On average, girls and women are less involved with video games than are boys and men, and when they do play, they often prefer different games. This article reports two studies that investigated the dislikes of German females with regard to video games. Study 1 applied conjoint analysis to female respondents’ (N = 317) ratings of fictional video games and demonstrated that lack of meaningful social interaction, followed by violent content and sexual gender role stereotyping of game characters, were the most important reasons why females disliked the games. Study 2, an online survey (N = 795), revealed that female respondents were less attracted to competitive elements in video games, suggesting an explanation for gender-specific game preferences. These findings are discussed with respect to communication theory on interactive entertainment and their implications for applied video game design.

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Introduction

Computer and video games have become among the most popular leisure time activities for children, adolescents, and young adults in Western and Asian societies. The computer game industry is a billion-dollar business and its products have become a major part of today’s media landscape (e.g., Poole, 2000; Vorderer & Bryant, 2006; Wolf, 1999). However, a substantial gender difference in computer game involvement has been observed, both in the U.S. and in Germany, despite the use of digital games being on the rise (Ivory, 2006). Many studies conducted in social science fields such as psychology report that girls and young women display less interest in digital games, have less game-related knowledge, and play less frequently and for shorter durations than do boys and young men (e.g., Brown, Hall, Holtzer, Brown, & Brown, 1997; Cassell & Jenkins, 1998a; Lucas & Sherry, 2004; Wright, et al., 2001).

Several recent studies in Germany suggest the existence of a similar or even wider gender gap in video game involvement among the German population. For example, among a representative sample of German six to 13 years olds, 33% of girls reported...
playing Gameboy at least once a week (compared to 51% of boys), 33% reported playing other video consoles or computer games (compared to 54% of boys), and only 12% reported being very interested in video games in general (compared to 36% of boys; MFS, 2005a). Another study (MFS, 2005b) found a similar gender gap in video game involvement among 12 to 19 year old adolescents, with for example only 15% of all females reporting finding video games very interesting (compared to 52% of males) and only 15% of all females in this age group (compared to 61% of males) stating that they play computer or video games at least once a week.

At the same time, recent publications suggest that the amount of female game playing has increased, at least in the U.K. and the U.S. (see, e.g., Bryce & Rutter, 2002; Jenkins, 1998). According to current user data for the U.S. market (ESA, 2005), 43% of all video game players are female (in contrast to the gender gap in Germany). Online games as a “new” form of video game playing have been adopted by many female players as well (44% of all online-players are female, ESA, 2005). The Sims’ success as a top selling video game has been attributed to its attractiveness to female players (cf. Carr, 2005); this adds to the discussion of female-targeted game design (Cassell, 1998; Cassell & Jenkins, 1998b; Graner-Ray, 2003; Gorriz & Medina, 2000; Miller, Chaika, & Groppe, 1996), but does not explain females’ lower interest in video games per se. Researchers have also noted the popularity of “pink software” among females (e.g., Subrahmanyam & Greenfield, 1998). Matell’s Barbie Fashion Designer, for example, a video game that allowed users to make clothes for their Barbie Dolls, sold more than 500,000 copies (Cassell, 2002).

Finally, some researchers, often with a background in Cultural Studies, note that females may regard contemporary computer games (even those designed for male players) as “sites for female participation and resistance to societal gender roles and conceptions of masculinity and femininity” (Bryce & Rutter, 2002, p. 246; see in general for a discussion of progressive “grrrl gamers” Cassell & Jenkins, 1998a; Yates & Littleton, 1999; for a different view, see “conservative pink software,” AAUW, 2000, p. 30).

In sum, the research suggests that video games have traditionally been a realm dominated by males, but that due to the emergence of female subcultures adopting contemporary video games designed for males, and the advent of new games that successfully engage female players, the gender gap has started to narrow, at least in the U.S., such that players are no longer overwhelmingly male. These developments imply a shift away from the traditional gender gap to gender-specific adaptations of video games.

Focusing on gender differences in involvement with computer games is primarily relevant for research on entertainment (e.g., Dietz, 1998; Klimmt & Hartmann, 2006; Raney, Smith, & Baker, 2006; Salisch, Oppl, & Kristen, 2006), as it seems plausible that gender-specific entertainment preferences exist. However, despite growing interest among scholars from different disciplines in what video game design elements attract females, few empirical studies have examined the issue from a psychological point of view. Continued research on the gender gap that still exists also has
implications for research on media socialization and access to information technologies. Because competence in computer games may require media literacy and technical skills, involvement with computer games presumably facilitates the acquisition of general computer-related knowledge and abilities (Subrahmanyam & Greenfield, 1994). Thus gaming can help users participate successfully in the information society (Cassell & Jenkins, 1998a; Lucas & Sherry, 2004). It follows that if computer games are more attractive to boys than to girls, they perpetuate gender imbalance in access to modern information technologies.

