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Virtual Violence against Women: Is Increased Exposure Related To Men's Attention To Intimate Partner Violence and Bystander Behavior?

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VIRTUAL VIOLENCE AGAINST WOMEN: IS INCREASED EXPOSURE RELATED TO MEN'S ATTENTION TO INTIMATE PARTNER VIOLENCE AND BYSTANDER BEHAVIOR?

by

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Under the Direction of Kevin Swartout, PhD

ABSTRACT

Playing violent video games has been linked with many negative outcomes (e.g., aggression and hostility); however, much has yet to be explored on the effects of violence against women in video games. The present study aimed to explore the relationships between playing video games containing violence against women and men's perceptions and reactions to intimate partner violence (IPV). Specifically, the present study aimed to determine whether playing more games containing violence against women negatively predicts men's likelihood to recognize aggression and their intention to intervene in a recorded IPV scenario. Five hundred and fifty seven men completed an online survey assessing their video game playing experiences and attitudes about violence against women, then viewed and responded to a brief video depicting IPV. Although the original hypotheses were not supported, in the final model, playing more video games containing violence against women significantly predicted increased justifications of date rape and indirectly predicted decreased identification of aggression.

INDEX WORDS: Video games, Violence against women, Sexual violence, Aggression, Bystander intervention

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DEDICATION

I would like to dedicate this thesis project to my friends, my family, and my friends who have become my family, my fellow research team members, my mentors, and my cat. Thank you for your never-ending support on this journey. I could not have done this without you.

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1 INTRODUCTION

Grand Theft Auto V, released in 2013, grossed one billion dollars in just three days—the shortest time any piece of media has ever taken to reach this milestone (Lynch, 2013). Although an incredible business accomplishment, this rapid success raised concerns amongst violence researchers and feminist activism groups. Grand Theft Auto V has become infamously known for the unique ability for players to buy sex from a prostitute in the game, then kill her and take the money back. This, although extreme, is one of many instances of violence against women featured in popular video games. Considering the alarming rate of violence against women in the United States—more than one in three women will experience violence by an intimate partner in their lifetime (Breiding et al., 2014)—this begs the following questions: How does graphic and violent video game content affect violence against women? And, does engaging with this violent content change the way people perceive and react to violence? A change in one's ability to recognize aggressive or dangerous behavior can have implications for public safety and violence prevention. The present study explored the issue of violence against women in the media and addressed the above questions by investigating whether exposure to virtual violence against women (VVAW) relates to one's ability to attend to violence and how one reacts to violence against women.

It is important to note that men are more likely than women to play violent video games and consume other forms of violent media (Anderson and Dill, 2000; Emmers-Sommer, Pauley, Hanzal, & Triplett, 2006). Additionally, men may be affected more by violence in video games than women; men exposed to violent video games support more severe punishments for their opponents and are more likely to endorse traditionally masculine beliefs than women exposed to violent video games (Bartholow & Anderson, 2002; Gabbiadini, Riva, Andrighetto, Volpato, &

Bushman, 2016). These differences in exposure to violence in media between men and women, and the difference in the effects, become increasingly important when considering the implications of these differences on violence against women, which is most often perpetrated by men (Breiding et al., 2014). Given the immersive nature of video games, it is possible that VVAW exposure has a similar, perhaps more severe, effect on men's attitudes toward violence and violence against women as other forms of violent media (McGloin, 2011; McGloin, Farrar, & Krcmar, 2013).

1.1 Violent Video Games and Aggression

Video games are more immersive than other forms of media. When players become immersed in video games, they often identify more heavily with their character, become lost in the story of the game and, consequently, become more aroused while playing than they do when engaging with less immersive forms of media (Brockmyer et al., 2009; McGloin, 2011; McGloin et al., 2013). This increased immersion and arousal can lead to increased hostility and aggression (McGloin, 2011; McGloin et al., 2013).

Game content also can affect players' hostility and aggression. Exposure to violent or graphic content in video games has been linked to aggressive disposition and behavior, including, but not limited to, hostile expectation bias, negative world view, delinquency, state hostility, and negative attitudes toward women (Anderson & Bushman, 2001; Anderson & Dill, 2000; Bartholow & Anderson, 2002; Fox & Potocki, 2016; Hasan, Begue, & Bushman, 2012; Saleem, Anderson, & Gentile, 2012). But does all violent video game content have the same effect on players?

1.2 Violence Against Women in the Media

Exposure to violence in the media influences people's aggressive behavior and attitudes toward violence (see Huesmann, 2007 for a review). More specifically, violence against women in the media affects people's attitudes about sexual violence and violence against women; however, this relationship is quite complex and can differ based on the medium, audience, and context of the violence portrayed.

Television. Exposure to violence against women in television programming, sexual violence in particular, has various impacts on an individual. For example, viewing sexual violence in television programming reduces men's sympathy for female victims of violence (Weisz & Earls, 1995). Additionally, overall television viewing is related to rape myth acceptance (Kahlor & Eastin, 2011). However, this relationship is not consistent across genres. Viewing crime dramas, which frequently depict violence against women but also include severe punishments for such violence, is related to decreased rape myth acceptance; in contrast, viewing soap operas, which frequently depict violence against women but do not include severe punishments for such violence, is related to increased rape myth acceptance (Kahlor & Eastin, 2011). Additionally, individuals exposed to violence against women in a crime drama series do not endorse higher acceptance of violence against women (Lee, Hust, & Zhang, 2011). The researchers who conducted the above studies argued that perhaps the context of the violence and the punishments or rewards that follow might alter the effects of such exposure on the viewer (Lee et al., 2011; Kahlor & Eastin, 2011). These mixed findings demonstrate the need to further examine the nuances in violent content in other forms of media, such as video games, as well as the effects these various types of violent content have on the viewer.

Film. Violence against women is a common theme in feature films, and is increasingly prevalent in recent years (King, 2005; Miller, 2014; Neuendorf, Gore, Dalessandro, Janstova, & Snyder-Suhy, 2010; Slocum, 2000). Much like television, this violent medium has also been shown to have a negative effect on viewers. Men are more likely to elect to watch violent films than women; additionally, men who prefer violent films are more likely to have higher rape myth acceptance (Emmers-Sommer et al., 2006). Also, reflecting the above-cited literature on television violence, violent content in films also has a greater negative effect on viewers when the violence is humorous or is rewarded; however, if the violence results in injury and punishment, these negative effects are reduced (Timmer, 2011). These findings reflect, again, that the repercussions of violence portrayed in media also affect the viewer. However, despite the prevalence of violence against women in film, its effect on attitudes and behaviors has yet to be thoroughly explored.

Pornography. Exposure to pornography has multiple negative effects. Those exposed to violent, heterosexual pornography, in both natural and lab settings, endorsed attitudes supportive of sexual violence and rape myth acceptance (see meta analyses by: Hald, Malamuth, & Yuen, 2010; Malamuth, Addison, & Koss, 2000). Additionally, exposure to both violent and non-violent pornography is related to increased general aggression (Malamuth et al., 2000; Hald et al., 2010). Although the above relationships vary in strength across studies, findings are in a consistent direction (Hald et al., 2010; Malamuth et al., 2000).

Music. Misogyny, the objectification and hypersexualization of women in particular, is a common theme in much of today's popular music and music videos (Aubrey & Frisby, 2011; Frisby & Aubrey, 2012; Bretthauer, Zimmerman, & Banning, 2006; Conrad, Dixon, & Zhang, 2009; Weitzer & Kubrin, 2009). Thus far, research on women in music videos has focused

largely on the effects of misogynistic content on men's attitudes about women. This is largely because female artists, actresses, and dancers are more likely to be objectified and hyper sexualized in music videos and lyrics than male artists, actors, and dancers (Bretthauer et al., 2006; Conrad et al., 2009). Men who view highly sexualized portrayals of women in music videos are more likely to hold stereotypical gender role attitudes and have increased acceptance of rape myths than those who view less sexualized music videos (Kistler & Lee, 2010).

Moreover, sexually aggressive or misogynistic lyrics have similar effects on men as well (Fischer & Greitemeyer, 2006). Men who listen to sexually aggressive or misogynistic songs are more aggressive toward women and endorse more negative attitudes toward women than men who listen to neutral music and women who listen to misogynistic or neutral music (Fischer & Greitemeyer, 2006). Interestingly, although misogynistic lyrics have a negative effect on men's attitudes toward women, pro-equality lyrics have the opposite effect on men's attitudes about women: men who listen to pro-equality songs feel more empathy for female victims of sexual harassment and endorse more positive attitudes toward women than men who listen to neutral songs (Greitemeyer, Hollingdale, & Traut-Mattausch, 2012)

Advertising. Violence against women in advertising—like that depicted by musical group The Rolling Stones in an infamous 1976 advertising campaign, in which a tied up, bruised, and bloodied woman was the face of their album "Black and Blue"—also has a negative effect on attitudes about violence against women. Those exposed to advertisements containing violence against women are more accepting of rape myths and interpersonal violence against women, and these effects are stronger for men (Capella, Hill, Rapp, & Kees, 2010). Additionally, men are more accepting than women of humorous advertisements containing violence (Swani, Weinberger, & Gulas, 2013).

Video Games. It is possible that certain types of violent video game content (i.e., violence against women) have a unique effect on players. Little is still known on the relationship between VVAW in video games and players' attitudes and behaviors toward women. Exposure to stereotypical images of women in video games increases people's tolerance of sexual harassment (Dill, Brown, & Collins, 2008). Additionally, objectification or sexism and violence against women in video games is linked to increased rape myth acceptance and increased traditional masculine beliefs among men, but not among women, especially when playing as a male avatar with whom they identify (V. Beck, Boys, Rose, & E. Beck, 2012; Gabbiadini et al., 2016).

