asked to independently construct a list of commonsense fun factor categories. In addition, literature on game enjoyment was systematically reviewed to identify important fun factors suggested in previous studies and theoretical elaborations (detailed in previous literature review section). Initial coding schemes were pilot tested using a small sample of reviews and modified for final coding according to the following 30 identified content categories (see Table 3.1). The final coding scheme was applied to the text in each review.

Table 3.1 Content Categories, Definitions, and Examples

Content Category	*Definition*	*Example*
1. Overall Technological Capacity	General comments on the technological aspect of a game.	"*Liberation* makes great use of the PSP hardware and its capabilities – all of them – to establish its place as one of the best games on the system" [Review 068.2].
2. Usability	The functionality and stability of a game, such as loading time, frame rate, bugs, or navigability of menus.	"... we encountered bugs in flag activation...a couple of missions ... stopped working mid-way for no reason" [Review 008.2].
3. Control	The ease, intuitiveness, and effectiveness of controls.	"On the field, the controls are sharp and swift" [Review 076.1].
4. Interactivity	The continuous action-and-reaction loops between the player(s) and the game world.	"Part of what makes it so rewarding is ... how easily you interact with everything" [Review 068.2].
5. Artificial Intelligence	The design of and interaction with artificial intelligence in a game.	"Doing more to hamper the gameplay is the enemy A.I." [Review 097.2].
6. Overall Game Design	General comments on game design.	"While there was a lot to love about the original *Empire at War*, there were some design decisions that left many gamers, including us, feeling a little dissatisfied. Petroglyph seems to have taken all of those criticisms to heart and improved on nearly every single aspect of the game" [Review 084.2].
7. Novelty	The originality or innovativeness of a game, such as incorporating new ideas in a compelling manner versus rehashing old concepts.	"...when it comes to tricking, *Tony Hawk's Downhill Jam* is ... a different experience from the traditional game" [Review 030.2].
8. Mechanics	The degree to which the basic game rules and core activities are well-established and enjoyable.	"Perhaps the most entertaining aspects of *Summon Night's* gameplay is the battle system" [Review 041.1].
9. Complexity and Diversity	The quantity and quality of meaningful options presented to the player and how well those options build on each other to enable a deep and intriguing game-play experience.	"As the game progresses, more job classes are unlocked, creating more opportunities to determine what the best team combination is for each area" [Review 037.1].
10. Levels	The ability of game level designs to provide efficient structures to enhance the overall game play experience.	"If nothing else, a more sensible minimum level standard should have been adopted for each area of the game" [Review 062.2].

(continued)

Table 3.1 Continued

Content Category	*Definition*	*Example*
11. Challenge	The difficulty of a game and whether it is scaled to provide a balanced experience that is neither frustrating nor effortless for the player(s).	"The downside is that missions are either much easier or much more difficult depending on how many balls you have at the start" [Review 094.2].
12. Freedom	The degree to which the structure of a game allows players to pursue different courses of action at will.	"How you go about the game is entirely up to you, and the game allows for class switching at any time" [Review 037.2].
13. Gratification	When game elements provide players with a sense of reward upon completion of tasks.	"Included in the trick attack mode is the ability to grab double and triple point modifiers, which instantly add a ton of points to the trick total" [Review 030.2].
14. Overall Aesthetic Presentation	General comments on aesthetic presentation, such as visual look, sound effects, and style.	"The overall style is pretty solid" [Review 030.2].
15. Visual Presentation	The quality of the graphics in the game.	"The game has some of the finest graphics seen on the PS2" [Review 001.1].
16. Audio Presentation	The quality of music, sound effects, and voice acting.	"The worst offender is the song selection; it's a veritable cornucopia of musical variety" [Review 036.1].
17. Overall Entertainment Game Play Experience	General comments on the experience of entertainment during game play.	"...fun rhythm gameplay, in which you essentially tap markers that go along with the music" [Review 036.1].
18. Excitement	The pacing of a game and sensory pleasure and arousal experienced by the player.	"Giddy with excitement, I cranked up with the classic. Minutes later, I turned it off in anger" [Review 015.2].
19. Presence	The degree to which player(s) experience the virtual physical objects, virtual social actors, and virtual self generated by media technologies as if they were real.	"*Rogue Galaxy* is what every RPG should strive to be: an immersive experience that places you in a new world" [Review 001.1].
20. Social Interaction	The possibility, requirement, and quality of human interactions during game play, especially regarding multiplayer support / features.	"...this is one of the most addictive multiplayer titles ... With two or more people, it is transformed into one of those games that you just can't stop playing" [Review 076.2].