This article presents two studies that address why young women are less attracted than young men to popular contemporary computer games in Germany. We examined content factors that are salient in most contemporary video games and that can potentially decrease females’ liking. Both studies rely on assumptions discussed in the literature in social-scientific communication research and psychology. Both studies analyzed single-player video games (thus excluding virtual worlds and other multiplayer games). Also, other playing contexts and situational factors (e.g., playing together with others) are not addressed, although research suggests that multiplayer modes and playing with friends are important factors in females’ liking to play video games (Agosto, 2002).

Research on Gender and Computer Games

“Gender” can be construed in different ways, depending on the researcher’s disciplinary approach (see, e.g., for feminist and cultural-studies based approaches, Cassell, 1998; Cassell & Jenkins, 1998b; for psychological approaches, Bem, 1981; Crane & Markus, 1982; and for overviews, Bussey & Bandura, 1999; deCastell & Bryson, 1998). Throughout this article we adopt a psychological perspective, namely the Social Cognitive Theory of Gender Differentiation, which is described by Bussey and Bandura (1999) as follows: “In this theoretical perspective, gender roles and conceptions are the product of a broad network of social influences operating interdependently in a variety of societal subsystems. Human evolution provides bodily structures and biological potentialities that permit a range of possibilities rather than dictate a fixed type of gender differentiation” (p. 676).

Most attempts to explain the gender gap in computer game involvement focus on the content and the design of typical games (e.g., AAUW, 2000; Cassell, 2002; Glaubke, Miller, Parker, & Espejo, 2001; Gorriz & Medina, 2000; Graner-Ray, 2003; Kafai, 1998; Miller, Chaika, & Groppe, 1996). Several authors have documented that most digital games rely heavily on stereotypes and archaic role models to portray female characters (Dietz, 1998; Jansz & Martis, 2003; Sherman, 1997). Many female characters in computer games are weak victims who are protected or rescued by powerful males (i.e., they have a low task-attractivity, McCroskey & McCain, 1974). Moreover, visual portrayals of females tend to highlight physical attributes (e.g., through clothing) or exaggerate female sexuality (e.g., Beasley & Standley, 2002; Downs & Smith, 2005; Schleiner, 2001). Although such content
characteristics presumably attract male players, they may repel females from playing, because observing such gender stereotypes could impede identification with the female characters or even cause cognitive conflicts and annoyance (especially if the subjective construction by the player involves a feminist self-concept; see, e.g., Cassell’s discussion of Lara Croft, 2002). Female users could have low attraction and appreciation for such portrayals of female characters (McCroskey & McCain, 1974), and their enjoyment and playing motivation could be reduced in consequence.

Another important content variable is violence. The majority of popular computer games targeted at teens and adults present an abundance of violent actions with an increasing degree of realism (Dietz, 1998; Schneider, Lang, Shin, & Bradley, 2004; Sherry, 2001; Smith, Lachlan, & Tamborini, 2003). Research on media genre preference has demonstrated that males are more interested in violent entertainment than females are (e.g., Slater, 2003). Females tend to display a very low preference for observing or participating in conflicts and their resolutions through violence (see Bussey & Bandura, 1999) and find non-violent entertainment, such as comedy or sad films, more attractive (Oliver, Weaver, & Sargent, 2000). Many computer games do not satisfy females’ preference for non-violent content. The lack of suitable non-violent games may also help explain women and girls’ low interest in such games (Jansz, 2005; Subrahmanyam & Greenfield, 1998).

A third content-related factor that could explain females’ dislike of computer games is the amount of social interaction offered in single-player games. Television research has revealed that females value programs with considerable amounts of meaningful dialogue and character interaction, and are less attracted by action-oriented formats with taciturn people who ignore each other (e.g., Mayer, 2003). Most single-player computer games, however, seem to adopt structures of action-oriented entertainment formats such as action movies or sports broadcasts, and only include social interaction to a limited extent. One prominent exception is “The Sims” (Electronic Arts, published in 2000), which centers around social interaction between players and characters and among characters (Steen, Greenfield, Davies, & Tynes, 2006). Not surprisingly, “The Sims” is one of the very few game products that has attracted many female players (Steen, et al., 2006). In general, however, most available digital games present few opportunities for social interaction in single-player mode; thus they do not address girls’ and women’s media entertainment preferences (see AAUW, 2000; Bryce & Rutter, 2002; Inkpen, et al., 1994).

