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The Effects of Sexualized Violence in Video Games on Rape Myth Acceptance

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Abstract

RESEARCH PAPER. Previous research has tested the effects of video games on players' Rape Myth Acceptance (RMA) with regard to either sexual or violent contents. The current study aimed at investigating the combined effects of sexual and violent material in video games on players' RMA. Participants ($N = 82$) played either a sexualized female game character or a non-sexualized female game character in a violent video game. Participants' pre-gaming RMA, gender role attitudes and gaming habits were found to predict RMA after the gaming episode, but sexualized game violence did not. Furthermore, no gender differences were found with regard to RMA. The present findings corroborate the important role of pre-existing gender attitudes for the concept of RMA. In addition, future research should also focus on long-term exposure to video games and players' gaming habits when examining the effects of sexualized violence in video games on RMA.

Keywords: sexualized violence, video games, Rape Myth Acceptance, gender roles attitudes, gaming habits

Introduction and theoretical background

Media play an essential role in most people's daily lives. A broad range of media sources and devices are almost permanently available anywhere, including, for example, the internet, smart phones, computers, television, or game consoles. Among the plethora of entertainment media, video games have become one of the most popular forms and an important economic factor. In 2012, for example, 157 million people in the US actively played video games, followed by 40.2 million gamers in Brazil and 38.5 millions in Germany¹. Notably, global video games revenue was over 100 billion USD in 2015².

Considering the popularity of this entertainment medium, it is not surprising that the focus of both scientific and public attention is on game content. Most notably, violent and sexual content are important characteristics in many recent popular video games (Morris, 2016). But does exposure to sexualized violence in video games affect gamers in any way? To address this question, the goal of the current study was to investigate the effects of sexualized violence in video games on players' *Rape Myth Acceptance (RMA)*.

The concept of *RMA* was introduced by Burt (1980) and defined as "prejudicial, stereotyped, or false beliefs about rape, rape victims and rapists" (p. 217). Beliefs such as "women ask for it", "any healthy women can resist a rapists if she really wants to", or "many women have an unconscious desire to be raped" represent concrete examples of prevalent rape myths (Burt, 1980, p. 217). In the course of the years, several definitions of rape myths have been proposed. Bohner (1996) introduced a more recent definition of rape myths as "descriptive or prescriptive beliefs about rape (i.e., about its causes, context, consequences, perpetrators, victims, and their interaction) that serve to deny, downplay or justify sexual violence that men commit against women" (p. 12). In other words, rape myths are considered

¹ <http://www.statista.com/topics/868/video-games/>

² <http://www.statista.com/topics/868/video-games/>

as certain beliefs and attitudes, which people may hold in order to trivialize a rape act or to blame the rape victim. Thus, the term *Rape Myth Acceptance* refers to the endorsement and the acceptance of these beliefs.

But why do people accept rape myths in the first place? Different functions have been pointed out in the literature. As regards to their *general functions*, rape myths operate as a cognitive schema, influencing the individuals' information processing and interpretation about a specific rape event (Bohner, Eyssel, Pina, Siebler, & Viki, 2009). The endorsement of rape myths also exonerates the perpetrator, by making the victim responsible for their own rape (Bohner, 1996), and thus, reinforces the feeling of safety (Lonsway & Fitzgerald, 1994) and avoids the experience of negative affect (Bohner, 1996). Concerning its gender specific functions, men were found to use rape myths to justify and rationalize their own tendencies when engaging in sexual coercive actions (Bohner, 1996; Bohner et al., 2009). However, RMA may also be important for some women serving "as an anxiety buffer that allows women to feel less vulnerable to sexual assault and to protect their self-esteem" (Bohner et al., 2009, p. 19). In other words, women endorsing rape myths process and interpret threatening information in a way that their own safety is guaranteed (Bohner, 1996). For instance, some women may think that only certain women become rape victims (Lonsway & Fitzgerald, 1994), and that rape can be avoided when behaving in a proper way (Bohner, 1996).

Prior research also focused on the relation between RMA other variables. Results supported links between RMA and (1) gender, (2) gender role attitudes, and (3) the likelihood of raping (Lonsway & Fitzgerald, 1994). Findings indicate that (1) men are more likely than women to endorse rape myths (Lonsway & Fitzgerald, 1994), traditional gender role attitudes are positively associated with higher levels of RMA (Johnson, Kuck & Schander, 1997), and the endorsement of rape myths is positively related to the self-reported likelihood of raping (Lonsway & Fitzgerald, 1994).