(continued)

Table 3.1 Continued

Content Category	*Definition*	*Example*
21. Length	Whether the game allows for a sufficient duration of play before it is beaten.	"...that stays fun for about an hour at most" [Review 017.2].
22. Replayability	Whether players want to play a game multiple times.	"There is not much point in running through it again" [Review 085.2].
23. Storyline	The existence and quality of storylines and plots in a game.	"*Bully* has a seriously poignant story with great dialogue" [Review 008.2].
24. Characters	The attractiveness, identifiability/relatablity, customizability, and depth of characters in a game.	"The biggest draw of this game is the goofy characters" [Review 017.2].
25. Humor	The use and effectiveness of humor in a game.	"The real joy of playing *Sam and Max* is in watching the hilarious interactions unfold and in spotting the throwaway jokes hidden in magazine racks and picture frames" [Review 085.2].
26. Realness	How a game resembles environments, situations, and social interactions in the physical world.	"*FFIII* has a more realistic feel" [Review 037.2].
27. Fantasy	Whether a game provides players with a fantastical and imaginative experience that is normally impossible in real life.	"I only wish that the writers had been willing to go just one step further and bring a little more absurdity into the whole thing. While the talking dog and rabbit thing are odd enough, everything else in the game seems just one shade too sane for you to totally lose yourself in the experience" [Review 085.2].
28. Other General Comments	Recommendations to the gamers and general comments about a game that don't explain what specifically makes the game fun to play.	"*Bully* is an interesting game" [Review 008.2].
29. Pure Descriptions	Pure descriptions of what is or what is not in a particular game.	"*Pocketbike Racer* has five tracks to choose from that range from short loops to longer jump and ramp filled course. Each course is filled with gates that fill up your power gauge when you cross through them ..." [Review 017.2].
30. Irrelevant Content	Background information, general discussions about games or gaming that is not pertinent to the specific game under review.	"Burger King is offering three games for the low, low price of only four dollars with the purchase of a value meal" [Review 017.1].

To accommodate the evaluative nature of the reviews and the different reviewer writing styles, we defined the units of analysis, *arguments*, as verbal expressions which reflect a distinct point of view about a digital game. This allowed us the flexibility to identify words, phrases, sentences, and even short paragraphs that best reflected each of the content categories in this study. For instance, a complete sentence such as "*Bully* is easily one of the funniest PlayStation 2 titles we've ever seen and is one of the few pieces of software out there that can legitimately be called a 'comedy'" [review 008.2] would be coded as one argument or unit for our analysis. Sometimes, there can be multiple arguments within one single sentence. "Its cool boss fights and fighting engine overshadow sometimes repetitious design and occasional bugs" [review 008.2] would be coded as three distinct units as "Its cool boss fights and fighting engine," "sometimes repetitious design," and "occasional bugs" address three different aspects about game enjoyment in this study. Likewise, there are cases where an argument runs longer than a single sentence. "Like most Rockstar games, there's a ton to do in *Bully* whether you just started or have been playing for 40+ hours. Expect plenty of welcome distractions at just about every moment" [review 008.2] would be coded altogether as one unit of analysis.

Furthermore, all 30 content categories except for the last two were each divided into three subcategories in terms of the valence of an argument (i.e., whether it is a positive, negative, or neutral comment on the particular game under review). For instance, "humor in this game is top notch" [review 008.2] would not be coded just as an argument about humor, but a positive statement about humor; "the main gripe I have with *Liberation* is that it is too short" [review 068.1] would be coded as a negative statement about length; and "[T] here wasn't any noticeable lag in the matches we played" [review 017.2] would be coded as a neutral statement about usability. Thus, a coding sheet was created with a comprehensive list of content categories, their definitions, and corresponding variable names on one side; and a table to record the raw frequency counts of all content categories (including valence-specific subcategories), total number of units, as well as information about the game, the game review, and the coder on the other side.

All the 60 game reviews were independently coded by two primary coders, and a third person coded 20% of all reviews to check on intercoder reliability. Of the 30 content categories coded, the first 27 categories were pertinent to the specific fun factors in digital games that were of our research interest, whereas the last three (i.e., general comments about a game, pure descriptions, and irrelevant information) were necessary for our content-coding procedure, but did not provide any insights about game enjoyment and, therefore, were excluded from our data analysis and report.