In addition to content factors, the competitive structure of most digital games could contribute to females’ indifference toward them (Vorderer, Hartmann, & Klimmt, 2006). Research in sports psychology has demonstrated that girls find competitive activities less attractive than do boys and that girls are sometimes afraid of participating in competitive sports (e.g., Swain & Jones, 1991; see also Bussey & Bandura, 1999, for explanations based on self-efficacy). It is reasonable to assume, then, that some females would avoid competitive computer games as well. But almost all games on the market involve competitive elements, such as sports contests, armed duels, car racing, or economic rivalry. One exception that is very popular
among females is the adventure game “Myst” (Ubisoft, published in 1993) and its sequels. This type of game offers a non-competitive task structure, requiring exploration and puzzle-solving without time pressure or immediate threats. Because most digital games involve competitive elements, however, they are presumably less likely to attract female users (see also Agosto, 2002; Lucas & Sherry, 2004).

In sum, at least four factors can account for the gender gap in computer game playing. Three concern the content typically found in games: archaic gender role portrayals, violence, and lack of social interaction. The fourth factor pertains to the structure of the games’ interactive tasks, that is, their competitive elements. However, empirical evidence for the explanatory value of those factors is scarce. Therefore, we report two studies that empirically examine the importance of these factors.

Study 1: Content Factors and Women’s Preference for an Electronic Game

Objective
Study 1 examined how game content factors affect females’ motivation to play computer games. The study specifically addressed the three content elements discussed above (sexuality-focused gender role portrayals, violence, and inclusion of social interactions). Based on previous research, we reasoned that females’ interest would be low if a given single-player computer game:

- involves strong and realistic violence
- features a female protagonist who fits into common male-dominated gender stereotypes, for example by exaggeration of female body characteristics or sexually revealing clothing
- allows little social interaction with other virtual characters

Complementarily, we hypothesized that females would report stronger interest in a given computer game if it does not include a gender-role stereotyped protagonist, is free of violence, and permits rich social interactions with other characters.

Method
A paper-and-pencil survey was administered among 317 females aged 18 to 26 years ($M = 21.67; SD = 4.37$) recruited in schools and universities in a major German city. The sample reported an average weekly computer game playing time of one hour, 24 minutes ($SD = 2$ hours, 27 minutes; max = 9 hours per week).

A conjoint analysis design was implemented to test the importance of the three content factors discussed above (gender role portrayal, violence, richness of social interactions). Conjoint analysis, originally rooted in consumer research, is a method designed to assess the relative impact of product attributes on individuals’ preferences and choice behavior (Hair, Tatham, Anderson, & Black, 1998). Based on theoretically established factors, a set of experimentally manipulated stimuli (e.g., products) is presented to the respondents, who are asked to rank them according to their preference. Subsequently, the relative impact of the underlying factors is
regressed by the conjoint analysis on the basis of the observed rankings. The analysis provides two criteria (Gustafson, Herrmann, & Huber, 2000): The “part-worth utility” (or “utility score”) reflects the absolute contribution of each factor level to the summarized total utility (e.g., overall preference) of a given product or object. The “importance score,” in contrast, reflects the range of utility scores between distinct levels of a given factor, and thus indicates how changes in factor levels lead to a change in the overall preference for a product or object.

Fictional computer game packages, along with text descriptions and small images, were presented in the questionnaire. These descriptive elements were varied to (1) promise heavy violence or the absence of violence, (2) indicate either a sexualized stereotyped role portrayal of the female protagonist or a non-stereotyped female protagonist, and (3) display either small amounts of social interactions or rich social exchange with other virtual characters. These three factors were manipulated independently in order to produce all possible combinations. Based on the conjoint analysis design, four of the eight possible combinations were selected (fractionated factorial design) and presented in the questionnaire. Figure 1 illustrates the manipulated elements; Table 1 shows how the levels of the three factors varied across the different games.