Violence in video games is often rewarded with virtual currency, enhanced powers, and advancement through the game—for example, players receive their money back after killing a prostitute in the game Grand Theft Auto V. This reward system for violence in games reinforces and encourages such violent behaviors (Anderson & Bushman, 2001). The presence of rewards and punishments for violence against women in other forms of media (e.g., television) alters how the violence affects the viewer. It is possible that rewarding violence against women in video games may affect men's attitudes and behaviors about violence against women as well.

Possibility of a Bi-Directional Relationship. When viewing sexually violent media versus non-violent media, men who have never perpetrated such violence identify more with non-violent actors; whereas, men who have perpetrated such violence identify with *both* violent and non-violent actors (Loh, Orchowski, Gidycz, & Elizaga, 2007). This indicated that perpetrators who view such media perceive themselves as being no different from non-violent men; whereas, non-perpetrators view those who behave violently as being different (Loh et al., 2007). This demonstrates that exposure to violent media does not only predict how one perceives

violence, but past experiences of violence may also predict the way in which one perceives and relates to violence in the media. According to the social norms perspective, it is possible that this is because aggressive men seek to maintain a social climate that is supportive of their aggressive actions, and therefore, fail to openly recognize a difference between aggressive and non-aggressive behavior (Berkowitz, 2003; Loh et al., 2007).

1.3 The General Aggression Model

The General Aggression Model (GAM) provides a framework for understanding how media violence exposure affects an individual. This model suggests that a person's past experiences and individual traits influence how one appraises and reacts to an aggressive act (Anderson & Bushman, 2001; Anderson & Carnagey, 2004).

GAM Episodic Processes. The GAM episodic processes, which focus on a single social interaction, provide an in-depth framework for understanding the behavior of an individual in an aggressive situation. The primary factors of concern in the GAM episodic model are person and situational inputs, present internal state, and the appraisal/decision-making process (Anderson & Bushman, 2001; Anderson & Carnagey, 2004). The person-level inputs include aspects of personality (e.g., trait aggression and irritability) and past experiences (e.g., exposure to violence in the media and perpetration of violence); the situation-level inputs include features of the present situation that may affect aggression (e.g., an insult in the presence of weapon; Anderson & Bushman, 2001; Anderson & Carnagey, 2004). Variations in these inputs result in a change in one's present internal state, which includes an individual's affect (e.g., state hostility), arousal (e.g., heart rate), and cognitions (e.g., aggressive scripts and attention; Anderson & Bushman, 2001; Anderson & Carnagey, 2004). An individual's internal state determines how one appraises the situation at hand; this appraisal process results in a thoughtful action (i.e., decision made

considering benefits and costs of action) or an impulsive action (i.e., decision made following little deliberation or made despite poor potential outcomes; Anderson & Bushman, 2001; Anderson & Carnagey, 2004).

To better understand aggression and how to prevent or reduce it, researchers have often focused on the relationship between the inputs and internal states presented in the GAM. Because these internal states contribute to one's decision making in an aggressive situation, an improved understanding of how these person- and situation-level variables relate to one's affect, cognition, and arousal can provide insight to potential points of violence prevention and intervention.

GAM and Video Game Violence. Many video game researchers argue that past exposure to violent video games should be observed as a person-level variable, similar to past experiences with violence (see Figure 2; Anderson & Dill, 2000; Anderson et al., 2010; Bushman & Anderson, 2009; Carnagey, Anderson, and Bushman, 2007; Hasan et al., 2010). Consistent with this argument, researchers have found a positive relationship between exposure to video game violence and increased aggressive cognitions (i.e., aggressive scripts and aggressive word-stem completion), increased negative affect (i.e., state hostility and irritability), increased arousal, and decreased sensitivity to violence (Anderson & Dill, 2000; Anderson et al., 2010; Bushman & Anderson, 2009; Carnagey et al., 2007; Hasan et al., 2010). Changes in internal states are related to decreased pro-social behaviors and increased aggression and violence, demonstrating that input factors and internal states predict decision-making (Anderson & Dill, 2000; Anderson et al., 2010; Bushman & Anderson, 2009; Carnagey et al., 2007; Hasan et al., 2010).

1.4 Bystander Intervention

One proposed means of violence prevention is bystander intervention. The initiation of bystander intervention is a five-step process: one must 1) notice violence, 2) perceive the event as an emergency, 3) take responsibility, 4) decide how to intervene, and 5) intervene (Latane & Darley, 1970). Exposure to a violent movie can interfere with step one and step two of the five-step process by decreasing sensitivity to violence and, therefore, negatively affecting helping behavior (Bushman & Anderson, 2009). Is it possible that exposure to VVAW has a similar effect as that of violence in other forms of media (see Figure 2)? Does exposure to VVAW desensitize individuals to violence against women and, therefore, decrease one's likelihood of recognizing an emergency and likelihood of intervening in an instance of violence, as illustrated in Figure 2?

Specific programs have recently been developed to reduce the incidences of violence against women by increasing a bystander's likelihood of intervening in risky situations. Effective programs aim to change the norms surrounding violence by training all participants to be change agents and interventionists. These programs educate potential bystanders (e.g., college students) on issues surrounding violence against women and encourage pro-social behaviors (DeGue, Valle, Massetti, Matkasko, & Tharpe, 2014; Miller et al., 2012; Palm, Reed, Hines, Armstrong, & Cameron, 2015). They educate participants on healthy relationships, consensual sex, empathy, and approaches to safe intervention in a variety of situations, ranging from how to intervene in a sexist conversation to how to safely intervene in non-consensual sexual acts or violence (DeGue et al., 2014; Miller et al., 2012; Palm et al., 2015). Although these programs are most often administered in college settings, they may be conducted in-person or online, increasing accessibility to more diverse audiences.

Preliminary findings on the effectiveness of bystander intervention programs in preventing violence against women and improving attitudes about women are promising (Coker et al., 2016; DeGue et al., 2014; Miller et al., 2012; Palm et al., 2015). Participants in such programs are less likely to endorse rape myths or perpetrate physical or sexual violence against women; moreover, they are more likely to hold positive attitudes toward women and to intervene, or state intention to intervene, in risky situations (DeGue et al., 2014; Miller et al., 2012 Palm et al., 2015; Salazar, Vivolo-Kantor, Hardin, & Berkowitz, 2014). Furthermore, programs promoting bystander intervention can directly reduce violence against women—men who are more likely to intervene in violence against women are also less likely to perpetrate violence against women, further highlighting the importance of focusing on this method of prevention (McCauley et al., 2013).

1.5 Purpose of the Study

The relationship between video game violence and negative outcomes (e.g., aggression, violent behavior, and delinquency) has been well established, but the issue of violence against women in video games and its relation to behavior has yet to be fully addressed. The present study sought to fill this gap by expanding what is known of the relationship between violence against women in the media and men's reactions to violence. The present study investigated the nature of the relationship between exposure to violence against women in video games, men's ability to attend to intimate partner violence, and their willingness to intervene in that violence. More specifically, the present study applied the GAM episodic process framework to study these relationships. I first focused on the relationship between past exposure to VVAW, a person-level input factor, and one's ability to attend to aggressive acts in a recorded violent situation, an internal cognition; I then focused on the relationship between participants' ability to attend to aggression and their reactions to violence (see Figures 1 & 2).

1.6 Hypotheses

I predicted that men's past exposure to virtual violence against women would predict their responses to a video depicting intimate partner violence in the following ways, depicted in figures three and four:

1) Men with greater VVAW exposure would identify fewer aggressive cues in the IPV scenario than those with less VVAW exposure.
2) Men with greater VVAW exposure would state they would intervene at a later point in the IPV scenario than those with less VVAW exposure.
3) The number of aggressive cues one identified in the IPV scenario would mediate the relationship between VVAW exposure and the point at which one stated he would intervene.

Lastly, I hypothesized that VVAW exposure and past perpetration of violence against women would interact to further influence men's aggressive cue recognition in the IPV vignette. I predicted that those who have perpetrated violence against women more frequently in the past and have played video games containing violence against women frequently in the past would identify even fewer cues of aggression in the given IPV scenario than those who have perpetrated lower levels of IPV, or none at all, and have played video games containing violence against women frequently in the past.

2 METHODOLOGY

2.1 Participants and Sampling

Participants recruited for this study were at least 18 years of age, had a United States Internet Protocol (IP) address or attended Georgia State University, had played at least one game from a list of top 71 most popular selling Mature-rated games, and consented to participate in the study using online consenting procedures.

The majority of our participants were recruited from Georgia State University's psychology research participant pool via SONA, Georgia State University's research and testing recruitment site (n=385). A smaller proportion of the participants were recruited via the online participant recruitment site Amazon Mechanical Turk (www.mturk.com; n=172). Amazon Mechanical Turk (MTurk) is a website where people can complete small web-based tasks in exchange for a small payment. MTurk users in the United States are largely women (approximately 70%), in their early thirties, on average, and often have obtained a secondary education or higher (approximately 34% with bachelor's degrees and approximately 16% with graduate degrees; Ross, Irani, Silberman, Zaldivar, & Tomlinson, 2010). Participants were recruited from a combination of these two sources.

Power analysis. To determine the appropriate sample size necessary to detect the expected effects, a series of Monte Carlo simulation studies were conducted in Mplus version 7.2. Based on previous findings, I generated effect size estimates for each proposed relationship. A population of data was generated using these effect sizes. Fifteen thousand samples of varying sizes (200-600) were drawn from this population to recursively estimate model effects and to generate probabilities of finding significant effects for each hypothesis (α 's=.05, two-tailed). Through this process, it was revealed that a sample size of 578 men will yield a minimum of

80% power to detect a *b*=-0.15 effect of VVAW exposure on the number of aggressive cues identified in the IPV scenario (cf. Anderson et al., 2010), a *b*=-0.135 effect of aggressive cue identification on the time of intervention in the IPV scenario (cf. Bushman & Anderson et al., 2009), and a *b*=0.11 effect of VVAW exposure on the time of intervention in the IPV scenario (cf. Anderson et al., 2010). Therefore, I aimed to recruit at least 578 male participants for the proposed study.