Previous studies aimed at providing a better understanding of rape myths also addressed why people endorse rape myths, and which personality characteristics typically accompany RMA. Considering the dominant role of media in our daily lives, it is not surprising that a number of studies investigated the link between media consumption and individuals' endorsement of rape myths. These studies suggested that sexual and/or violent content, depicted in linear media, affect RMA in the recipients (Lonsway & Fitzgerald, 1994). More specifically, previous research found daily television viewing (Kahlor & Morrison, 2007) and the exposure to sexualized violence depicted in music videos (Kistler & Lee, 2009) to increase RMA in the media recipients. To date, however, only few studies have looked at the effects of sexual and/or violent content in interactive media on RMA, including general effects of violent video games (Dill, 2009). Other studies focused on particular aspects of video games, including the relationship between exposure to sexualized avatars and post-gaming RMA (Fox, Bailenson, & Tricase, 2013; Fox, Ralston, Cooper, & Jones, 2015). However, whether sexualization and violence in video games influence the acceptance of rape myths has rarely been addressed so far (Beck, Boys, Rose, & Beck, 2012; Driesmans, Vandenbosch, & Eggermont, 2014).

Aim of the study

Given the small number of studies on this topic, the present study primarily aimed at examining the consequences of interacting with sexualized violence in video games on the players' RMA. In addition, player gender and their pre-existing gender role attitudes were taken into account.

Previous studies illustrated that both sexual or violent video game content influence the RMA of the players. For example, playing violent video games was found to increase the acceptance of rape myths (Dill, 2009). Further, studies emphasized the role of sexual game

content, showing that the exposure and the embodiment of sexualized virtual avatars were related to greater endorsement of rape myths (Fox et al., 2013; Fox et al., 2015).

These findings illustrate the separate effects of violent or sexual video game content on RMA. However, few studies have investigated the combined effects of violent and sexual game content on RMA of the players. In this regard, Beck and colleagues (2012) found that sexual objectification of women and violence against women in video games led to an increase in RMA. Driesmans and colleagues (2014) reported similar results. In their study, adolescents that had played a sexualized female avatar in a video game showed higher levels of RMA afterwards, compared to their colleagues who had played a non-sexualized female avatar (Driesmans et al., 2014). For the present study, this led to the following hypothesis:

H1. Playing a sexualized female game character in a violent video game will lead to greater RMA than playing a non-sexualized female game character in the same game.

As outlined by Lonsway and Fitzgerald (1994), the most frequently examined variable in connection with RMA is the gender of participants. Several research findings indicated that men endorse more rape myths than women (Johnson et al., 1997; Lonsway & Fitzgerald, 1994). Hence, the following hypothesis was tested:

H2. Before the video gaming episode, male participants express greater RMA than female participants.

Few studies have investigated the interaction between participants' gender and sexualized violence in video games and its impact on RMA. One study suggested that sexualized violence in video games only influences men's rape supportive attitudes (Beck et al., 2012). In contrast, other research found no interaction between participants' gender and sexualized violence in video games (Driesmans et al., 2014). This led to the following research question:

RQ1. Does gender interact with sexualized violence in video games regarding its influences on RMA?

In contrast, the relationship between attitudinal variables and individuals' RMA has been thoroughly examined (Lonsway & Fitzgerald, 1994). Rape myth acceptance was shown to be positively related to the endorsement of traditional gender role attitudes (Burt, 1980; Johnson et al., 1997; Lonsway & Fitzgerald, 1994). To the best of our knowledge, however, no study has yet addressed this topic in the context of video games. Consequently, this led to the following research question:

RQ2. Do pre-existing gender role attitudes moderate the relationship between video game condition and RMA?

Methods

Participants

A total of 82 participants (45.1% females, $M_{\text{age}} = 23.90$, $SD = 4.03$), recruited at the University of Luxembourg, took part in the study on a voluntary and anonymous basis. Participants were predominantly students (90.2%), whereas 8.5% were employed, and the remaining 1.2% currently looking for a job.

Video gaming episode

The study was based on a one-factorial design with two different video game conditions. Participants played either a sexualized or a non-sexualized female game character in the Arcade/Beat 'em up game DEAD OR ALIVE: LAST ROUND 5 (Tecmo Koei Holdings) on the Sony PlayStation 4 game console. More specifically the sexualized game character was shown wearing a bikini costume (i.e. strips of clothes), whereas the non-sexualized game character was wearing a suit (i.e. coat and skirt). In addition to differences in

nudity, the intensity of breasts movements varied substantially between conditions. More specifically, the presentation of the sexualized game character was characterized by a continuous jiggling of the breasts during the entire game action. In contrast, breasts movements were switched off in the non-sexualized video game condition. In this fighting video game, all participants had to fight against the same male computer-controlled game character, irrespective of game conditions. Participants tried to knock out the male opponent with a combination of kicks, strikes, grips and throws. Above all, they could use critical stuns, combos, bursts, and counterattacks. Participants were randomly assigned to conditions: 19 women and 23 men played the female character in the sexualized condition, whereas 18 women and 22 men played the non-sexualized version of the female character.