For the purpose of checking intercoder reliability, the 27 fun-factor-related, evaluative content categories were consensually grouped within five distinct dimensions: (1) technological capacity, (2) game design, (3) aesthetic presentation, (4) entertainment game play experience, and (5) narrativity. Zero-order correlations and *Kappa* were separately calculated based on total frequency counts and modified three-level categorical coding (i.e., low, moderate, and high frequencies). High intercoder reliability was obtained for all five dimensions: technological capacity (r = .99, *kappa* = 1.00), game design (r = .98, *kappa* = 1.00), aesthetic presentation (r = .97, *kappa* = 1.00), entertainment game play experience (r = .97, *kappa* = .73), and narrativity (r = .89, *kappa* = .87).

Data Modification and Analysis

Sixty game reviews were analyzed in this study. The total number of words was 60,127. The total word counts of GamePro reviews were 13,610, ranged from 207 to 852 words, with an average of 454 words. And the total word counts of IGN reviews were 46,517, ranged from 637 to 2,579 words, with an average of 1,551 words. All reviews were marked with units of analysis, with each argument as a single unit. The review content was coded into a total of 2,292 units for further analysis, 575 units from GamePro and 1,717 units from IGN. Among all the coded units, about 20% fell into the three categories excluded from analysis: 9.9% were general comments such as "this is a great game," 7.2% were pure descriptions of the game, and 3.0% were irrelevant content to the particular game being reviewed. Therefore, fun-factor-related evaluative content in these game reviews only constituted 80% of all review texts. Given the substantial discrepancy in review length between GamePro and IGN, frequency counts of all fun factor categories were weighted by the number of units. Only weighted data were used in our analysis and hence the weighted frequency counts (in rounded whole numbers) are reported in this chapter.

Results

Overall Frequency

Table 3.2 shows the overall frequency of all content categories in descending order. The top five categories were: overall game design, visual presentation, control, audio presentation, and complexity and diversity. The bottom three were: fantasy, presence, and interactivity.

Positives, Negatives, and Relative Positions

Of all the review content related to fun factors, 55.4% were positive comments, 35.6% were negative comments, and 9.0% were neutral comments. As illustrated in Table 3.3, the most frequently mentioned categories in positive comments were: overall game design, visual presentation, audio presentation, complexity and diversity, and control. The least frequently mentioned categories in positive comments were: fantasy, interactivity, and presence.

The most frequently mentioned categories in negative comments were:

Table 3.2 Overall Frequency of Fun-Factor Content Categories

Fun-Factor Content Category	*Frequency Counts Weighted by Units*	*% of All Fun-Factor-Related Content*
Overall Game Design	800	17.7
Visual Presentation	591	13.1
Control	433	9.6
Audio Presentation	312	6.9
Complexity and Diversity	299	6.6
Overall Entertainment Game Play Experience	207	4.6
Usability	187	4.1
Mechanics	186	4.1
Novelty	180	4.0
Storyline	170	3.8
Characters	163	3.6
Social Interaction	162	3.6
Challenge	126	2.8
Artificial Intelligence	79	1.8
Length	77	1.7
Humor	71	1.6
Overall Technological Capacity	70	1.5
Levels	68	1.5
Overall Aesthetic Presentation	62	1.4
Excitement	59	1.3
Freedom	56	1.3
Replayability	42	0.9
Realness	37	0.8
Gratification	35	0.8
Interactivity	14	0.3
Presence	12	0.3
Fantasy	11	0.2

overall game design, control, visual presentation, usability, and complexity and diversity. The least frequently mentioned categories in negative comments were: presence, interactivity, gratification, and fantasy.

In general, five fun factor categories consistently appeared on top in the overall frequency ranking as well as the frequency rankings in positive, negative, and neutral comments: overall game design, visual presentation, audio presentation, complexity and diversity, and control.