Violence and gender role portrayal were varied by altering visual components of the picture, whereas the role of social interaction for the game was manipulated through different verbal descriptions. The left package shown in Figure 1 is the

![Figure 1 Manipulation of presented computer game packages according to three factors: “violence,” “gender role portrayal,” and “social interaction richness” (graphics were shown in grey scale in the study)](image-url)
manifestation of the conditions “high violence—sexualized gender role portrayal—low social interaction;” the right package is the combination “low violence—non-sexualized gender role—low social interaction.” Both pictures are shown as used in the original questionnaire. The German description on the left package reads: “Game ‘Red’ is about Lea, a young detective (see image on the right). She is investigating a series of murders and has to solve numerous difficult puzzles. She often finds useful information in computers, files, and letters. Although many people appear in ‘Red,’ conversations with them are rather rare and short. Communication with other characters is not important in ‘Red.’” The German description on the right package reads: “Game ‘Yellow’ is about Lea, a young detective (see image on the right). She is investigating a series of murders and has to solve numerous difficult puzzles. She often finds useful information in computers, files, and letters. Although many people appear in ‘Yellow,’ conversations with them are rather rare and short. Communication with other characters is not important in ‘Yellow.’”

Respondents were asked to rank the four games in order of the game they would like to play the most versus the game they would like to play the least. In addition, for each of the four game packages, participants were required to rate how enjoyable they presumed the product to be (using a scale from 1 “not enjoyable at all” to 6 “very enjoyable”). Ranking positions and enjoyment ratings were used for two different conjoint analyses.

Results

Overall Game Preference
About 70% of all subjects (n = 223) were included in the first conjoint analysis; 30% (n = 95) were removed because they had produced missing values in their rankings. A summary of the overall results of the conjoint analysis of the female respondents’ preference for computer game types is shown in Table 2. As the mean utility scores (and their positive/negative directions) suggest, the computer game most preferred contains (1) many opportunities for social interactions with other virtual characters, (2) a non-sexualized role for the female protagonist, and (3) non-aggressive content. This pattern confirms the effects hypothesized for the different factor levels.

Table 1 Variation of factors across games

<table>
<thead>
<tr>
<th>Game label</th>
<th>Factor: Violence</th>
<th>Factor: Gender role portrayal</th>
<th>Factor: Social interaction richness</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>High</td>
<td>Sexualized</td>
<td>Low</td>
</tr>
<tr>
<td>BLUE</td>
<td>High</td>
<td>Non-sexualized</td>
<td>High</td>
</tr>
<tr>
<td>GREEN</td>
<td>Low</td>
<td>Sexualized</td>
<td>High</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Low</td>
<td>Non-sexualized</td>
<td>Low</td>
</tr>
<tr>
<td>(SIMULATED)</td>
<td>Low</td>
<td>Non-sexualized</td>
<td>High</td>
</tr>
</tbody>
</table>

Note: The “simulated” game was not presented to respondents, but was computed during data analysis as it was predicted to return the highest preference scores.
Accordingly, females’ game preference was most sensitive (see column “importance”) to the richness of social interactions offered ($M_{\text{Importance}} = 59.14\%$). Gender role portrayal and violence contributed less to a change of game preference, suggesting that the amount of social interaction is the dominant content feature in German females’ evaluation of a computer game.

However, while the above data build on average tendencies, not all subjects reported the same direction of factor levels’ utility as hypothesized. Overall, 13.9% ($n = 31$) of the subjects differed from the hypothesized direction by reversals in two of the three factors, and 44.39% ($n = 99$) differed in their utility scores from the hypothesized direction in at least one of the three factors (total amount of reversals = 161). Most reversals occurred with respect to aggressive content (40.4% of all reversals), whereas subjects were more in line with the hypothesized direction regarding the “richness of social interaction” (34.2% of all reversals), and the “sexual character of the protagonist’s social role” (25.5% of all reversals). These findings suggest that only careful generalizations about the explanatory power of the investigated content factors should be made. Perhaps there were small subgroups in the sample whose preference patterns varied (e.g., who prefer violent games over non-violent games, cf. Bryce & Rutter, 2002; Jenkins, 1998; Kassis & Steiner, 2003). To identify those subgroups and patterns, however, remains a task for further research and analysis.

Figure 2 shows the estimated total utility values of all four computer games presented, plus the estimated total utility of the simulated fifth game (which was not presented to respondents, but whose values were estimated from the existing data, which is a common procedure in conjoint analysis). According to the utility scores and utility gains reported in Table 2, the computer game featuring no aggressive content, a non-sexualized social role of the protagonist, and a rich choice of social interaction possibilities achieved the highest preference score.
Paired t-tests comparing the total utility scores of the games reveal that all scores differ significantly except for the total utility score of the games “blue” and “green” (see Table 3).