Sample characteristics. A total of 559 adult men were recruited, consented to participate, and provided acceptable data (see below for data inclusion criteria). Among these men, the majority was either Black/African American or White, had completed at least some college or vocational training, was heterosexual, and was single (see Table 1 for full sample characteristics).

2.2 Procedure

Recruitment and Informed Consent. Potential participants saw a job posting on MTurk offering $0.10 for the completion of a web-based survey or a participation opportunity posted on Georgia State University's SONA webpage offering one credit for their participation. If workers or students were interested in participating, they clicked on the job posting or the SONA participation link to review the informed consent information explaining the nature of the study. Workers and students clicked a button to consent and accept the task. The button on MTurk read, "By clicking this button to accept this job you ensure that you have read the above statement and give your informed consent to participate in this research study." The option on SONA read, "I have read the above information thoroughly and I consent to participate in this study." Participants who clicked the option indicating that they agree to participate were sent a link to

the study survey hosted on Qualtrics (www.qualtrics.com). All participants' responses were anonymous.

Study Overview. Consenting participants completed a series of questionnaires and brief computerized tasks. Participants responded to questions about their video game experience, demographic information, then measures of individual aggressive traits, and measures examining their experiences with and attitudes about violence and violence against women. After completing the questionnaires, participants viewed a video depicting an instance of intimate partner violence and completed two tasks. While viewing the video, participants indicated the number of aggressive cues they perceived in the video. Simultaneously, participants indicated the point at which they would intervene in the given violent situation (the recorded IPV vignette), were they present.

2.2 Measures

Demographic Information. To control for individual differences in demographic variables, the survey contained the following simple demographic questions: "What is your age?" "What is your race/ethnicity?" "What is your relationship status?" "What is your sexual orientation?" "Please indicate the highest level of education you have completed."

Trait Aggression. To control for individual differences in aggressive traits, I used the Buss-Perry Aggression Questionnaire to capture individuals' levels of physical aggression, verbal aggression, anger, and hostility, α=.89 (Buss & Perry, 1992). This scale contains questions regarding the extent to which one resigns to physical aggression (i.e., "Given enough provocation, I may hit another person"), verbal aggression (i.e., "I often find myself disagreeing with people"), anger (i.e., "When frustrated, I let my irritation show"), and hostility (i.e., "When people are especially nice, I wonder what they want"). Participants' responses were on a five-

point Likert-type scale, ranging from "extremely uncharacteristic of me" to "extremely characteristic of me".

Impulsive Aggression. To control for individual differences in impulsivity, I used the Caprara Irritability Scale (CIS) to capture individuals' proclivity to act impulsively in an aggressive manner (e.g., short fused), α=.81 (Caprara et al., 1985). This scale consists of 20 irritability items (i.e., "I easily fly off the handle with those who don't listen or understand") and ten friendly items (i.e., "Usually when someone shows a lack of respect for me, I let it go by"), reverse scored, per Dill, Anderson, and Deuser's (1997) recommendation. Participants' responses were on a five-point Likert-type scale, ranging from "extremely uncharacteristic of me" to "extremely characteristic of me".

Justifications of Date Rape. To glean information on men's attitudes toward justifications of date rape, I used the Justifications of Date Rape Subscale (JDRS) of the Rape Attitudes and Beliefs Scale, α=.82 (Burgess, 2007) The scale consists of 10 items which describe different scenarios in which men may or may not justify obtaining non-consensual sexual contact (e.g., "If a woman leads a man on by dressing up, dancing with him close, and kissing him– the man is somewhat justified to have sexual intercourse with her, even if says she does not want to"). Participants' responses were on a five-point Likert-type scale, ranging from "strongly disagree" to "strongly agree".

VVAW Exposure. I calculated VVAW exposure using a method similar to Anderson and Dill's (2000) of calculating violent media exposure: multiplying severity of violent content consumed by frequency of play. Participants reported their five most frequently played games from the time they were in 7th grade to the present. Participants were prompted with a list of the

top 71 most popular Mature-rated video games, but were also allowed to write-in additional game titles they frequently played.

Participants then described the violent content using the Virtual Violence Against Women Scale (VVAW Scale). This scale consists of 27 items that tap into three types of violence against women: physical, sexual, and unrealistic (Goodnight, Borgman, & Swartout, in preparation). Participants were asked to report how often the player character they controlled in their most frequently played games could commit each act in the scale, using a five-point Likert-type scale, ranging from "never" to "all of the time". Participants' responses to these items were then averaged to create a VVAW Scale Score, ranging from zero to six.

Participants then reported how often they played their most frequently played games, on average, using a five-point Likert-type scale, ranging from "never" to "all of the time". Participants' responses for each game were then averaged to create an average game-play frequency score, ranging from zero to six. Mirroring Anderson and Dill's (2000) method of calculating violent media exposure, the average game-play frequency score was then multiplied by the participant's VVAW Scale score to create a VVAW exposure score for each participant.

Intimate Partner Violence. I measured past experiences of intimate partner violence, perpetration and victimization, using the Revised Conflict Tactics Scale (CTS2) (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). This scale is a reliable measure of intimate partner violence perpetration and victimization, with an internal consistency reliability of .79 to .95 (Straus et al, 1996). This scale is composed of a total of 39 items which can be divided into five different subscales: negotiation (i.e., "I explained my side or suggested a compromise for a disagreement with my partner"), psychological aggression (i.e., "I insulted or swore or shouted or yelled at my partner"), physical assault (i.e., "I pushed, shoved, or slapped my partner"), sexual coercion (i.e.,

I used force (like hitting, holding down, or using a weapon) to make my partner have sex"), and injury (i.e., My partner had a sprain, bruise, or small cut, or felt pain the next day because of a fight with me"). Each of the 39 items is repeated for both the participant (perpetration) and his partner (victimization), creating a total of 78 questions on the scale. Participants indicated how often each act in the scale has happened in the past year, ranging from "never" to "more than 20 times". Perpetration items from the psychological aggression, physical assault, sexual coercion, and injury subscales were used in the present study. Frequency of perpetration across these items was summed to create a score representing the total amount of perpetration of intimate partner violence in the past year.

2.3 Cognitive and Behavioral Outcomes

IPV Video Vignette. The video used for the cognitive and behavioral tasks, created by Witte and Mulla in 2012 for the study of social norms of intimate partner violence (IPV), depicts a situation of escalating IPV between two college-aged heterosexual partners. The argument begins as the male partner enters the female partner's apartment as her male classmate is leaving. The boyfriend quickly accuses her of cheating. As the argument escalates, the boyfriend becomes verbally and psychologically aggressive, and eventually physically aggressive toward the girlfriend. The video was viewed and tested for realistic appearance and was established as realistic and believable (Witte & Mulla, 2010).

Aggressive Cues. The number of aggressive cues (anything the participant perceives as aggressive) identified in the IPV scenario by the participants during the interactive task reflected the individuals' attention to aggression and violence (Loh et al., 2007). Participants indicated the number of acts of aggression they perceived in the brief video clip by clicking a designated key, "G". Instructions read,

"The following video depicts an interaction between two college-aged heterosexual partners. (Sound is required for this video.)

Please watch the video and press the "g" key on your keyboard each time you see an aggressive act. Do this for the ENTIRE VIDEO. *If you accidentally press the "g" key too many times, please correct the number at the bottom of the page."*

Bystander Intervention. Participants pressed the "intervene" button on screen to indicate the point at which they would intervene in the given IPV scenario if they were present. Instructions, which were delivered in conjunction with the instructions for identifying aggressive cues, read,

"Additionally, please click the INTERVENE button below at the point you would intervene if you were present. Continue pressing "g" each time you see an aggressive act, even after you press the intervene button, until the end of the video. Press play to begin the video. Indicate that you have pressed play by answering the question below the video. WATCH THE ENTIRE VIDEO."

2.4 Debriefing and Incentives

After the questionnaires and the brief video tasks, participants were fully debriefed of the study purposes and provided contact information for the researchers, should they wish to follow-up. Participants lastly received their compensation for participation. MTurk participants received a 9-digit code, which they used to receive their $0.10 payment through MTurk. Georgia State University SONA participants received credit for participating in the SONA system. Participants were allowed to skip questions at their discretion, without penalty.

2.5 Data Cleaning

I removed any data of participants who withdrew or indicated that they did not want their data included in the study. Additionally, despite having built-in mechanisms to prevent participants from participating more than once, some participants completed the survey twice. This was often due to survey errors or other technological issues. For these participants, only their most complete data were retained.

Due to the nature of the computerized tasks, the number of aggressive cues identified in the video and the amount of time before participants pressed the intervention key occasionally surpassed logical values. For many (n=148), the time before participants pressed the intervention key exceeded the total play time of the video. This could have occurred if the participant stepped away from the computer during the video without pressing "intervene", finished viewing the video before pressing "intervene", or otherwise remained on the page longer than the duration of the video before pressing "intervene". For this reason, all participants' intervention times that exceeded this maximum were winsorized by adjusting them to the total length of the video. Including these adjusted intervention times did not alter the reported findings below; results were consistent with and without these cases.

Additionally, two participants' total number of aggressive cues identified was more than three standard deviations above the mean; therefore, these participants' data were removed in subsequent analyses. Excluding these outliers did not alter the reported findings below; results were consistent with and without these cases.

Lastly, some participants did not respond to all predictor variables in all models. As such, using the default settings in Mplus version 7, cases with missing data on any predictor variables or covariates were deleted listwise. Thus, model sample sizes ranged from 449 to 501, out of the

total pool of participants remaining in the dataset after the above cleaning process (N=557); participants not included (deleted listwise) in the analyses responded to the video tasks similarly to those included.