Material

Two final language versions of the questionnaires were provided (one in German and one in French). Sets consisted of independent scales that assessed different constructs and concepts.

Video game playing frequency

In order to assess the extent to which the participants played video games, they were asked to indicate how long they play video games on average on a typical weekday, over the weekend, and during holidays. They could choose between *never*, *up to 1 hour*, *1-3 hours*, and *>3 hours*.

Gender role attitudes

The Traditional-Antitraditional Gender Role Attitudes Scale (TAGRAS) by Klocke and Lamberty (2015) was used to assess participants' traditional, egalitarian and anti-traditional gender role attitudes. This questionnaire consisted of two scales measuring different concepts of an ideal man or woman. Concepts were identical in the male and female version, with 11

items per gender, for example, “*S/He becomes a manager in a large company*” or “*S/He cries when something has hurt his/her feelings very much*”. Participants were asked to indicate their agreement with each specific statement on a 5-point Likert scale, ranging from *very bad* to *very good* ($\alpha = .75$). Two versions of the final questionnaire set were created: version A, in which the items regarding the concept of an ideal women were placed before the items concerning the concept of an ideal man, and version B, in which the order of the bipolar scales was switched. Presentation of the two versions was counterbalanced to avoid question-order-effects.

Rape Myths and myths about other forms of sexual aggression

Participants responded to questions concerning myths about rape and myths about less severe forms of sexual aggression before they played the video game (henceforth referred to as *pre-gaming RMA*). Of the 30-item self-report scale of Acceptance of Modern Myths about Sexual Aggression (AMMSA; Gerger, Kley, Bohner, & Siebler, 2007), as well as the short form of the AMMSA (Gerger et al., 2007), which consists of 16 items, a total of 14 items ($\alpha = .76$) were included into the final set (e.g., “*Any women who is careless enough to walk through dark alleys at night is partly to be blamed if she is raped.*”). Ten items were selected from the short form of the AMMSA, and 4 items were retrieved from the original AMMSA. The rest of the original items were excluded due to their long and complex sentence structure and their wide focus on other forms of sexual aggression, such as sexual harassment. Participants were asked to indicate their level of agreement on a 7-point Likert scale (from *completely disagree* to *completely agree*) concerning statements of rape and other forms of sexual aggression (Gerger et al., 2007).

Social desirability

In order to assess participants' general tendency to respond in a social desirable manner, items were selected from the Social Desirability Scale-17 (SDS-17) developed by Stöber (1999). In the present study, a total number of 8 SDS-17 items were included into the final questionnaire set (e.g., "*I never hesitate to help someone in case of emergency.*"). These items were selected due to their comparably higher values of discriminatory power in the SDS-17. The selected items were then presented together with the final set of AMMSA items. Thus, the original true/false answer format of the SDS-17 was replaced by the 7-point Likert scale, ranging from *completely disagree* to *completely agree* ($\alpha = .47$). Due to the low internal consistency the global score of the eight SDS-17 items was calculated on the basis of the Median of the distribution instead of the Mean. Thus, participants' responses were dichotomized, resembling the original true/false response scale of the author.

Evaluations concerning the video game and the depicted female game character

Participants evaluated the video game episode with a total set of 11 questions. They rated the female game character on 3 items (e.g., "*How sexy did you find the depiction of the female avatar?*", $\alpha = .77$). The game itself was rated on 8 items (e.g., "*Did you like the game?*", $\alpha = .77$). Participants were asked to mark an answer on the 5-point Likert scale, ranging from *not at all* to *very much*.

Rape Myth Acceptance

Finally, after the video game playing session, the short form of the Illinois Rape Myth Acceptance scale (IRMA-SF) by Payne, Lonsway and Fitzgerald (1999) was administered, which served as dependent variable. Thus, in line with previous research (Beck et al., 2012), IRMA-SF was used to measure state RMA (henceforth *post-gaming RMA*). Participants indicated their level of agreement on 20 items on a 7-point Likert scale, ranging from *not at all agree* to *very much agree* (e.g., "*Many women secretly desire to be raped.*", $\alpha = .86$).