**Entertainment Value**

The second conjoint analyses included 177 subjects (56.7%). All other subjects were dropped due to invalid values or equal values across all game types. Table 4 provides an overview of the results. Again, richness of social interactions accounts for anticipated entertainment value to the greatest extent. With respect to the “change sensitivity” of the entertainment value, the impact of this factor is almost 15 times as high as those of the other two factors, “aggression” and “gender role.”

Surprisingly, unlike in the analysis of preference above, female respondents assigned a higher entertainment value to computer games that included a female

![Figure 2](https://academic.oup.com/jcmc/article-abstract/11/4/910/4617707)

**Figure 2** Female respondents’ preference for different computer games: Estimated total utility scores (means) of four presented and one non-presented computer game types. In brackets: aggressive content [1 yes; 2 no] / social role [1 non-sexualized; 2 sexualized] / richness of social interactions [1 high; 2 low]

Paired t-tests comparing the total utility scores of the games reveal that all scores differ significantly except for the total utility score of the games “blue” and “green” (see Table 3).

**Table 3** Significance of mean differences between games’ total utility scores (game preference)

<table>
<thead>
<tr>
<th>Game</th>
<th>SIMULATED</th>
<th>BLUE</th>
<th>GREEN</th>
<th>YELLOW</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMULATED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLUE</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN</td>
<td>**</td>
<td>Ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YELLOW</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

Note: Paired t-tests computed (all n = 222; df = 221). ** p < .01; * p < .05; ns = non significant (p > .1).
protagonist in a rather sexualized gender role. However, two caveats should be noted. First, no treatment check was included to verify whether the female respondents perceived the intended “sexualized” social role as such. Thus the conclusion that a sexualized role for the protagonist increases the anticipated entertainment value of a game must be drawn with care. Also, the mean utility gain in entertainment value achieved by including in the computer game a sexualized protagonist role is rather small, as is this factor’s importance score. Because no test of significance is available, the relevance of this gain may be quite low.

Again, a couple of subjects showed preferences for one or more factor levels opposite from the hypothesized direction. Specifically, 7.91% ($n = 14$) of the subjects differed from the average pattern by showing three reversals, 11.86% ($n = 21$) by showing two reversals, and 44.5% ($n = 77$) by showing one reversal (total amount of reversals = 161). Again, responses diverged the most regarding the factor “violence” (36.65% of all reversals), followed by “gender role portrayal” (32.92% of all reversals) and “social interaction richness” (30.43% of all reversals). As in the first conjoint analysis reported, these findings warrant further research to identify subgroups within the female population that hold specific preference patterns that differ from the mainstream.

The estimated total utility values with respect to the entertainment value of all four computer games presented, and the (simulated) fifth game, are shown in Figure 3.

Paired t-tests show that the total utility scores of the games ‘red’ and ‘yellow’ differ significantly from the scores of the games ‘green’ and ‘blue’ and the ‘simulated’ game (see Table 5).

Discussion
The first study’s findings support the assumptions that had been extracted from the literature. All three content factors investigated contributed to the preference values that the young women assigned to the computer games. Interestingly, the relative importance of social interaction was much higher than the relevance of gender role.

Table 4 Results of conjoint analysis on games’ entertainment value

<table>
<thead>
<tr>
<th>Factor</th>
<th>Factor level</th>
<th>Hypothesized direction</th>
<th>Mean utility score</th>
<th>Mean utility gain</th>
<th>Mean importance score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violence</td>
<td>High</td>
<td>–</td>
<td>–.0085</td>
<td>+.02</td>
<td>3.85</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>+</td>
<td>.0085</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender role portrayal</td>
<td>Sexualized</td>
<td>–</td>
<td>.0141</td>
<td>-.03</td>
<td>5.77</td>
</tr>
<tr>
<td></td>
<td>Non-sexualized</td>
<td>+</td>
<td>-.0141</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richness of social interactions</td>
<td>Low</td>
<td>–</td>
<td>-.2345</td>
<td>+.47</td>
<td>90.38</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>+</td>
<td>.2345</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Constant = 2.43. For calculation of mean utility scores, mean utility gain, and mean importance scores see Table 1.
stereotyping and violence in the game. In fact, respondents were not repelled by the game versions that portrayed a gender-stereotyped protagonist with sexually revealing (leather) clothing. To experience enjoyment on some dimensions, at least a portion of women interviewed were apparently ready to accept such role stereotyping (see Bryce & Rutter, 2002; Yates & Littleton, 1999).