2.6 Analyses

All models were tested using structural equation modeling (SEM) with bootstrapped indirect effects in Mplus version 7 (Kline, 2011). This approach allowed me to estimate path coefficients, indirect effects, and the overall model fit. Prior to fitting any models, I examined correlations among all variables of interest and sample characteristics (see Table 2 for correlations). To generate the most parsimonious model, I elected to include sample characteristics (demographics and personality traits) as control variables in the model when they were significantly correlated with the dependent or mediating variables (see Table 2 for correlations).

To test the first hypothesized model (Figure 3), the mediation only model, I regressed time to intervention on VVAW exposure scores and total identified aggressive cues. I simultaneously regressed total identified aggressive cues on VVAW exposure scores (the predictor of interest) and all relevant control variables. Using fit statistics provided by Mplus, I then evaluated the fit of this model.

To test the second hypothesized model (Figure 4), the moderated mediation model, I regressed time to intervention on VVAW exposure scores and total identified aggressive cues. I simultaneously regressed total identified aggressive cues on VVAW exposure scores (the predictor of interest) and all relevant control variables. Additionally, I regressed total identified aggressive cues on self-reported total intimate partner violence perpetration and all relevant control variables. To examine whether the effects of VVAW exposure on aggressive cue

recognition were enhanced by intimate partner violence perpetration, I created an interaction term by multiplying standardized VVAW exposure scores and standardized reported frequencies of intimate partner violence perpetration. I regressed the total number of identified aggressive cues on this interaction term. I also requested the indirect effects of VVAW exposure, intimate partner violence perpetration, and the interaction of the two on intervention times, as they functioned through aggressive cue recognition. Using fit statics provided by Mplus, I determined how well this larger overall model (Figure 4) fit the data. Lastly, using the Bayesian Information Criterion (BIC), I determined whether this model was a better fit than the previous model (Figure 3).

Exploratory Models. In addition to questions concerning media violence consumption, irritability and aggressive traits, and intimate violence perpetration, participants responded to questions concerning their attitudes toward women and violence. Given extant literature demonstrating the relationships between attitudes about violence and women, exposure to violent media, and reactions to violence, I probed an additional attitudinal measure, the JDRS, included in the study as a potential mediator of the previously hypothesized relationships.

I explored additional alternative models and selected the most parsimonious model that best fit the data and was interpretable based on the previously outlined theoretical framework. In the first exploratory model (Figure 7), I regressed time to intervention on JDRS scores, total identified aggressive cues, and all relevant control variables. I simultaneously regressed total identified aggressive cues on JDRS scores and all relevant control variables. I then regressed JDRS scores on VVAW exposure scores. I also requested the indirect effect of VVAW exposure on intervention times, as it functioned through JDRS scores and aggressive cue recognition. I also requested the indirect effect of VVAW exposure on aggressive cue recognition, as it

functioned through JDRS scores. Using fit statics provided by Mplus, I determined how well this model fit the data. Lastly, using the Bayesian Information Criterion (BIC), I determined whether this model was a better fit than the hypothesized models.

In the second exploratory model, a trimmed version of the first exploratory model, (Figure 8), I regressed aggressive cue recognition on JDRS scores, VVAW exposure, and all relevant control variables. I simultaneously regressed JDRS scores on VVAW exposure and all relevant control variables. I also requested the indirect effect of VVAW exposure on aggressive cue identification, as it functioned through JDRS scores. Using fit statics provided by Mplus, I determined how well this model fit the data. Lastly, using the Bayesian Information Criterion (BIC), I determined whether this model was a better fit than all previous models.

All model results and fit statistics are presented below. It is important to note that a non-significant chi-squared value, a comparative fit index (CFI) greater than 0.9, a Tucker-Lewis index (TLI) greater than 0.95, a Root Mean Square Error of Approximation (RMSEA) less than 0.1, and a Standardized Root Mean Square Residual (SRMR) less than 0.05 are generally accepted as indicative of good fit (Kline, 2011). Furthermore, models with a lower Bayesian Information Criterion (BIC) are assumed to fit the data better than models with a higher BIC.

3 RESULTS

3.1 Primary Mediation Model.

My primary hypothesized model (mediation only), when controlling for relevant covariates, fit the data well, χ^2 (df=2, n=501)=0.54, p=0.77, BIC= 9444.62, CFI=1.00, TLI=1.36, RMSEA<0.001, SRMR=0.004 (see Table 3 and Figure 5). However, all hypothesized relationships, whether significant or non-significant, were in the opposite direction from what I predicted (see Table 3 and Figure 5). First, VVAW exposure did not significantly predict the number of aggressive cues identified (b=0.15, SE=0.16, p=0.35) or intervention times (b=-0.49, SE=0.79, p=0.54), controlling for individual education and aggressive traits.

Additionally, the number of aggressive cues identified in the video was significantly and positively related to intervention time (b=0.51, SE=0.23, p=0.02), controlling for individual education, aggressive traits, irritability, and recruitment platform. For each additional aggressive cue identified, participants indicated they would intervene 0.51 seconds later in the recorded violent scenario. Lastly, the predicted indirect effect of VVAW exposure on intervention time via aggressive cue identification was non-significant (b=0.08, SE=0.09, p=0.39). See Table 3 for full model results, including all covariates' path coefficients.

3.2 Moderated Mediation Model

As indicated by the lower BIC, my second hypothesized model (moderated mediation) fit the data better than the first, χ^2(df=4, n=449)=3.78, p=0.44, BIC= 8404.28, CFI=1.00, TLI=1.06, RMSEA<0.001, SRMR=0.01 (see Table 4 and Figure 6). As in the previous model, VVAW exposure was significantly predictive of neither number of aggressive cues identified in the video (b=0.10, SE=0.17, p=0.56) nor intervention times (b=-0.56, SE=0.82, p=0.49), controlling for individuals' education, aggressive traits, irritability, and recruitment platform, where necessary.

Each one-point increase in VVAW exposure scores corresponded with participants identifying 0.10 additional aggressive cues and intervening 0.56 seconds sooner in the recorded IPV scenario.

Additionally, number of aggressive cues identified in the video was marginally related with intervention times (*b*=0.43, SE=0.24, *p*=.08), controlling for individual education, aggressive traits, and irritability; for each additional aggressive cue identified, participants indicated they would intervene 0.43 seconds later in the recorded violent scenario. However past perpetration of intimate partner violence (IPV) was not related with the number of aggressive cues identified in the video (*b*=-0.01, SE=0.01, *p*=0.46). The interaction between VVAW exposure and IPV perpetration on aggressive cue identification was also non-significant (*b*=-0.25, SE=0.79, *p*=0.75). All hypothesized relationships were non-significant and all indirect effects were non-significant. See Table 5 for full model results, including all covariates effects.

3.3 Exploratory Multiple Mediation Model

As previously mentioned, the data collected for these analyses were part of a larger study exploring the multiple factors that may contribute to men's attitudes toward women and violence and reactions to violence against women. As such, participants completed several surveys regarding their attitudes toward violence against women. Given the lack of support for the hypothesized models, I elected to further explore how attitudinal factors might predict men's identification of aggression and their intervention responses.

I specifically elected to explore how participants' justifications of date rape may mediate the previously hypothesized relationships. This new model fit the data well, χ^2 (df=5, n=501)=7.17, *p*=0.21, BIC= 10482.27, CFI=0.98, TLI=0.93, RMSEA=0.03, SRMR=0.02 (see Table 5 and Figure 7). My exploration revealed that men's increased justifications of date rape

were significantly predictive of both the number of aggressive cues identified in the video (b=-3.65, SE=0.88, p<0.001) and the time it took to intervene in the scenario (b=-8.83, SE=4.36, p=0.04). Each one-point increase in participants' JDRS scores corresponded with identifying of 3.65 fewer aggressive cues and intervening 8.83 seconds sooner in the recorded IPV scenario. Additionally, men's increased VVAW exposure scores were significantly predictive of increased justification of date rape scores (b=0.02, SE=0.01, p<0.01). Each one-point increase in participants' VVAW exposure scores corresponded with a 0.02-point increase in their JDRS scores. Although only marginally significant, increased aggressive cue identification was related to later intervention times (b=0.43, SE=0.23, p=0.06) in this model. Each additional cue identified corresponded with participants intervening 0.43 seconds later in the recorded scenario. Furthermore, the indirect effect of VVAW exposure on aggressive cue recognition, as it functions through justifications of date rape, was significant, (b=-0.08, SE=0.04, p=0.02); each one-point increase in VVAW exposure scores was indirectly predictive of participants recognizing 0.08 fewer aggressive cues. All other indirect paths were non-significant. See Table 5 for full model results, including all covariates effects.

However, because I could not interpret the marginal effects on intervention time, I trimmed this outcome from the model. Thus, I explored a final model.

3.4 Final Exploratory Mediation Model

Considering the results of the previous exploratory model, as well as the two hypothesized models, it appeared that the counterintuitive results might be a function of the intervention portion of the video task. All paths not leading to the intervention time as an outcome in the first exploratory model were significant and in the expected directions, including the indirect relationship between VVAW exposure and aggressive cue recognition. Thus, in my

final exploratory model, I elected to remove time to intervention as an outcome and explore the relationship between VVAW exposure and aggressive cue recognition, mediated by JDRS scores.