Procedure

Prior to the video gaming episode, participants read the information sheet, signed the consent form, answered demographic questions, and indicated their gender role attitudes and gaming habits. They also completed the AMMSA scale and the items on Social Desirability. A short training session followed (approx. 3 min), in which participants played DEAD OR ALIVE 5: LAST ROUND on the Sony PlayStation 4 connected to a 46" LCD TV screen. In correspondence with the game condition in the subsequent test session, participants played either the sexualized or non-sexualized female fighter already in the training phase. After training, the test session started. Total playing time was 20 minutes for all participants. Next, participants answered the final part of the questionnaire that included questions concerning their evaluation of the video game and the female game character they had played. In addition, the post-gaming RMA scale (IRMA-SF) was administered. Finally, participants were debriefed and remunerated (i.e., they participated in a raffle). The entire study took about 45 minutes per participant.

Results

Rape Myth Acceptance

In order to investigate the effects of sexualized violence and participant gender on participants' RMA (i.e., the post-gaming IRMA-SF scale), a 2 (game condition: sexualized video game condition vs. non-sexualized video game condition) x 2 (participant gender: female vs. male) ANOVA was carried out. Does playing a sexualized female game character in a violent video game lead to more RMA than playing a non-sexualized female game character (H1)? In addition, does participant gender interact with sexualized violence in video games with regard to RMA (RQ1)? The results of this analysis are based on the collected data of 81 participants, after the exclusion of one outlier in the IRMA-SF scores. The outlier was

easily identified as the largest value, with its mean ($M = 3.85$) accounting for more than five times the standard deviation of the rest of the IRMA-SF scores.

Results showed a non-significant main effect of video game condition on RMA, $F(1, 77) = 0.05, p = .82$. Participants playing the sexualized female game character did not endorse RMA ($M = 1.27, SE = 0.11$) more than those playing the non-sexualized female game character ($M = 1.24, SE = 0.11$). Thus, there was no support for Hypothesis 1.

Besides, there was no significant main effect of participant gender on post-gaming RMA, $F(1, 77) = 2.62, p = .11$, and no significant interaction effect, $F(1, 77) = 0.21, p = .65$. In other words, participant gender did not interact with sexualized violence in video games regarding RMA (RQ1). Figure 1 illustrates the mean scores of participants' post-gaming RMA for male and female participants, depending on the video game condition.

Moreover, a t -Test for independent samples was carried out to test Hypothesis 2 that, prior to the video gaming episode, male participants express more RMA than female participants as indicated by the mean scores of the AMMSA scale. The analysis yielded a surprising result: prior to gaming, men ($M = 3.47, SE = 0.11$) and women ($M = 3.39, SE = 0.14$) did not significantly differ in their level of RMA, $t(80) = -.48, p = .64$.

Gender role attitudes

The potentially moderating role of participants' gender role attitudes (as indicated by the TAGRAS scale) with regard to the relationship between video game condition and post-gaming RMA was tested in a multiple regression analysis (RQ2). Although participants' gender role attitudes significantly predicted their RMA, $b = 0.65, 95\% \text{ CI } [0.19, 1.11], t = 2.82, p < .01$, the interaction effect was not significant, $b = 0.16, 95\% \text{ CI } [-0.77, 1.09], t = 0.34, p > .05$. Thus, participant's gender role attitudes did not moderate the relationship between video game condition and participants' post-gaming RMA.

Additional Results

Variables affecting post-gaming Rape Myth Acceptance

In order to examine the role of variables affecting post-gaming RMA, an additional multiple linear regression analysis was conducted. The variables included in this analysis as well as the results of the four models tested are presented in Table 1. In contrast to the first model, $F(2, 77) = 1.76, p > .05$, the overall fit of the second model was significant, $F(3, 76) = 7.16, p < .001$, explaining 22% of the total variance. In particular, participants' gender role attitudes significantly predicted post-gaming RMA ($\beta = .45, p < .001$). This predictor alone accounted for 17.7 % of the variance of the outcome variable. In addition, the third model showed a significant improvement in predicting post-gaming RMA, $F(4, 75) = 27.30, p < .001$, explaining 59% of the total variance. For instance, participant gender ($\beta = .16, p < .05$) as well as participants' pre-gaming RMA ($\beta = .71, p < .001$) significantly predicted the dependent variable. Most notably, participants' pre-gaming RMA alone accounted for 37.2% of the total variance. A significant regression equation was also found for the fourth model, $F(8, 71) = 15.22, p < .001$. Again, participants' pre-gaming RMA significantly predicted their post-gaming RMA ($\beta = .74, p < .001$), which was also true for participants' video game playing frequency ($\beta = .19, p < .05$).