Nevertheless, the overall picture of what the women valued in the computer games explains very well why females show such dislike when it comes to contemporary games. Few commercial games offer substantial and meaningful social interaction, but many games are full of violence, and gender stereotyping is also very common (Smith, et al., 2003). Designing games that meet female preferences by producing rich and sophisticated social interactions with virtual characters is a technical challenge, however. It requires the computer program to have profound “artificial intelligence,” whereas violence and gender stereotyping depend largely on visual representations. The visual components of video games have undergone

**Figure 3** Female respondents’ anticipated entertainment value of different computer games: Estimated total utility scores (means) of four presented and one non-presented computer game types. In brackets: aggressive content [1 yes; 2 no] / social role [1 non-sexualized; 2 sexualized] / richness of social interactions [1 high; 2 low]

sized and violence in the game. In fact, respondents were not repelled by the game versions that portrayed a gender-stereotyped protagonist with sexually revealing (leather) clothing. To experience enjoyment on some dimensions, at least a portion of women interviewed were apparently ready to accept such role stereotyping (see Bryce & Rutter, 2002; Yates & Littleton, 1999).

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**Table 5** Significance of mean differences between games’ total utility scores (entertainment value)

<table>
<thead>
<tr>
<th>Game</th>
<th>GREEN</th>
<th>SIMULATED</th>
<th>BLUE</th>
<th>RED</th>
<th>YELLOW</th>
</tr>
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<tbody>
<tr>
<td>GREEN</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SIMULATED</td>
<td>Ns</td>
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<tr>
<td>BLUE</td>
<td>Ns</td>
<td>Ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>**</td>
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<td>YELLOW</td>
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<td>ns</td>
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</tbody>
</table>

*Note:* Paired t-tests computed (all $n = 177$; $df = 176$). ** $p < .01$; ns = non significant ($p > .1$).
remarkable improvements due to technical progress in graphics devices, but the data clearly suggest that the industry must face this challenge if women’s interactive entertainment preferences are to be met.

**Study 2: Competitiveness and Women’s Preferences for Electronic Games**

**Theory and Hypotheses**

Aside from the content elements that were investigated in Study 1, the competitive structure of many computer games had been identified as a potential factor that might repel women from playing. An online survey was conducted to examine the role of competitiveness in males’ and females’ preference for different computer game genres. The considerations presented above suggested that females would display a lower general use of computer games, but that gender differences would be especially large with respect to game genres that are highly competitive. To identify competitive game genres, time pressure and any kind of conflict or threat were defined as common manifestations of competition in computer games.

Competition orientation is a personality factor that can refer to different levels of generality. People may have a preference for competing with others in all domains of social life (high level of generality), or they may prefer to compete only in specific areas, such as a given sport (Gill, 1993) or a domain of knowledge (e.g., Andresen, 1990; McClintock, 1972). Computer games may be construed as a domain of life to which a specific motivation to compete may refer: Even people who do not display preferences for competition in other domains might prefer to enter competitive situations in computer gaming (e.g., LAN-parties; Jansz & Martens, 2003). Based on the existing evidence that males on average hold a stronger competitive disposition than do females (Bischof-Koehler, 1997; Swain & Jones, 1991), we hypothesized that males would also display a stronger computer-game-specific competition orientation and that this would be responsible for their greater tendency to play computer games.

Trait competitiveness can be divided into three theoretical components. The core component is the motivation to challenge and to surpass others (“Wetteifermotiv,” Lerch & Rubensal, 1983). A second aspect of competition orientation is the “need to win,” that is, the desire to be successful in any social and/or competitive situation, aversive emotional reactions to defeat, and little tolerance for situations that end in a tie (Franken & Brown, 1996; Gill, 1993). Finally, the user’s belief that he or she will be successful in competitive situations (self-efficacy; Bandura, 1997) is the third component of competition orientation. The assumption that males are more competitive than females in the computer gaming domain led to the following hypotheses:

**H1:** Males will report greater intensity of use of competitive computer game genres than females.

**H2:** Males will display a larger average computer-game-specific “Wetteifermotiv” than females.

**H3:** Males will report a larger average “need to win” in computer game contexts than females.
H4: Greater computer-game-related self-efficacy will be observable in males than in females. Finally, it was hypothesized that:

H5: Computer-game-specific “Wetteifermotiv,” “need to win,” and self-efficacy will predict the intensity of use of competitive computer game genres.

This concluding hypothesis represents the conceptual link between gender differences in the psychological components of competition orientation and computer game preferences, and completes the postulated explanation of gender difference in computer game play.