As indicated by the lower BIC, this final model fit the data better than all previous models, χ^2 (df=5, n=501)=0.22, *p*=0.64, BIC=4844.74, CFI=1, TLI=1.08, RMSEA<0.001, SRMR=0.003 (see Table 6 and Figure 8). Men's increased VVAW exposure was significantly predictive of increased JDRS scores (*b*=0.02, SE=0.01, β=0.12, *p*=0.005); however, the effect was not large. A standard deviation increase in participants' VVAW exposure scores was predictive of only a 0.12 standard deviation increase in JDRS scores. However, increased VVAW exposure scores not significantly related to the number of aggressive cues identified in the recorded scenario (*b*=0.23, SE=0.16, *p*=0.15). Each one-point increase in participants' VVAW exposure scores corresponded with participants identifying 0.23 more aggressive cues in the recorded scenario. However, just as in the first exploratory model, the indirect effect of VVAW exposure scores on aggressive cue recognition, as it functions through JDRS scores, was negative and significant, (*b*=-0.09, SE=0.04, *p*=0.02); each one-point increase in VVAW exposure scores was indirectly predictive of participants identifying 0.09 fewer aggressive cues in the recorded scenario. See Table 6 for full model results, including all covariates effects.

As outlined above, this mediation model fit the data best of all tested models, statistically and theoretically. Thus, I accepted this model as the final, most parsimonious model.

4 DISCUSSION

This study explored the relationships between men's exposure to VVAW, past perpetration of IPV, and their reactions to an IPV simulation. These results indicate that, although VVAW exposure may be related to how men perceive and react to IPV, it does not explain it in isolation.

Hypothesized Models. My primary hypothesized model, when including all relevant covariates, fit the data well, indicating that this system of relationships adequately explains the relationship between VVAW exposure and men's reactions to IPV. However, my original hypotheses were not supported. Exposure to VVAW since 7th grade was not significantly related to identification of aggressive cues, contrary to my first hypothesis. Furthermore, exposure to VVAW since 7th grade was not significantly related to the time it took participants to indicate they would intervene in the recorded IPV scenario, contrary to my second hypothesis. Lastly, contrary to my third hypothesis, identification of more aggressive cues in the recorded scenario was significantly related to an *increase* in time to intervention in the recorded IPV scenario.

Furthermore, when including all relevant covariates, my second hypothesized model fit the data better than my first hypothesized model, indicating that including participants' past perpetration of IPV helped further explain the relationship between VVAW exposure and reactions to IPV. However, my final hypotheses were not supported. IPV perpetration was not significantly related to the number of aggressive cues identified in the recorded scenario. IPV perpetration also did not significantly interact with VVAW exposure to affect the number of aggressive cues identified in the recorded scenario, contrary to my final hypothesis. Furthermore, all additional hypothesized relationships in this model were non-significant and in the opposite direction as predicted.

It is noteworthy that, although most hypothesized pathways were non-significant, the above models fit the data well. I suspect this is largely due to the covariates included in these models, which were significantly related to some outcomes (see model results tables for all path coefficients); I included both trait irritability and trait aggression in both models. These findings further support the notion that individual traits are related to men's perceptions of violence and bystander behavior. Future research should explore how individual personality traits predict violent media consumption and reactions to violence. Furthermore, future research should track changes in attitudes and violent media consumption over time to better understand the directionality of these relationships.

As mentioned previously, my original hypotheses were based on one piece of a larger model of the effects of video game violence exposure on helping behaviors and aggression (see the bolded boxes in Figure 2). Although the relationships I anticipated based on that theoretical model were not reflected in the data, it is possible that those who play more games containing VVAW maintain beliefs that violence is normative yet adhere to societal expectations of bystander intervention (see Figure 2). Perhaps each cognitive or affective outcome of repeated VVAW exposure is not equally predictive of men's perceptions of violence or bystander behavior. Men who play more games containing VVAW more often may be desensitized to violence, but such violence may not be considered normative. Thus, it is possible men could be less sensitive to individual acts of aggression, but aware of the expectation to intervene in aggressive scenarios. This may explain the unexpected relationships, and lack thereof, observed in the present study. Additional research on other components of this theoretical model is necessary to better understand the complex relationships revealed in this study.

Exploratory Models. Given that most pathways in the previous models were non-significant, I explored alternative models. In the effort to build a model that better explained the relationship between VVAW exposure and men's reactions to IPV, I examined additional literature on the relationships between exposure to violence in video games, and attitudes and behavior. Extant research has established a link between exposure to violence in video games and negative attitudes toward women (V. Beck et al., 2012; Dill et al., 2008; Fox & Potocki, 2016; Gabbiadini et al., 2016). Additionally, negative attitudes toward women are predictive of decreased bystander helping behaviors (Degue et al., 2014). Thus, I explored the ways in which men's attitudes toward women and heterosexual relationships may help better explain how VVAW exposure may affect men's reactions to IPV.

These post-hoc analyses revealed that increased VVAW exposure since 7th grade predicted increased endorsement of justifications of date rape, even when accounting for relevant control variables. Congruent with what I expected based on the literature, increased endorsement of justifications of date rape was predictive of decreased identification of aggressive cues (desensitization to aggression). However, contrary to what I expected based on the literature, increased endorsement of justifications of date rape was predictive of significantly earlier intervention times (increased helping behavior). However, as anticipated, increased VVAW exposure did indirectly predict decreased aggressive cue recognition through justifications of date rape. This system of relationships fit the data; however, the, but not better than my original models. Thus, I elected to trim the non-significant effects on intervention times and explored one final model.

The three models discussed thus far had one thing in common: the relationships between all predictor variables and intervention times were non-significant or in the opposite direction of

predicted. This suggested another mechanism was at work while participants were completing the tasks associated with the video. I asked all participants to watch a brief video of a simulated dating violence scenario while simultaneously indicating when they see an aggressive act and indicating when they would intervene if they were present. It is possible that being asked to complete both tasks simultaneously affected participants' performance.

When individuals are asked to complete more than one task simultaneously, their cognitive capacity is often reached (Morrison, Burnham, & Morrison, 2015; Pashler, 1994). They must hold both sets of instructions in their mind at once and be prepared to respond to both at any moment. When faced with dual-attention tasks, individuals are likely to dedicate more focus to one task than the other (Hirsch, Nolden, & Koch, 2017). Aggressive cue recognition was a continuous task, while intervening was a single response task. Continuous tasks require a steady supply of cognitive resources, while single-response tasks require fewer cognitive resources; however, if both tasks require resources simultaneously, they compete for resources and are susceptible to encountering a cognitive bottleneck, which inhibits the ability to complete two tasks at once (Hirsch et al., 2017; Morrison et al., 2015; Pashler, 1994). The continuous task of aggressive cue recognition may have inhibited participants' ability to respond to the intervention task, ultimately biasing those scores (Morrison et al., 2015). Thus, I explored a final model that excluded intervention times and focused on VVAW exposure, attitudes, and aggressive cue recognition.

This final model, which included VVAW exposure, justifications of date rape, aggressive cue recognition, and relevant covariates, fit the data better than all previous models. Increased VVAW exposure was significantly predictive of increased justifications of date rape, which were then significantly predictive of decreased identification of aggressive cues. Furthermore,

increased VVAW exposure was indirectly predictive of decreased identification of aggressive cues in the video.

This final system of relationships not only fit the data well, but also aligns well with past literature. Based on past findings regarding the effects of media portrayals of violence against women on attitudes about violence against women, it follows that VVAW exposure would also predict attitudes toward sexual violence against women (e.g., increased justifications of date rape). Furthermore, it follows that these negative attitudes would also negatively predict men's sensitivity to violence (e.g. aggressive cue recognition). Lastly, as originally hypothesized, increased VVAW exposure did negatively predict aggressive cue recognition; however, this relationship functions indirectly through men's endorsement of various justifications of date rape. VVAW exposure does appear to predict men's reactions to violence; however, the relationship is more complex than anticipated, as is evident from this final model.

4.1 Limitations and Future Directions

There were many limitations to the present study. These data were collected during one online session; therefore, all survey data collected are cross-sectional, meaning that I cannot assume temporal precedence or directionality of many relationships (e.g., I cannot definitively state that VVAW exposure *causes* increased justifications of date rape). It is possible that men choose games containing more VVAW because it aligns with and confirms their attitudes; those with increased justifications of date rape may enjoy video games containing VVAW more than others, and therefore, play more of these games more often. Again, this relationship may also be reciprocal, but that cannot be determined from these data. As mentioned previously, in the future, a longitudinal study following men's media consumption and their self-reported perpetration of IPV and attitudes toward women and violence over time would allow researchers to monitor

change and better understand the directionality of relationships, including potential reciprocal relationships, between violent media consumption and attitudes and behaviors regarding violence against women.

Additionally, all data were collected online, meaning that participants were allowed to complete the surveys and tasks at the time and place of their choosing. Some participants may have completed the study in distracting environments, which may have affected their performance on the cue identification or intervention tasks. As many participants did not press the "intervene" key in a reasonable amount of time, it is possible that these participants were not paying full attention. In the future, to prevent such distractions, it would be beneficial to conduct this study in a controlled laboratory setting with experimenter monitoring.

The primary outcome in this study was bystander intervention, with VVAW exposure, past perpetration of violence, and attitudes as predictors. However, future studies should focus on men's perpetration of violence as an outcome rather than a predictor of future behaviors. This could answer the question of whether or not VVAW exposure causes increases in violent behavior over time. Previous findings could be expanded upon by incorporating questions about violent media consumption into other longitudinal studies studying patterns of violence against women over time.

Furthermore, although the video vignette used in this study was tested for validity and was designed to be relatable for college students, it is lacking in contextual information, which facilitates decision-making in real life situations. Particularly, the violent encounter portrayed in this video vignette is of heterosexual dating partners arguing in the confines of their home. As this task was intended to tap into bystander behavior, the setting and intimacy of this instance may have influenced the outcome. Additionally, participants responding to vignettes often

respond in ways deemed socially desirable, not necessarily how they may react in a similar real-life situation (Hughes & Huby, 2004). However, as a researcher committed to do no harm, it is unethical to place participants in a potentially dangerous situation. Therefore, the use of a video vignette was appropriate in the present study, despite its potential flaws.