Based on the results of the multiple linear regression analyses, a closer look was taken at the different correlations, which resulted in a number of important findings. Firstly, there was the expected positive significant relationship between participants' pre- and post-gaming RMA, $r = .74, p < .001$.³ Thus, the pre-gaming measure of participants' RMA that was assumed to have a stable or trait-like character was strongly related to the dependent variable that served as a state measure supposed to reflect the effects of the treatment. Secondly,

³ As Field (2013) suggests, multicollinearity is identified when the correlations are above .80 or .90. In this sense, multicollinearity does not apply in the above presented case (i.e. $r = .74$).

participants' gender role attitudes were related to their pre-gaming RMA, $r = .49, p < .001$ as well as to their post-gaming RMA, $r = .47, p < .001$, suggesting a strong connection between traditional gender role attitudes and the general endorsement of RMA. In addition, a Point Biserial correlation yielded a significant relationship between the gender of participants and their gender role attitudes, $r_{pb} = .31, p < .01$, indicating that males held more traditional gender role attitudes.

Finally, the relationship between the gender of participants and their pre- and post-gaming RMA scores was further investigated. To this end, a repeated measures ANOVA was conducted. Participants' RMA (pre-gaming vs. vs. post-gaming) was defined as within-subjects variable, whereas participant gender (female vs. male) was defined as between-subjects factor. Results showed a significant effect of RMA, $F(1, 80) = 1235.46, p < .001, \eta^2 = 0.94$. Thus, participants showed greater acceptance of rape myths prior to the video gaming episode ($M = 3.43, SE = 0.09$), than after playing the game ($M = 1.28, SE = 0.08$). There was no significant main effect of gender, $F(1, 80) = 1.52, p > .05$, indicating that male and female participants did not differ regarding their levels of RMA. Moreover, the interaction effect between RMA and the gender of participants was not significant, $F(1, 80) = 3.32, p > .05$. Results are presented in Figure 2.

Evaluation of the game

In order to investigate the effects of sexualized violence and participant gender on their evaluation of the game, a 2 x 2 ANOVA was carried out, with game condition and gender of participants serving as between-subjects factors and their mean global evaluation of the game serving as dependent variable. Results yielded no significant effects, $F_s < 1$. Male participants who had played the sexualized female character ($M = 2.53, SE = 0.17$) did not differ from their colleagues in the non-sexualized character condition ($M = 2.46, SE = 0.17$) in terms of

game evaluations. This was also true for female participants' game evaluations, $M_{\text{sexualized}} = 2.49$, $SE = 0.19$, and $M_{\text{non-sexualized}} = 2.45$, $SE = 0.20$, respectively.

Treatment Check

A two-way factorial ANOVA was conducted to investigate whether players' evaluation regarding the depiction of the female game character differed between experimental conditions and the gender of participants in terms of distraction, perceiving her as sexy, and perceiving the female character as sexually arousing. No significant effects were found, $F_s \leq 2.54$, $p > .05$. In order to further explore this unexpected result, it was tested whether responses to the game character were affected by social desirability. To this end, the three items that evaluated the female game character as distracting, sexy and sexually arousing were correlated with the mean score obtained from the SDS-17 scale. Interestingly, there was a significant relationship between the item "*Did you find the depiction of the female game character sexually arousing?*" and participants' tendency to answer in a social desirable manner, $r = -.25$, $p < .05$. However, the two other correlations were not significant, $r_s \leq .45$, $p > .05$. Consequently, the item on the sexual arousing effect of the game character was excluded from a second two-way factorial ANOVA that was conducted with same independent variables as described above. However, no significant effects were found, $F_s \leq 3.11$, $p > .05$.

Video game playing frequency

Results of a *t*-Test substantiated the difference in video game playing frequency between men and women, $t(80) = -2.61$, $p < .05$, $d = .53$, with men playing video games significantly more often ($M = 1.13$, $SE = 0.15$) than women ($M = 0.58$, $SE = 0.14$). On average, male participants played between *up to 1 hour* and *1 to 3 hours*, whereas many female participants hardly ever played video games.

Discussion

The results of the present study do not support the hypothesis that encountering sexualized violence in video games (i.e., playing a sexualized female game character in a fighting game) has an increasing effect on RMA compared to playing the same game with a non-sexualized female character (H1). This result is in contrast to previous findings that the exposure to sexual and violent video game content increases the acceptance of rape myths (Beck et al., 2012; Driesmans et al., 2014). In concordance with previous findings reported by Driesmans and her colleagues (2014), however, the gender of participants did not interact with sexualized violence in video games regarding players' RMA (RQ 1).