Method
An online survey of users of German computer-game-related websites was conducted. Banners and postings to related chats and newsgroups invited interested Internet users to participate anonymously in the investigation. The questionnaire included items on average frequency of use of different competitive and non-competitive computer game genres. Competitive genres were ego-shooters (cf. Schneider, et al., 2004; e.g., “Half-life”), action adventures (e.g., “Mafia”), real-time strategy games (e.g., “Age of Mythology”), and sports games, whereas non-competitive games were “simulations” (e.g., “MS Flight Simulator”), “peaceful build-up strategy” (e.g., “The Sims,” cf. Steen, et al., 2006), role playing games (e.g., “Baldur’s Gate”), and puzzle-based “adventure games” (e.g., “Monkey Island”). Intensity of use was measured on a five-point frequency scale, with the lowest value (1) meaning “never” and the highest value (5) meaning “very often.”

The components of computer-game-related competition orientation were measured by scales adapted from the psychological literature. The motivation to challenge and surpass others (“Wetteifermotiv”) was assessed by an 18-item scale adapted from the Sport Orientation Questionnaire (Gill & Deeter, 1988; Gill, Dzewaltowski, & Deeter, 1988) that includes a subscale about the motivation to compete. A sample item was “I like competition in computer games very much.” The scale turned out to be sufficiently reliable (Cronbach’s Alpha = .92). A list of six items was used to measure the “need to win.” The statements, e.g., “I hate to lose in a computer game,” were also inspired by the Sport Orientation Questionnaire (“win orientation sub scale;” Gill, et al., 1988). They formed a sufficiently reliable scale as well (Cronbach’s Alpha = .85). Computer-game-related self-efficacy, finally, was measured by a 10-item scale adapted from a general self-efficacy questionnaire by Jerusalem and Schwarzer (1986). A sample item was “I manage to resolve virtually all difficult problems in computer games.” The scale displayed satisfactory reliability as well (Cronbach’s Alpha = .89).

In addition to these variables, items about participants’ age and gender were included in the online questionnaire. It took participants about 12 minutes to complete the questionnaire. Overall, 795 individuals responded to the questionnaire, among them only 18 females. The small number of female subjects willing to participate in the survey as compared to male subjects further attests to the gender gap
in video game involvement among the German population. However, the group of females turned out to be large enough to allow for statistical gender comparisons. On average, respondents were 21 years old ($M = 21.03$ years, $SD = 5.83$ years).

Results
The comparison of male and female respondents with respect to their intensity of use of different computer game genres supported H1: Males reported significantly more frequent use in all competitive genres than did females (Figure 4). In contrast, no gender differences were observed in the use of the non-competitive genres, except for the “simulation” category, which might be due to the broad range of game titles that respondents may have associated with this genre, such as (competitive) racing simulations or combat flight simulations.

Gender comparisons of the components of competition orientation revealed, as hypothesized, significantly higher values for men on all three dimensions (all $p < .05$; see Figure 5). On average, men reported a stronger computer-game-related competitive motive (“Wetteifermotiv”), a stronger “need to win,” and higher self-efficacy. Thus, the findings confirmed H2, H3, and H4.

As the final step of analysis, the influence of the three components of competition orientation on the use of competitive computer game genres was assessed. A regression analysis was performed, with intensity of use as the dependent measure and the three components of competition orientation as predictor variables, for each of the four competitive game genres (ego-shooters, action adventures, strategy games, and sports games). For all four regression models, collinearity was acceptable.

![Figure 4](https://academic.oup.com/jcmc/article-abstract/11/4/910/4617707)

**Figure 4** Gender comparison of frequency of use of competitive and non-competitive computer game genres, with values “1” representing “never” and “5” representing “very often” ($N = 795$). The use of genres marked by differs significantly with $p < .05$. 

Table 6 summarizes the results. The “need to compete,” which was lower among female than male users, particularly fosters the use of ego-shooters and strategy games.