As discussed previously, the video response tasks required dual-attention. This may have hindered participants' abilities to complete the aggressive cue identification and intervention tasks simultaneously and correctly. Similar studies in the future should have participants complete each task separately by watching the video twice, counterbalancing the order to counteract priming in either task. However, it is important to note that in the current study, as it was an online survey, I was unable to determine what cognitive processes are behind participants' responses. Thus, I cannot definitively determine if cognitive overload during a dual-attention task can explain these counterintuitive findings. Although highly ambitious and clearly outside the scope of the current research project, conducting a similar study with participants undergoing fMRI scans while they complete these tasks would likely lend interesting information on the cognitive processes involved with aggressive cue recognition and bystander decision-making.

Lastly, the present study involved only self-identified men; therefore, it is not generalizable to those who do not identify as men. Future studies should include all genders to determine if violence against women in video games has a similar effect on everyone and if similar approaches to violence prevention should be provided to both.

4.2 Conclusions

The present study aimed to explore the relationship between exposure to violence against women in video games and men's perceptions and reactions to IPV. Specifically, I aimed to

determine whether men who played games containing violence against women more often would identify fewer aggressive cues in a recorded IPV scenario and indicate they would intervene later in that scenario if they were present. Furthermore, I aimed to determine whether and how men's past perpetration of IPV would further influenced these relationships. Although my original hypotheses were not supported, the present study adds to the literature on the relations between violence against women in video games, men's attitudes about sexual violence against women, and men's perceptions of aggressive acts. These findings support the notion that increased exposure to violence in the media, specifically video games, is related to attitudes supportive of violence against women, specifically sexual violence. Exposure to violence against women in video games was not directly related to desensitization to violence or decreased bystander intervention; however, increased exposure to violence against women in video games was indirectly related to men identifying fewer acts of aggression when asked to view a violent scenario (see Figure 8).

Past research has demonstrated that men's perceptions of violence and their attitudes are predictive of their likelihood to perpetrate violence and to intervene in violence (Banyard, 2011; Bushman & Anderson, 2009; McMahon & Banyard, 2012). If VVAW exposure is predictive of negative attitudes and decreased identification of aggression, then efforts to reduce men's exposure to such violence in video games, or efforts to provide education and information that counteracts the negative effects of the exposure among those who already play such games, may be effective in preventing violence against women.

Although these suggested approaches to violence against women prevention are not novel, these findings provide further support for targeting violent media consumption and attitudes as a means of increased men's ability to identify aggression and violence against

women and, hopefully, deem it as wrong and unjustifiable. However, more work is needed to fully understand how people process information when they witness violence against women. Violence against women intervention and prevention efforts would benefit from a better understanding of how this process works and what specifically affects this process (e.g., VVAW).

Table 1. Sample characteristics

Characteristic/Demographic	Mean (SD) or %
Age, in years	23.59 (9.23)
Recruitment Platform	
Amazon Mechanical Turk	30.9%
SONA	69.1%
Education (highest completed)	
Grammar School	.2%
High School or Equivalent	28.7%
Vocational/Technical School (2 year)	2.3%
Some College	49%
College Graduate (4 year)	14.5%
Master's Degree	2.2%
Professional Degree	1.1%
Other	1.3%
Sexual Orientation	
Straight/Heterosexual	88.7%
Gay	5.7%
Bisexual	4.1%
Queer	0.2%
Questioning	0.2%
Other	0.4%
Race/Ethnicity	
White/European American	42.4%
Black/African American	23%
Hispanic or Latino	7.7%
Asian or Asian American	15.8%
Native American or Alaskan Native	.9%
Multiracial/Multiethnic	7.9%
Other	1.3%
Relationship Status	
Single	56.7%
Exclusively Dating	18%
Living with Partner	7%
Married	12.6%
Separated	.5%
Divorced	1.6%
Widowed	.2%
Rather not Say	2.7%

Note: N=557, Some participants did not respond to all demographic characteristics questions.

Table 2. Correlations among all included and possible confounding variables.

	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
1. Education	3.6	1.72	1									
2. Age	23.59	9.23	0.41**	1								
3. JDRS	1.38	1.97	0.25**	0.13**	1							
4. BPAgg	2.09	2.29	0.19**	0.08	0.73**	1						
5. CIS	2.37	2.13	0.24**	0.10*	0.75**	0.76**	1					
6. CTS2	38.65	82.37	0.07	0.03	0.19**	0.19**	0.16**	1				
7. VVAWS	3.03	4.86	0.12**	0.01	0.2**	0.17**	0.16**	0.09*	1			
8. Cues	10.07	13.26	0.09*	0.03	-0.03	0.10*	0.04	-0.02	-0.01	1		
9. Time	132.24	123.72	0.11**	-0.01	0.07	0.12**	0.10*	0.01	-0.03	0.13*	1	
10. Platform	0.31	0.46	0.28**	0.56**	-0.03	-0.11**	-0.07	0.05	0.15**	0.03	-0.09*	1

Note: Age=in years, Relationship=relationship status, Orientation=sexual orientation, JDRS= Justifications of Date Rape Scale, BPAgg= trait aggression via the Buss Perry Aggression Questionnaire, CIS= trait irritability via the Caprara Irritability Scale, CTS2= IPV perpetration via the Revised Conflict Tactics Scale, VVAWS= virtual violence against women exposure, Cues= Aggressive cues/acts identified by participant, Time= time to intervention, in seconds, Platform= recruitment platform; *p<.01, **p<.01.

Table 3. Primary mediation model results.

	Estimate	SE	Ratio	*p*	Std
Direct Effects					
Intervention Time on					
VVAWS	-0.49	0.79	-0.61	0.54	-0.03
Aggressive Cues	0.51	0.23	2.26	0.02	0.1
Education	4.27	2.3	1.86	0.06	0.09
Aggression	23.29	6.4	3.64	<0.001	0.23
Irritability	-28.49	9.37	-3.04	0.002	-0.2
Platform	-21.97	6.73	-3.27	0.001	-0.15
Aggressive Cues on					
VVAWS	0.15	0.16	0.93	0.35	0.04
Education	0.74	0.44	1.66	0.1	0.08
Aggression	0.4	0.92	0.44	0.66	0.02
Indirect Effect					
Intervention Time on					
VVAWS via Cues	0.08	0.09	0.86	0.39	0.004
Residual Variances					
Aggressive Cues	168.68	10.97	15.38	-	0.99
Intervention Time	4150.86	262.38	15.82	-	0.94

Note: VVAWS= virtual violence against women exposure, Cues= Aggressive cues/acts identified by participant, Aggression= trait aggression via the Buss Perry Aggression Questionnaire, Irritability= trait irritability via the Caprara Irritability Scale, Platform= recruitment platform; hypothesized covariates and sample characteristics controlled for where statistically supported (see Table 2); all other indirect effects were non-significant; χ^2(df=2, n=501)=0.54, *p*=0.77, BIC=9444.62, CFI=1.00, TLI=1.36, RMSEA<0.001, SRMR=0.004.

Table 4. Primary moderated mediation model results

	Estimate	SE	Ratio	*p*	Std
Direct Effects					
Intervention Time on					
VVAWS	-0.56	0.82	-0.69	0.49	-0.03
Aggressive Cues	0.43	0.24	1.78	0.08	0.08
Education	4.12	2.37	1.74	0.08	0.09
Aggression	22.06	7.19	3.07	0.002	0.22
Irritability	-28.2	10.43	-2.7	0.007	-0.19
Platform	-21.18	7.04	-3.01	0.003	-0.15
Aggressive Cues on					
VVAWS	0.1	0.17	0.58	0.56	0.03
CTS2	-0.01	0.01	-0.74	0.46	-0.05
CTS2xVVAWS	-0.25	0.79	-0.32	0.75	-0.02
Education	0.68	0.46	1.5	0.14	0.07
Aggression	0.98	1.02	0.96	0.34	0.05
Indirect Effects					
Intervention Time on					
VVAWS via Cues	0.04	0.08	0.55	0.58	0.002
CTS2 via Cues	-0.003	0.004	-0.67	0.5	-0.004
CTSxVVAWS via Cues	-0.11	0.34	-0.31	0.76	-0.002
Residual Variances					
Aggressive Cues	161.76	11.08	14.6	-	0.99
Intervention Time	4002.293	267.221	14.98	-	0.95

Note: VVAWS= virtual violence against women exposure, Cues= Aggressive cues/acts identified by participant, Aggression= trait aggression via the Buss Perry Aggression Questionnaire, Irritability= trait irritability via the Caprara Irritability Scale, Platform= recruitment platform; CTS2= IPV perpetration via the Revised Conflict Tactics Scale, CTS2xVVAWS= interaction between VVAWS exposure and IPV perpetration; hypothesized covariates and sample characteristics controlled for where statistically supported (see Table 2); all other indirect effects were non-significant; χ^2(df=4, n=449)=3.78, p=0.44, BIC=8404.28, CFI=1.00, TLI=1.06, RMSEA<0.001, SRMR=0.01.