Table 3.3 Frequency of Fun-Factor Content Categories by Valence

Positive Comments			*Negative Comments*			*Neutral Comments*		
Fun Factor	*Weighted Freq*	*Percentage*	*Fun Factor*	*Weighted Freq*	*Percentage*	*Fun Factor*	*Weighted Freq*	*Percentage*
Overall Game Design	412	16.5	Overall Game Design	286	17.8	Overall Game Design	102	25.3
Visual Presentation	361	14.4	Control	209	13.0	Visual Presentation	51	12.7
Audio Presentation	215	8.6	Visual Presentation	179	11.1	Control	38	9.5
Complexity and Diversity	195	7.8	Usability	117	7.3	Overall Entertainment Game Play Experience	32	7.9
Control	186	7.4	Complexity and Diversity	89	5.5	Audio Presentation	25	6.2
Mechanics	123	4.9	Audio Presentation	72	4.5	Storyline	23	5.7
Overall Entertainment Game Play Experience	117	4.7	Challenge	69	4.3	Challenge	21	5.2
Novelty	117	4.7	Overall Entertainment Game Play Experience	58	3.6	Length	17	4.2
Storyline	97	3.9	Novelty	57	3.6	Complexity and Diversity	15	3.7
Social Interaction	97	3.9	Characters	57	3.5	Usability	13	3.2
Characters	95	3.8	Social Interaction	54	3.4	Mechanics	12	2.9
Humor	60	2.4	Artificial Intelligence	52	3.2	Characters	11	2.7
Usability	57	2.3	Mechanics	52	3.2	Social Interaction	10	2.6
Overall Aesthetic Presentation	43	1.7	Storyline	49	3.1	Freedom	9	2.1

(continued)

Table 3.3 Continued

Positive Comments			Negative Comments			Neutral Comments		
Fun Factor	*Weighted Freq*	*Percentage*	*Fun Factor*	*Weighted Freq*	*Percentage*	*Fun Factor*	*Weighted Freq*	*Percentage*
Overall Technological Capacity	42	1.7	Levels	42	2.7	Overall Aesthetic Presentation	6	1.5
Excitement	37	1.5	Length	39	2.4	Novelty	6	1.4
Challenge	36	1.5	Freedom	28	1.7	Levels	3	0.7
Gratification	33	1.3	Overall Technological Capacity	26	1.6	Excitement	3	0.7
Realness	31	1.2	Excitement	19	1.2	Interactivity	3	0.7
Replayability	26	1.1	Replayability	16	1.0	Humor	2	0.5
Artificial Intelligence	25	1.0	Overall Aesthetic Presentation	13	0.8	Overall Technological Capacity	2	0.4
Levels	23	0.9	Humor	9	0.6	Artificial Intelligence	2	0.4
Length	21	0.8	Realness	6	0.4	Replayability	0	0.0
Freedom	20	0.8	Fantasy	3	0.2	Realness	0	0.0
Presence	12	0.5	Gratification	2	0.2	Fantasy	0	0.0
Interactivity	9	0.4	Interactivity	2	0.1	Gratification	0	0.0
Fantasy	8	0.3	Presence	0	0.0	Presence	0	0.0

A comparison of categorical rankings between positive and negative comments indicated that humor, mechanics, and gratification were more likely to be praised for their contribution to game enjoyment. However, game elements related to control, usability, challenge, and artificial intelligence came up more often when frustration and disappointment were expressed in the reviews.

Particularly "Fun" and "Not Fun" Games

Four games (eight reviews) in our sample were awarded the title of Editor's Choice with overall fun-factor scores of 4.50 or above on a 5-point scale. In these particularly "fun" games, 66.3% of all valenced comments were positive comments. The fun factors that appeared most frequently in those positive comments, as shown in Table 3.4, were: overall game design, control, characters, complexity and diversity, social interaction, and novelty. We also noticed that characters, social interaction, novelty, realness, and gratification rendered relatively more salient than they appeared in our general analysis.

Table 3.4 Frequency of Positively Valenced Comments on "Fun" Games

Fun Factor	*Weighted Freq*	*Percentage*
Overall Game Design	82	25.5
Control	33	10.1
Characters	20	6.1
Complexity and Diversity	20	6.1
Social Interaction	20	6.1
Novelty	19	5.9
Audio Presentation	15	4.5
Visual Presentation	14	4.4
Realness	13	4.1
Mechanics	11	3.3
Gratification	10	3.0
Usability	9	2.8
Storyline	9	2.7
Overall Technological Capacity	8	2.4
Overall Entertainment Game Play Experience	8	2.4
Levels	7	2.2
Humor	6	1.8
Artificial Intelligence	5	1.6
Freedom	4	1.2
Excitement	4	1.2
Challenge	3	0.9
Replayability	3	0.9
Overall Aesthetic Presentation	1	0.4
Length	1	0.4
Interactivity	0	0.0
Presence	0	0.0
Fantasy	0	0.0

Coincidentally, four games (eight reviews) in our sample were also given overall fun-factor scores of 2.50 or below. In these particularly "not fun" games, 36.7% of all valenced comments were negative comments. The categories that appeared most frequently in the negative comments, as shown in Table 3.5, were: overall game design, visual presentation, control, overall entertainment game play experience, audio presentation, and storyline. We also noticed that overall critical statements on entertainment game play experience, storyline, social interaction, and length rendered relatively more salient than they appeared in our general analysis.