How can the results of the present study be explained? Most notably, the study design itself has to be taken into account. All participants played a female game character, either sexualized or non-sexualized, and fought against a male game character. Thus, the game design attempted to simulate the setting of a rape-like situation that escalated in an act of violence between two human-like characters of opposing genders. We expected the effect of the rape-like situation on RMA to be particularly prominent in the sexualized condition where the appearance of the female character bore resemblance to a well-known rape myth. However, the present study differs from previous reports on the impact of video games on RMA with regard to the actual task in the test phase, where participants had to play a sexualized female game character in a violent video game, rather than simply watching a recorded clip of someone playing a video game (Beck et al., 2012). In addition, the instructions in the present study did not highlight the (sexualized or non-sexualized) female game character but simply explained how the game should be played. Hence, the attention of participants was likely on the ongoing events, not on the appearance of their game character. In addition, players were likely trying to win their fights (it was obvious for the experimenter

that all participants were at least trying to avoid a quick defeat). In this line, the impact of sexualized violence on the players may not have been fully effective, because the appearance of the game character was simply irrelevant for the outcome of the game.

At this point, it is important to mention that all 82 participants won the fight against the male game character. Given the rather low expected level of gaming experience in our sample that consisted of mostly students, the overall difficulty level of the game had been set to an easy level. More importantly, the two fighting characters were improperly unbalanced to the extent that participants interacted with a powerful female game character that did not require great gaming skills to dominate the computer-controlled male opponent. This was true irrespective of whether or not the female character was shown in a sexualized way. With this decision we tried to avoid frustration in our participants caused by playing a weak and physically inferior female character and, thus, losing the game. Frustration could have easily led to distorted responses in the post-gaming RMA. We cannot rule out, however, that the resulting gaming experience differed from traditional conceptualizations of rape. In this regard, Burt (1980) described rape as the logical consequence of a dominant-submissive culture. In this line, the idea of dominance is a crucial aspect, which is also integrated in the concept of rape myths. Importantly, when defining rape myths, the focus lies on “sexual violence that men commit against women” (Bohner, 1996, p.12). Clearly, rape myths involve a male perpetrator exerting power and control over the female victim. Participants in the present study experienced the exact opposite situation, as the female game character dominated her male opponent, regardless of being presented in a sexualized manner or not. The dominating female character could have outweighed any effect of her sexualized appearance on post-gaming RMA. Furthermore, this speculation might also explain why sexualized violence did not interact with participant gender, because both female and male participants shared the same gaming experience of playing a strong female character. Future research should therefore examine the effects of sexualization in violent video games by

investigating whether playing a submissive sexualized female character leads to greater RMA than playing a dominant version of the same sexualized female character.

The additional analyses were helpful to understand why sexualized violence did not affect post-gaming RMA. In particular, participants evaluated both female game characters as equally distracting, sexy and sexually arousing. This is quite surprising, when taking into account that the depiction of both female game characters differed considerably regarding, for example, the level of nudity (e.g., cleavage) and the intensity of breast movements. In this line, it would have been important to ask for participants' definition and understanding of sexualization. At this stage, we cannot fully rule out the possibility that participants were overly accustomed to sexual contents in the media, which might have led to the absence of differential effects of the experimental manipulation. Sexualized portrayals are widely spread in different types of media entertainment, such as fashion magazines (Thompson, 2000), music videos (Conrad, Dixon, & Zhang, 2009), and video games (Burgess, Stermer, & Burgess, 2007). Hence, participants might have already become accustomed to seeing sexual portrayals in the media, and as a result have become desensitized to the attention grabbing impact of the sexualized female game character in the present study (cf. Lull & Bushman, 2015).

In addition, participants in the current study were adults. This fact might explain why we failed to replicate previous findings by Driesmans et al. (2014), who found that playing a sexualized female game character affected the RMA in a sample of adolescents. In this line, Johnson and colleagues (1997) reported that younger participants were more likely to exonerate the perpetrator, suggesting that younger individuals may endorse more rape myths than older individuals. Hence, future research should examine whether age differences moderate the effects of sexualized violence in video games on the RMA of participants.

Finally, the present study yielded the unexpected finding that there was no significant difference between male and female participants concerning their RMA prior to the video

gaming episode. This is in sharp contrast to previous research (Johnson et al., 1997; Lonsway & Fitzgerald, 1994). We cannot rule out that gender differences were absent in the present study because of the high level of education in our participants. Burt (1980) reported that better educated individuals endorse less rape myths than less educated persons.