Table 5. Exploratory multiple mediation model results

	Estimate	SE	Ratio	*p*	Std
Direct Effects					
Intervention Time on					
JDRS	-8.83	4.36	-2.03	0.04	-0.1
Aggressive Cues	0.43	0.23	1.86	0.06	0.08
Education	4.23	2.29	1.85	0.06	0.09
Aggression	25.29	6.45	3.92	<0.001	0.26
Irritability	-26.84	9.36	-2.87	0.004	-0.18
Platform	-21.06	6.66	-3.16	0.002	-0.15
Aggressive Cues on					
JDRS	-3.65	0.88	-4.13	<0.001	-0.2
Education	0.73	0.44	1.68	0.09	0.08
Aggression	1.88	0.95	1.99	0.046	0.1
JDRS on					
VVAWS	0.02	0.01	2.79	0.005	0.12
Aggression	0.26	0.07	3.96	<0.001	0.24
Irritability	0.17	0.1	1.72	0.08	0.12
Education	<0.001	0.02	-0.01	0.99	<0.001
Indirect Effect					
Intervention Time on					
VVAWS via JDRS and Cues	-0.035	0.02	-1.45	0.15	-0.002
JDRS via Cues	-1.55	0.92	-1.69	0.09	-0.12
Cues on					
VVAWS via JDRS	-0.08	0.04	-2.31	0.02	-0.02
Residual Variances					
JDRS	0.45	0.03	15.83	-	0.96
Aggressive Cues	163.12	10.61	15.83	-	0.87
Intervention Time	4119.05	260.32	15.82	-	0.94

Note: JDRS= Justifications of Date Rape Scale, VVAWS= virtual violence against women exposure, Cues= Aggressive cues/acts identified by participant, Aggression= trait aggression via the Buss Perry Aggression Questionnaire, Irritability= trait irritability via the Caprara Irritability Scale, Platform= recruitment platform; hypothesized covariates and sample characteristics controlled for where statistically supported (see Table 2); all other indirect effects were non-significant; χ^2(df=5, n=501)=7.17, *p*=0.21, BIC=10482.27, CFI=0.98, TLI=0.93, RMSEA=0.03, SRMR=0.02.

Table 6. Final exploratory mediation model results

	Estimate	SE	Ratio	*p*	Std
Direct Effects					
Aggressive Cues on					
VVAWS	0.23	0.16	1.44	0.15	0.07
JDRS	-3.8	0.89	-4.27	<0.001	-0.21
Education	0.75	0.44	1.72	0.09	0.08
Aggression	1.7	0.95	1.79	0.07	0.09
JDRS on					
VVAWS	0.02	0.01	2.79	0.005	0.12
Aggression	0.26	0.07	3.96	<0.001	0.24
Irritability	0.17	0.1	1.73	0.08	0.12
Education	<0.001	0.02	-0.01	0.99	<0.001
Indirect Effect					
Cues on					
VVAWS via JDRS	-0.09	0.04	-2.34	0.02	-0.03
Residual Variances					
JDRS	0.45	0.03	15.83	-	0.87
Aggressive Cues	162.44	10.56	15.38	-	0.95

Note: JDRS= Justifications of Date Rape Scale, VVAWS= virtual violence against women exposure, Cues= Aggressive cues/acts identified by participant, Aggression= trait aggression via the Buss Perry Aggression Questionnaire, Irritability= trait irritability via the Caprara Irritability Scale; hypothesized covariates and sample characteristics controlled for where statistically supported (see Table 2); χ^2(df=1, n=501)=0.22, *p*=0.64, BIC=4844.74, CFI=1.00, TLI=1.08, RMSEA<0.001, SRMR=0.003.

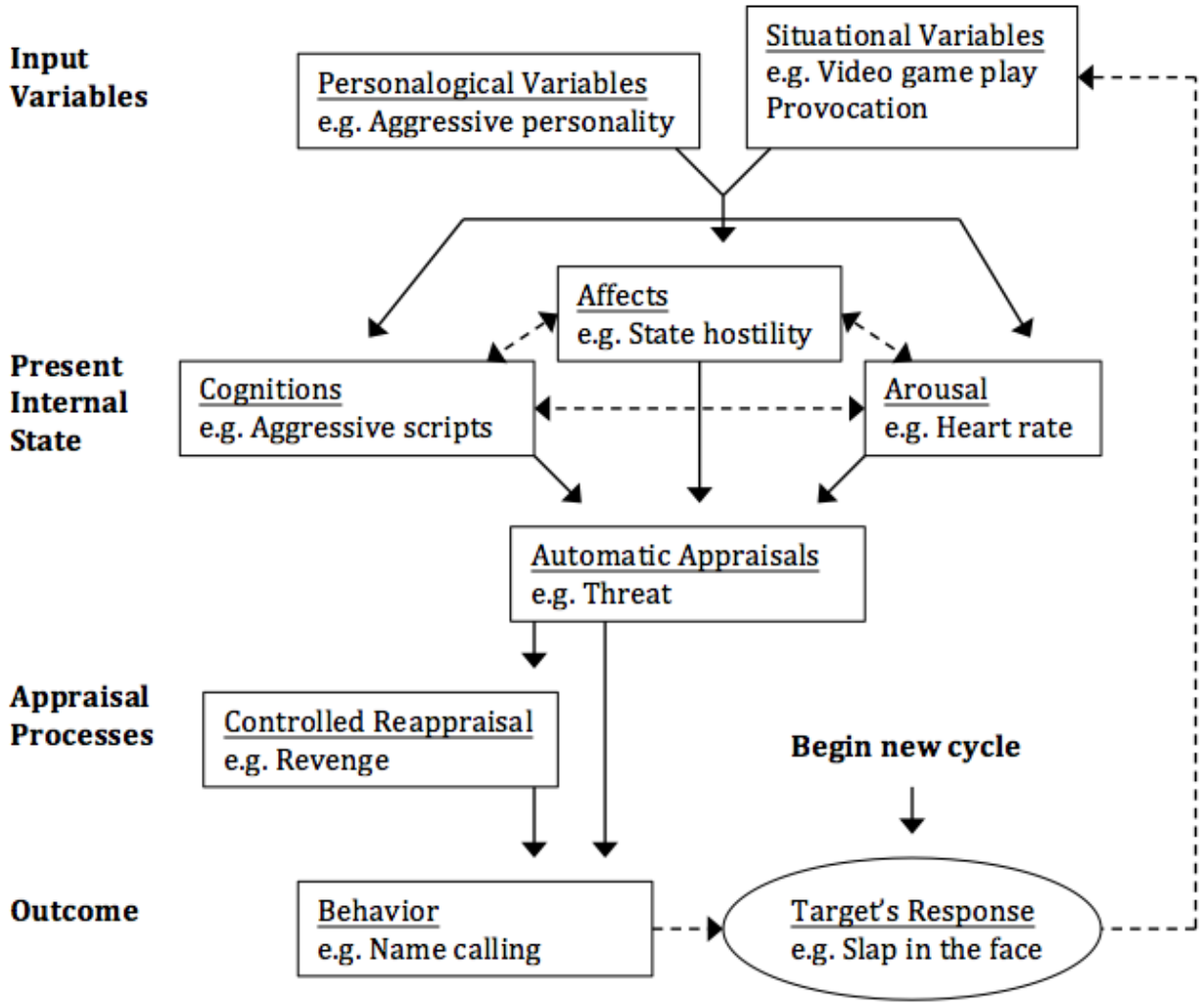

Figure 1. General Aggression Model (GAM): Long-term effects of video game violence. Adapted from Anderson and Dill (2000).

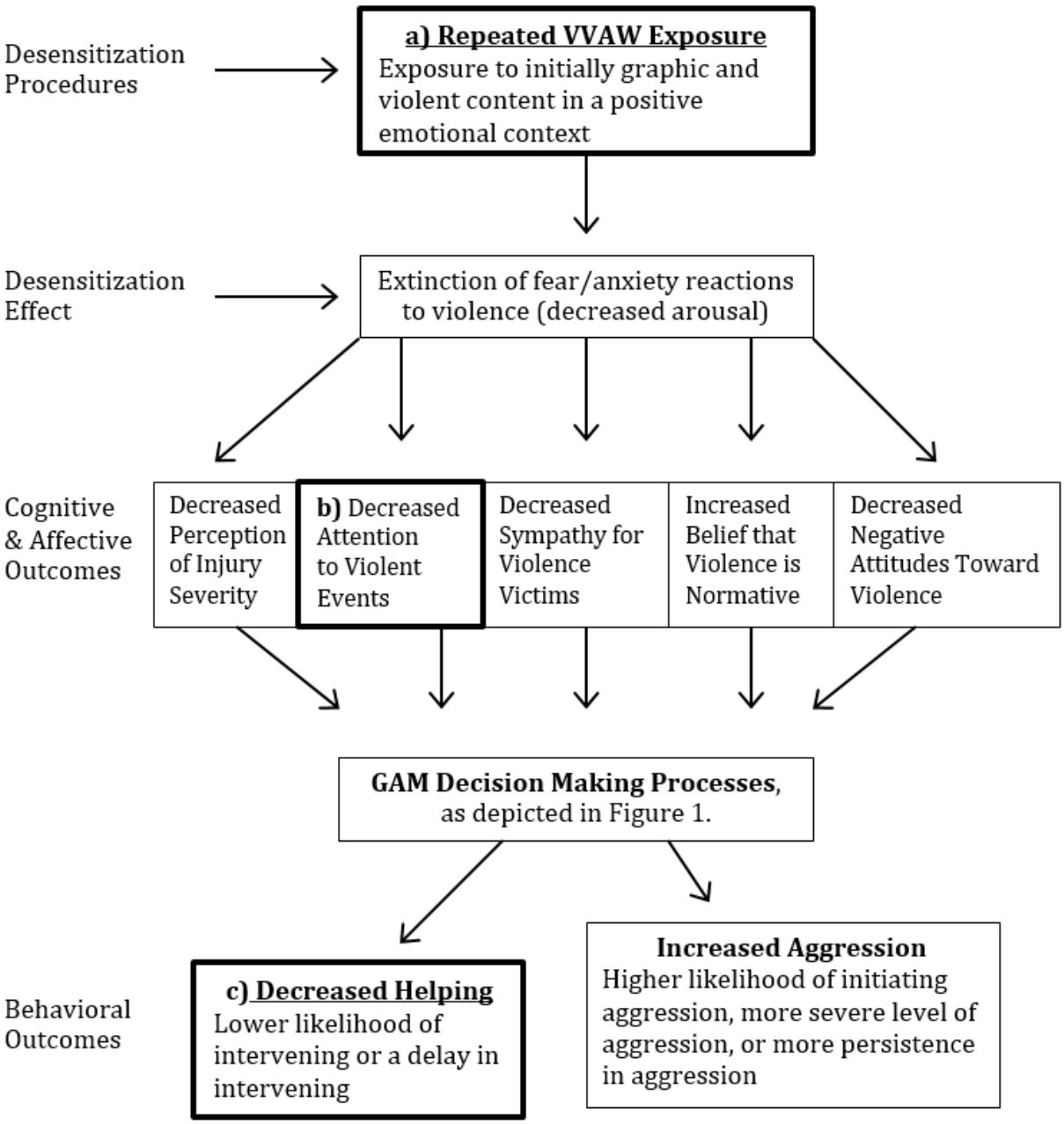

Figure 2. Model of the effects of exposure to VVAW.
Note: VVAW exposure serves as a desensitization procedure leading to decreases in attention to violent events and decreases in bystander intervention. Boldfaced boxes are variables of interest in the current study.