Relevance of Fun-Factor Ratings for Games Sales

Prior research has suggested that media reviews can influence users' perceptions and their consumer behaviors as well (e.g., d'Astous & Colbert, 2002). Using our data set, we explored the connection between fun factors emphasized in game reviews and consumer purchase behaviors. At first look, the prominent fun factor categories rendered from our content analysis generally corresponded to GamePro and IGN's rating dimensions. We understand that mere frequency counts of specific fun-factor categories cannot be used to predict rating scores in a linear fashion as each count may carry different weights (or degrees) in terms of valence that are not measured in the content coding procedure. For example, there is a qualitative difference in the same one count of positive comment between "humor in this game is top notch" [review 008.2] and "this game is one of the funniest titles on PS2 and one the few that can be legitimately called 'comedy'" [review 008.2]. So, in order to test the common assumption that these rating scores help promote game sales, we analyzed the dimensionality of the 10 fun-factor ratings (4 items from GamePro and 6 items from IGN) using maximum likelihood factor analysis. Based on the Scree Plot test, two factors were rotated using a Varimax rotation procedure, yielding two interpretable factors: IGN ratings (accounted for 37.4% of the item variance; $\alpha = .92$) and GamePro ratings (independently accounted for 31.4% of the item variance; $\alpha = .90$). We also included a unidimensional scale of average ratings posted on popular game Web sites other than GamePro.com and IGN.com, using principal components factor analysis (accounted for 97.7% of item variance; $\alpha = .96$). Factor scores were saved in both analyses. A multiple linear regression analysis was conducted to assess how well these three rating factors (GamPro, IGN, and averaged popular ratings) predicted sales reflected by Amazon.com game-sales ranking. The results of stepwise multiple regression indicated that the average popular ratings was the only significant predictor [$\beta = -.36$, $t(48) = -2.70$, $p = .01$] and accounted for a significant portion of the variance in sales [adjusted $R^2 = .11$, $F(1,50) = 7.26$, $p = .01$]. Therefore, we can conclude that the various rating scores provided on popular game Web sites (taken together) do have a fair amount of influence on sales of entertainment titles.

Table 3.5 Frequency of Negatively Valenced Comments on "Not Fun" Games

Fun Factor	*Weighted Freq*	*Percentage*
Overall Game Design	54	26.1
Visual Presentation	30	14.3
Control	17	8.2
Overall Entertainment Game Play Experience	17	8.0
Audio Presentation	15	7.1
Storyline	14	6.8
Complexity and Diversity	11	5.1
Social Interaction	10	4.8
Usability	10	4.6
Length	7	3.3
Novelty	5	2.7
Mechanics	5	2.2
Realness	4	1.9
Overall Aesthetic Presentation	3	1.5
Challenge	2	0.7
Freedom	2	0.7
Excitement	2	0.7
Artificial Intelligence	1	0.6
Gratification	1	0.6
Overall Technological Capacity	0	0.0
Levels	0	0.0
Characters	0	0.0
Humor	0	0.0
Replayability	0	0.0
Interactivity	0	0.0
Presence	0	0.0
Fantasy	0	0.0

Discussion

Game reviewers, unlike professional writers, are subject-matter experts. Their writing (i.e., the game reviews) may not be as structured or coherent as presidential speeches, but we trust them to provide precise arguments in their evaluations when it comes to what makes a game appealing, interesting, and, ultimately, *fun*! Although the pleasure of digital game play may be experienced and interpreted differently across individuals, platforms, genres, content, as well as the sociocultural contexts of play, we believe that the elaborative assessment presented in professional game reviews represents an effort to reduce idiosyncratic biases while still representing a user's perspective. In this sense, what is frequently discussed and how it is discussed in these game reviews provide important insights into our understanding of digital game enjoyment.

Trend Spotting: What's Attention Catching and What's Taken for Granted

Our content analysis indicated that certain fun-factor categories consistently appeared on the top in all of our frequency tables. They are *overall game design* (i.e., the different game elements, rules, procedures, objectives, and how they work together), *visual presentation* (i.e., the style and sophistication of graphics), *audio presentation* (i.e., the quality of auditory components and effects), *complexity and diversity* (i.e., the number, level, and interconnection of meaningful acts presented to the player in a game), and *control* (i.e., the ease of use and the comfortable feel of game control devices). These categories not only attracted the most attention of game reviewers, but that of game designers and developers as well. It is not news to anyone that large financial investments in high-end digital games would focus on innovative technological development and stylish, high-fidelity presentation. This attention and focus on technology and presentation are unavoidably transferred to the game rating systems as well. Both GamePro and IGN specifically include graphics, sounds, and control as their criteria for evaluating game enjoyment. As our regression analysis suggested, the rating scores offered by popular game Web sites do hold certain predictive power in the economic markets.