Gender role attitudes and gaming experience

Participants' gender role attitudes were found to be a significant predictor of post-gaming RMA. However, gender role attitudes did not moderate the relationship between the video game condition and participants' post-gaming RMA (RQ 2). In this context, it is important to note that participants' responses regarding the items of the *Acceptance of Modern Myths about Sexual Aggression scale (AMMSA)*; i.e., the pre-gaming measure of RMA), strongly anticipated participants' responses concerning the items of the *Illinois Rape Myth Acceptance scale (IRMA-SF)*, i.e., the post-gaming measure of RMA). Notably, both participants' gender role attitudes and their pre-gaming RMA had a greater impact on the level of post-gaming RMA than the experimental manipulation, as both variables together explained almost half of the total variance of the outcome variable. This finding has at least two important implications. First, the present study shows that it is difficult to induce substantial changes in the endorsement of rape myths using video games. Second, it suggests that when it comes to attempts to modifying the acceptance of rape myths, the focus should be put on individuals' gender attitudes. In this regard, the present study once again highlights the outstanding role of attitudinal variables when trying to understand the endorsement of rape myths. Notably, previous research already corroborated the crucial role of attitudinal variables for RMA (Burt, 1980; Johnson et al., 1997; Lonsway & Fitzgerald, 1994).

The current study also shows that gaming experience has to be taken into account for a better understanding of RMA in the context of violent video games. Participants' level of gaming frequency predicted their post-gaming RMA, but it was not correlated with their pre-

gaming RMA. In other words, participants who played video games more frequently were also more likely to endorse rape myths after the video gaming episode than their colleagues who spent less time playing. It is important to note that the gaming frequency participants indicated referred to their general playing behavior, rather than their particular video game preference. The present finding is therefore consistent with long-term models of video game effects. For example, Dill (2009) emphasized that video game effects develop over time, rather than appearing immediately after interacting with video game contents. Thus, the experimental short-term exposure to sexualized violence does not necessarily imply that any potential effect will directly manifest itself.

Finally, it was found that prior to the video gaming episode, participants' endorsed more rape myths than after the test phase. Does this mean that playing the video game led to a decrease in players' RMA? As already pointed out, participants played a dominant female game character, who was able to punch, kick and even knock-out the male opponent. Clearly, this is in contrast to the female stereotype underlying rape myths. Hence, playing a strong, counter-stereotypical female character might have caused the decrease in RMA.

It is important to note that the present finding is based on the comparison of the RMA scores assessed with two different questionnaires. More precisely, participants' RMA scores assessed with the AMMSA scale were significantly higher than participants' RMA scores assessed with the IRMA-SF scale. With this in mind, Gerger et al. (2007) stated that participants' responses to the IRMA scale are rather oriented towards the low endpoints of this scale, leading to low RMA mean scores. In addition, the authors also emphasized that the "effects of an intervention may be difficult to demonstrate if the means of the target variable are already so close to the bottom of the scale" (Gerger et al., 2007, p.424). Consequently, the question arises whether the IRMA-SF scale, used here as a state measure of participants' RMA, was sensitive enough to indicate the effects of playing sexualized female game characters on RMA. Thus, future research should replicate the current study findings using

different RMA scales when trying to detect the potential effects of the short-term experimental manipulation of sexualization in a violent video game.

Conclusions

The current study further corroborated the importance of attitudinal variables for understanding individual levels of Rape Myth Acceptance (RMA). Participants holding traditional gender role attitudes as well as those having higher levels of pre-gaming RMA were more likely to endorse rape myths after playing a violent video game. Further, general video game playing frequency was found to be important: participants playing video games more frequently were also more likely to have higher levels of RMA after the video gaming episode than participants with fewer gaming experience. In this line, future research should further investigate the effects of individuals' long-term exposure to video games, as well as the role of attitudes related to the endorsement of rape myths. Finally, when aiming at testing the potential effects of sexualized violence in video games, identifying a sensitive instrument that indicates players' level of post-gaming RMA is crucial.