Discussion
Although the number of female participants is small, the findings suggest that personality characteristics related to competition contribute to the emergence of gender differences in computer game involvement. The “Wetteifermotiv” especially accounted for substantial portions of variance in involvement with some competitive

Table 6 Influence of “Wetteifermotiv,” “need to win,” and “self-efficacy” on genre use

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<tbody>
<tr>
<td>1</td>
<td>Ego-Shooters</td>
<td>.35**</td>
<td>−.11**</td>
<td>.07*</td>
</tr>
<tr>
<td>2</td>
<td>Action Adventures</td>
<td>.01</td>
<td>.03</td>
<td>.16**</td>
</tr>
<tr>
<td>3</td>
<td>Strategy Games</td>
<td>.15**</td>
<td>−.03</td>
<td>.05</td>
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<td>4</td>
<td>Sports Games</td>
<td>.03</td>
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Note: ** p < .01; * p < .05.
computer game genres such as ego-shooters. A somewhat smaller explanatory power was found for the “need to win” and “self-efficacy” components of competition orientation. In all of these predictors, notable gender differences were observed. Females portrayed themselves as less competitive and found winning less important in (play) actions than did males. They were also less self-confident about their ability to master competitive game situations. Because most computer games available feature strong competitive elements, those personality differences in competition orientation are important determinants of gender imbalances in computer game play. Further studies should attempt to replicate these findings with larger (female) samples, which would allow the regression analyses performed to be repeated for both gender groups separately.

Conclusions

The two studies reported in this article demonstrate the importance of content and personality factors for the explanation of gender differences in computer game play. Study 1 found that young German women prefer rich social interactions in computer games, which most available products cannot offer, and also revealed the women’s dislike of violent content and heavy gender-stereotyping in the presentation of characters. The applied research design that relied on fictional game packages and conjoint analysis should produce valid results.

However, two limitations need to be addressed. First, the packages of some of the games presented contained negative remarks about “what is not in the game,” which is clearly artificial when compared to normal packages of computer games and might have affected the findings about social interaction possibilities. Second, each participant dealt with several packages, some of which had identical screenshots or visual features. Again, this differs from a natural situation of video game choice. Therefore, the findings need to be replicated using real games and participants who are allowed to actually play them. Further analysis should also deal with the comparatively high number of divergent responses that indicate some variance in how the females responded to the content factors investigated. Nevertheless, the findings are in line with the assumptions and evidence reported in the literature (e.g., Glaubke, et al., 2001). Theories on gender socialization, evolution, and biopsychological research may help to explain the existence of the observed gender-specific content preferences (cf. Sherry, 2004) and inspire theoretical reasoning on a more abstract level (see also for a broader culture-specific approach AAUW, 2000; Cassell & Jenkins, 1998a; Yates & Littleton, 1999). As a practical consequence, the computer game industry stands to conquer new market segments if it would rigorously implement females’ content preferences in future products (Cassell, 2002; Gorriz & Medina, 2000; Subrahmanyum & Greenfield, 1998).

As regards personality factors, competition orientation appears to be an important component in the explanation of gender differences in Germany. Lucas and
Sherry (2004) have reported similar findings from a survey in the United States. The games industry should also consider how, if at all, to implement competitive game structures if they intend to reach female mass audiences.

Overall, the findings contribute to an explanation of the substantial gender gap in computer game involvement. They also call for further theoretical discussion in entertainment research: Current explanations of why playing video games is fun (e.g., Klimmt, 2003; Vorderer & Bryant, 2006) need extensions to account for gender-specific models of pleasure. If competing, winning, and being a violent superhero do not appeal to women to the extent that they appeal to men, several mechanisms of enjoyment that have been proposed, such as pride in success and identification with attractive role models (e.g., Klimmt, 2003), should be reconsidered. Most importantly, the pleasures of social interaction with game characters, and with other players as well, require more attention in theories about (interactive) entertainment. The studies reported indicate that further gender-specific refinements are needed in entertainment theories and entertainment research in general.

In addition, differences related to frequency of game use among players should be added to the gender comparison. For example, research suggests that males who play games infrequently more closely resemble the stereotypical female game player in their preference for less violence in games (AAUW, 2000; Kafai, 1998).

As the studies were conducted in Germany and gender roles as well as motivations are likely to be affected by culture, the findings first and foremost contribute to an explanation of the gender gap in video game involvement among the German population. Further research is needed that takes a culture-based view of gender construction and associated video game preferences.

Finally, given the link between access to and use of computer games for media literacy and affinity for information technologies, the implications of the findings for girls’ and women’s developmental opportunities should be brought out and addressed (Durkin, 2006). Suppose that the majority of computer games offer too much violence, unacceptable gender role models, and insufficient amounts of social interaction, and impose a level of competition that, for females, is too high. What might be the impact on the general appeal of computer technologies to girls and women who are thinking about possible career paths and participation in society (see Bussey & Bandura, 1999)? Thus, in addition to suggesting further areas for entertainment research, the findings underscore the need to continue in-depth discussion about how video games influence females’ perceptions of and attitudes towards computer technologies.

References


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