In contrast, three fun-factor categories consistently appeared the least frequently in the sampled reviews: *fantasy* (i.e., a fantastical and imaginative experience that is normally impossible in reality), *presence* (i.e., the player's feeling of immersion in the virtual world generated by media technologies), and *interactivity* (i.e., the continuous action-and-reaction loops between players and the game world). The low frequency of these categories does not necessarily mean that they barely contribute to game enjoyment. In our opinion, these factors are often taken for granted by experienced players, and, since the reviewers' perceived readers are game players as opposed to nonplayers, these factors might not be fully articulated in the context of game reviews. In fact, these factors are unique characteristics of digital games when compared with other media formats such as books and movies (Gee, 2005, 2007), and are main topics of study for many game researchers. They are also critical factors that offer players an emotionally engaging play experience, which is at the heart of game enjoyment (Klimmt, 2003, also this volume, chapter 16; Vorderer, 2000; Wang & Singhal, this volume, chapter 17).

Clustering Fun Factor Categories: The Big Five

In extracting the essence of our 27 fun-factor-related categories, we borrow the metaphorical label of the "Big Five" from research on personality psychology (e.g., John & Srivastava, 1999) and propose a potential Big Five of digital game enjoyment including (1) technological capacity, (2) game design, (3) aesthetic presentation, (4) entertainment game play experience, and (5) narrativity.

Like the Big Five of psychology, these are five very broad, abstract, and lexical dimensions that emerged from our content analysis. These five dimensions may be arguably positioned along a continuum with a more technological and designer-centered perspective on one end, and a more social psychological and player-centered perspective on the other end. Our proposal here is not meant to reduce all the possible aspects of game enjoyment to only five clusters, but rather to provide a potentially generic structure of taxonomy in understanding the subject, acknowledging the fact that each of these five dimensions should and does encompass a number of distinct and specific fun factors in digital games.

Leveling Up: Playability Threshold, Enjoyment Threshold, and Super Fun-Boosting Factors

Further comparisons of our content categorical rankings indicated that some factors (i.e., humor, mechanics, and gratification) tended to appear in positive comments more often while others (i.e., control, usability, challenge, and artificial intelligence) were more likely to appear in negative comments; and some factors (i.e., characters, social interaction, novelty, realness, and gratification) were perceived to have contributed more in the particularly "fun" games while others (i.e., overall entertainment game play experience, storyline, social interaction, and length) were thought to have diminished the entertainment value in the particularly "not fun" games. Relative ranking positions of these fun-factor categories implied that there are certain thresholds that a game has to pass in order to be playable or entertaining, and yet an additional set of factors are needed for a game to be super fun.

We arranged these patterns into a *playability threshold*, an *enjoyment threshold*, and a group of *super fun-boosting factors*. The *playability threshold* is based on common complaints related to technological capacity and basic game elements (such as usability, control, challenge, and visual presentation). These are things that are expected to be in place for a game to be playable, and serve as the prerequisites for game enjoyment. If they are not there, it is easy to generate a feeling of disappointment, frustration, and irritation. It is fairly understandable that not many people would be interested in playing a game that looks ugly, takes forever to load, has numerous glitches, and becomes easily repetitive. The *enjoyment threshold* constitutes common factors mentioned in both positive and negative ways and reflected in fun factors related to aesthetic presentation and game design (such as quality visual and audio presentation, complexity and diversity, mechanics, freedom, levels, balanced degree of challenge, and gratification). For example, the game should have decent graphic and sound effects; the player is given a variety of options to explore the game world at different levels, make decisions, and take actions; or their decisions and actions are reasonably connected to the consequences that follow, enabling the player to create a trajectory of personal experience through

the game play. These things satisfy our innate human desires for discovery and problem solving and create genuine feelings of pleasure (Gee, 2005, 2007). Finally, the *super fun-boosting factors* make games extremely entertaining. These are the outstanding factors derived from the top games in our sample. These super fun-boosting factors are often related to extraordinary game design elements (such as complexity and diversity, novelty, mechanics, and gratification), superior quality of aesthetic presentation (such as highly sophisticated, stylish, and immersive visual and audio environments), but particularly the role of narrative in games (such as storylines, characters, and humor) and player's social interaction during and after the game-play experience. This has important implications for serious game developers. When making strategic decisions about allocating often limited financial resources, organizations and institutions interested in designing and developing serious games should consider investing in the narrative and social aspects of a game instead of solely focusing on improving the look and feel.