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Appendix

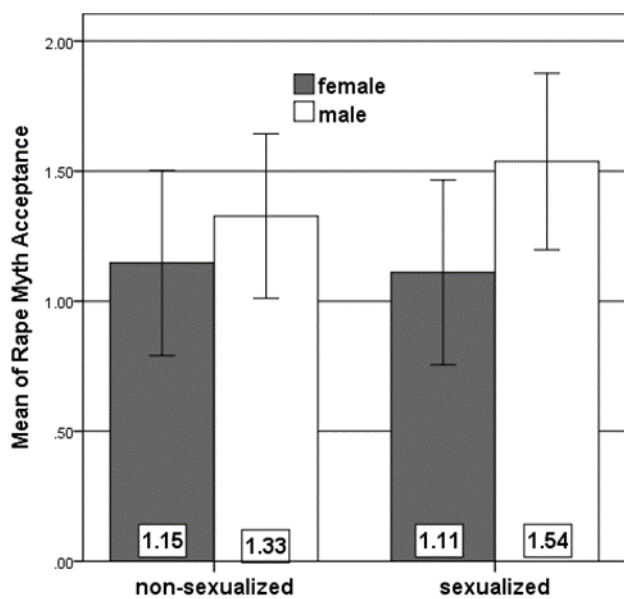


Figure 1. Mean score of Rape Myth Acceptance for female and male participants depending on the video game condition. Error bars indicate 95% of confidence intervals.

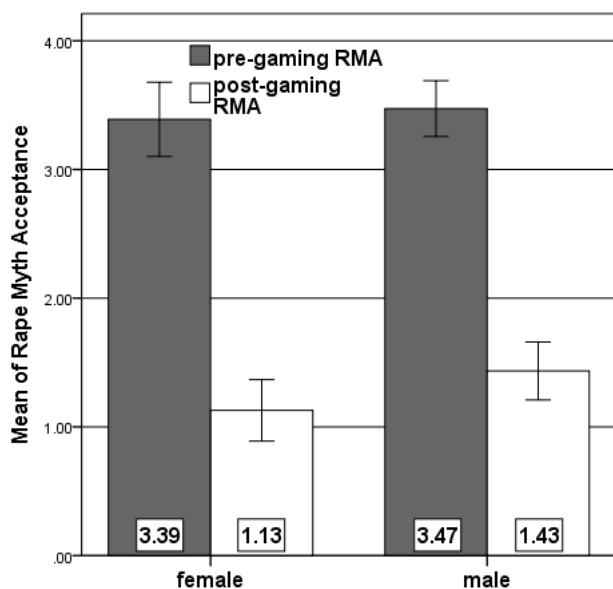


Figure 2. Mean score for Rape Myth Acceptance before and after video game playing depending on participants' gender. Error bars indicate 95% of confidence intervals.

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Table 1. *Linear model of predictors of participants' Rape Myth Acceptance after the video gaming episode, with 95% of confidence intervals. Significant predictors are denoted with *.*

	b	SE B	β	p	95% CI
Model 1					
Constant	1.09	0.15		.000*	[0.78, 1.39]
Gender	0.30	0.17	.20	.076	[-0.03, 0.64]
Game condition	0.09	0.17	.06	.591	[-0.24, 0.42]
Model 2					
Constant	1.22	0.14		.000*	[0.94, 1.50]
Gender	0.10	0.16	.06	.547	[-0.22, 0.42]
Game condition	0.00	0.15	.00	.983	[-0.30, 0.31]
Gender role attitudes	0.67	0.16	.45	.000*	[0.34, 0.97]
Model 3					
Constant	-1.17	0.31		.000*	[-1.78, -0.56]
Gender	0.24	0.12	.16	.045*	[0.01, 0.48]
Game condition	-.012	0.11	-0.08	.293	[-0.34, 0.11]
Gender role attitudes	0.12	0.13	.08	.370	[-0.14, 0.38]
Pre-gaming RMA	0.70	0.08	.71	.000*	[0.53, 0.86]
Model 4					
Constant	-1.15	0.35		.002*	[-1.80, -0.45]
Gender	0.13	0.12	.08	.311	[-0.12, 0.37]
Game condition	-0.17	0.11	-.11	.144	[-0.39, 0.06]
Gender role attitudes	0.20	0.14	.13	.149	[-0.07, 0.47]
Pre-gaming RMA	0.71	0.08	.74	.000*	[0.55, 0.89]
Social desirability	-0.01	0.11	-.01	.930	[-0.23, 0.22]
Game character perception	0.09	0.06	.12	.158	[-0.04, 0.21]
Game evaluation	-0.12	0.08	-.13	.155	[-0.29, 0.05]
Gaming frequency	0.14	0.06	.19	.025*	[0.12, 0.26]

R² = .04 for step 1, *p* = .180; ΔR² = .18 for step 2, *p* = .000; ΔR² = .37 for step 3, *p* = .000; ΔR² = .04 for step 4, *p* = .125.