In summary, we identified 27 fun-factor-related categories in our content analysis, using a combination of inductive and deductive approaches. We then suggested a Big Five of digital game enjoyment that includes technological capacity, game design, aesthetic presentation, entertainment game play experience, and narrativity. We further proposed a three-level threshold perspective to understand the enjoyability of digital games. Overcoming the *playability threshold* provides a game higher probability of being picked up for a try by the players. Passing the *enjoyability threshold* offers possibilities of an appealing, fun play experience. Yet, it is when a game incorporates the *super fun-boosting factors* that it becomes exceptionally entertaining. The Big Five may overlap across these three levels. However, taken together, technological capacity roughly defines the playability threshold whereas game design and aesthetic presentation mostly account for the enjoyability threshold. Entertainment game play experience and narrativity best distinguish between fun and super fun games. There is no doubt that we found great variations in the distribution of game quality in the entertainment genre. Crucial for our further understanding of the serious game genre, however, is whether the enjoyment threshold can be realized or even passed with examples of super fun serious games.

Acknowledgments

The authors thank Daniel Ye for his invaluable input and contribution. We are also indebted to Dr. Michael Cody, Roy Alugbue, Brian Strumpf, and Khadeejah Raoof for their assistance with this project.

References

Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD Research, 1*(1). Retrieved April 20, 2008, from http://www.mud.co.uk/richard/hcds.htm

Bartle, R. A. (2004). *Designing virtual worlds*. Berkeley, CA: New Riders.

Berridge, K. C. (2003). Pleasures of the brain. *Brain & Cognition, 52*, 106–128.

Bosshart, L., & Macconi, I. (1998). Defining "entertainment." *Communication Research Trends, 18*(3), 3–6.

Bryant, J., & Davies, J. (2006). Selective exposure to video games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 181–196). Mahwah, NJ: Erlbaum.

Bryant, J., Roskos-Ewoldsen, D. R., & Cantor, J. (Eds.). (2003). *Communication and emotion: Essays in honor of Dolf Zillmann*. Mahwah, NJ: Erlbaum.

Bryant, J., & Vorderer, P. (Eds.). (2006). *The psychology of entertainment*. Mahwah, NJ: Erlbaum.

Bryant, J., & Zillmann, D. (Eds.). (2002). *Media effects: Advances in theory and research*. Mahwah, NJ: Erlbaum.

Choi, D., Kim, H., & Kim, J. (1999). Toward the construction of fun computer games; differences in the views of developers and players. *Personal Technologies, 3*, 92–104.

Clanton, C. (1998). An integrated demonstration of computer game design. *Proceedings of CHI 98 Conference on Human Factors in Computing Systems*, Los Angeles: ACM.

Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology, 88*, 715–730.

Csikszentmihalyi, M. (1997). *Finding flow: The psychology of engagement with everyday life*. New York: Basic Books.

d'Astous, A., & Colbert, F. (2002). Moviegoers' consultation of critical reviews: Psychological antecedents and consequences. *International Journal of Arts Management, 5*(1), 24–36.

Desurvire, H., Caplan, M., & Toth, J. A. (2004). Using heuristics to evaluate the playability of games. *CHI 2004*, 1509–1512. Vienna, Austria: ACM.

Federoff, M. A. (2002). *Heuristics and usability guidelines for the creation and evaluation of fun in video games*. Unpublished master's thesis, Indiana University.

Fullerton, T., Swain, C., & Hoffman, S. (2004). *Game design workshop: Designing, prototyping, and playtesting games*. New York: CMP Books.

Gee, J. P. (2005). *Why video games are good for your soul*. Australia: Common Ground.

Gee, J. P. (2007). *Good video games and good learning*. New York: Lang.

Green, M. C., Brock, T. C., & Kaufman, G. F. (2004). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory, 14*, 311–327.

Grodal, T. (2000). Video games and the pleasure of control. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 197–214). Mahwah, NJ: Erlbaum.

Hubbard, P. (1991). Evaluating computer games for language learning. *Simulation and Gaming, 22*, 220–223.

Integrated Media Network. (2007). GamePro Magazine readership climbs to 3, 836, 000. Retrieved May 8, 2008, from http://www.idgentertainment.com/pr/pr.cfm?article_id=121.

John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–153). New York: Guildford Press.

Klimmt, C. (2003). Dimensions and determinants of the enjoyment of playing digital games: A three-level model. In M. Copier & J. Raessens (Eds.), *Level up: Digital games research conference* (pp. 246–257). Utrecht, The Netherlands: Faculty of Arts, Utrecht University.

Klimmt, C., & Hartmann, T. (2006). Effectance, self-efficacy, and the motivation to play video games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 133–145). Mahwah, NJ: Erlbaum.

Klimmt, C., Harmann, T., & Frey, A. (2007). Effectance and control as determinants of video game enjoyment. *CyberPsychology & Behavior, 10*(6), 845–848.

Klimmt, C., & Vorderer, P. (2007). Interactive media. In J. J. Arnett (Ed.), *Encyclopedia of children, adolescents, and the media* (pp. 417–419). London: Sage.

Lee, K. M. (2004). Presence, explicated. *Communication Theory, 14*(1), 27–50.

Lee, K. M., Park, N., & Jin, S. (2006). Narrative and interactivity in computer games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 259–274). Mahwah, NJ: Erlbaum.

Lepper, M. R., & Malone, T. W. (1987). Intrinsic motivation and instructional effectiveness in computer-based education. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, learning and instruction: Vol. 3. Conative and affective process analysis* (pp. 255–286). Hillsdale, NJ: Erlbaum.

Lombard, M., & Ditton, T. (1997). At the heart of it all: The concept of presence. *Journal of Computer Mediated Communication*, 3(2). Retrieved May 6, 2008, from http://jcmc.indiana.edu /jcmc/vol3/issue2/lombard.html

Malone, T. W. (1981a). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, 5(4), 333–369.

Malone, T. W. (1981b). What makes computer games fun? *BYTE*, 5, 258–277.

Malone, T. W., & Lepper, M. R. (1987). Ming learning fun: A taxonomy of intrinsic motivations for learning. In R. E. Snow & M. J. Farr (Eds.), *Aptitude, learning and instruction: Vol. 3. Conative and affective process analysis* (pp. 223–253). Hillsdale, NJ: Erlbaum.

Oerter, R. (1999). *Psychologie des Spiels. Ein handlungstheoretischer Ansatz [The psychology of play: An action-theoretical approach]*. Weinheim, Germany: Beltz.

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion, 30*, 347–363.

Shapiro, M. A., Peña-Herborn, J., & Hancock, J. T. (2006). Realism, imagination, and narrative video games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 275–290). Mahwah, NJ: Erlbaum.

Sherry, J. L. (2004). Flow and media enjoyment. *Communication Theory, 14*, 328–347.

Sherry, J. L., Lucas, K., Greenberg, B. S., & Lachlan, K. (2006). Video game uses and gratifications as predictors of use and game preference. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 213–224). Mahwah, NJ: Erlbaum.

Slater, M. D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory, 12*, 173–191.

Sweetster, P., & W. P. (2005). GameFlow: A model for evaluating player enjoyment in games. *ACM Computers in Entertainment*, 3(3), Article 3A, 1–24.

Tamborini, R., & Skalski, P. (2006). The role of presence in the experience of electronic games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 225–240). Mahwah, NJ: Erlbaum.

Vorderer, P. (2000). Interactive entertainment and beyond. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 21–36). Mahwah, NJ: Erlbaum.

Vorderer, P. (2001). It's all entertainment—sure. But what exactly is entertainment? Communication research, media psychology, and the explanation of entertainment processes. *Poetics, 29*, 247–261.

Klimmt, C., & Ritterfeld, U. (2004). Enjoyment: At the heart of media entertainment. *Communication Theory, 14*, 388–408.

Vorderer, P., Wulff, H. J., & Friedrichsen, M. (Eds.). (1996). *Suspense: conceptualizations, theoretical analyses, and empirical explorations*. Mahwah, NJ: Erlbaum.

Yee, N. (2005, March 15). *A model of player motivations*. Retrieved October 3, 2006, from http://www.nickyee.com/daedalus/archives/001298.php?page=1

Yee, N. (2007). Motivations of play in online games. *Journal of CyberPsychology and Behavior, 9*, 772–775.

Zillmann, D., & Bryant, J. (1994). Entertainment as media effect. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 437–461). Mahwah, NJ: Erlbaum.

Zillmann, D., & Vorderer, P. (Eds.). (2000). *Media entertainment: The psychology of its appeal*. Mahwah, NJ: Erlbaum.