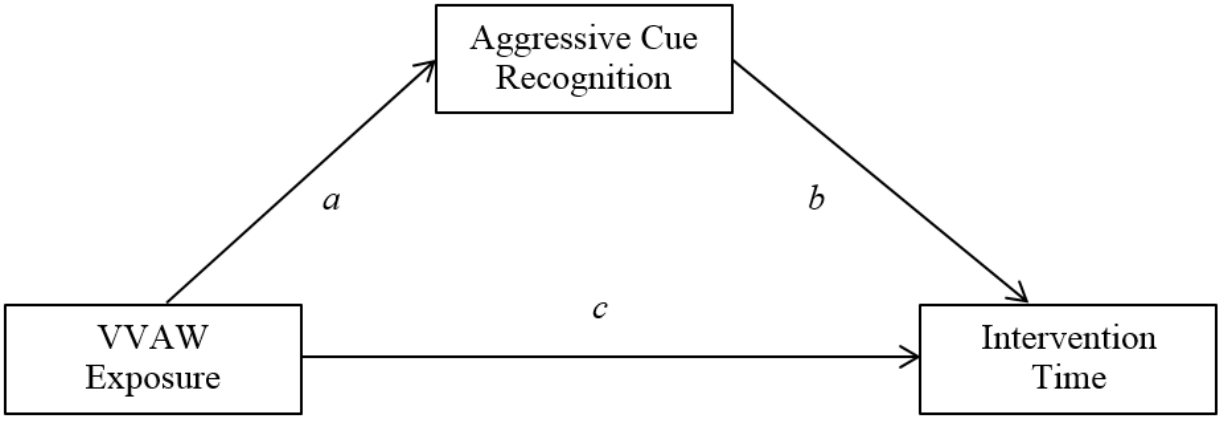

Figure 3. Hypothesized relationship between exposure to VVAW and bystander intervention behavior, as mediated by aggressive cue recognition.

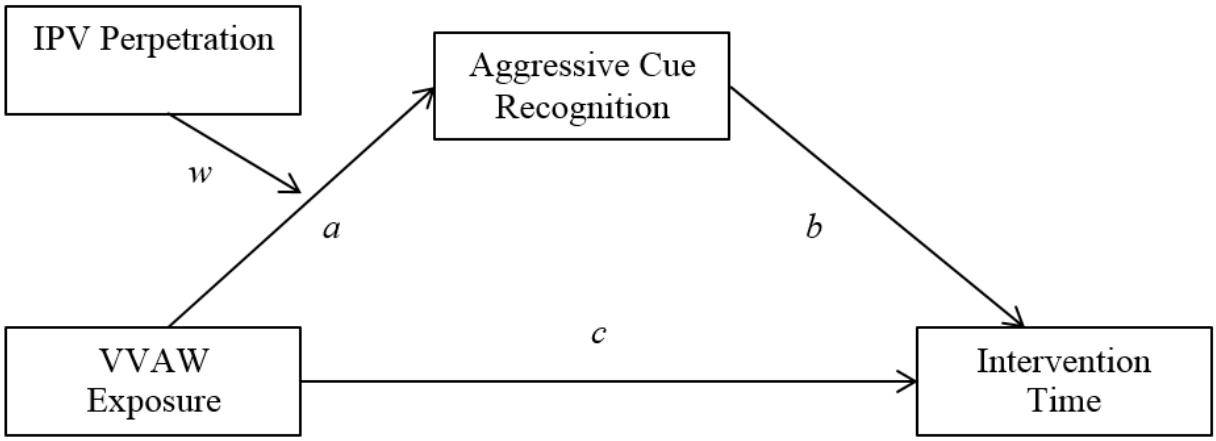

Figure 4. Hypothesized relationship between VVAW exposure and bystander intervention behavior, as mediated by aggressive cue recognition and moderated by past intimate partner violence perpetration.

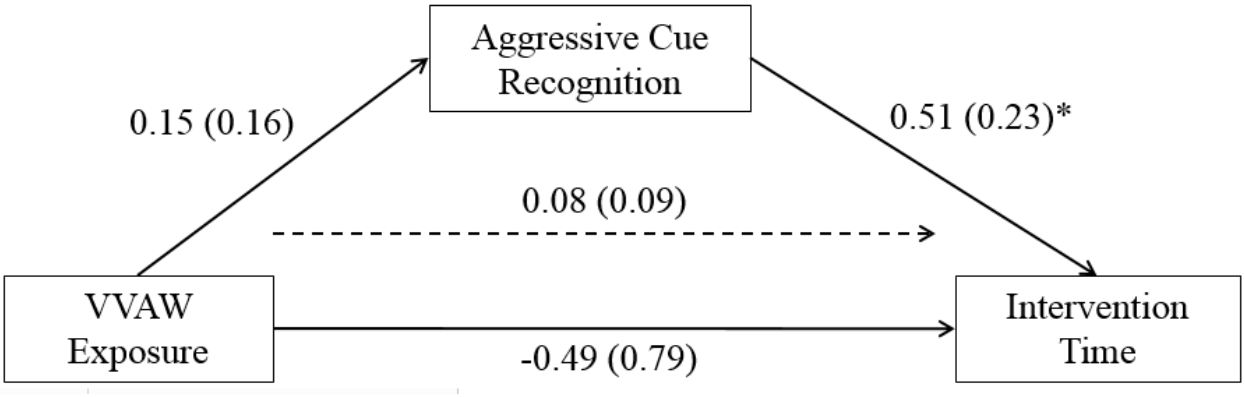

Figure 5. The relationship between VVAW exposure and bystander behavior, as mediated by aggressive cue recognition.

Note: **p*<.05; The dashed line indicates an indirect pathway; all estimates are unstandardized; standard errors are in parentheses; VVAWS= virtual violence against women; analyses controlling for Buss-Perry Aggression Questionnaire scores, Caprara Irritability Scale scores, recruitment platform, and education; all other indirect effects were non-significant; see Table 3 for full results; χ^2(df=2, n=501)=0.54, *p*=0.77, BIC=9444.62, CFI=1.00, TLI=1.36, RMSEA<0.001, SRMR=0.004.

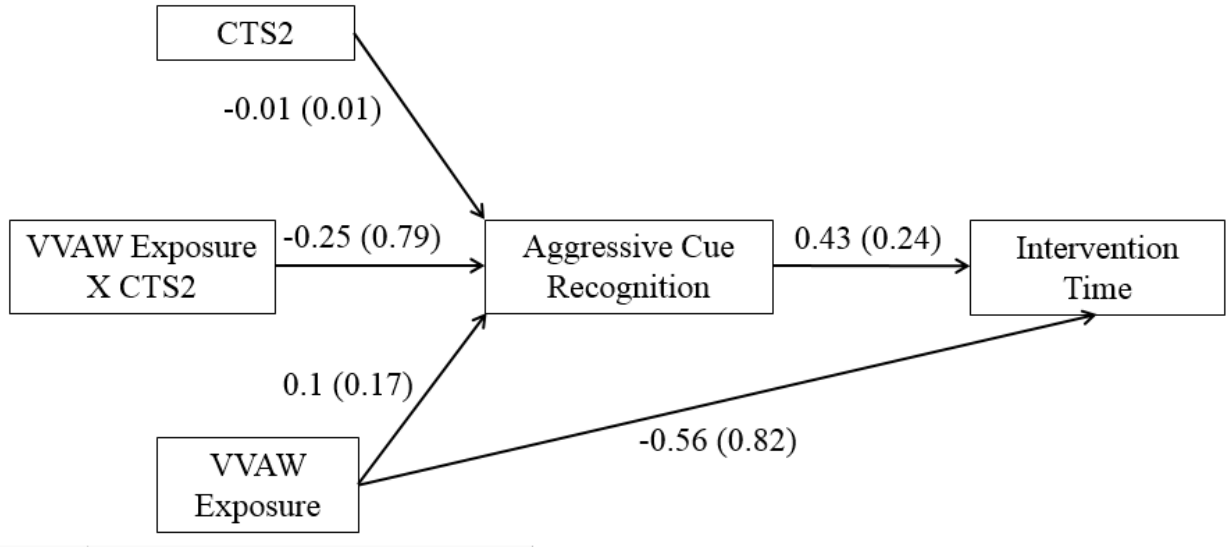

Figure 6. The relationship between VVAW exposure and intervention time, as mediated by aggressive cue recognition and moderated by IPV perpetration.

Note: VVAWS= virtual violence against women, Irritability= trait irritability via the Caprara Irritability Scale, Platform= recruitment platform, CTS2= IPV perpetration via the Revised Conflict Tactics Scale; VVAWS Exposure X CTS2= interaction between VVAWS exposure and IPV perpetration; all of the above paths were non-significant; all indirect effects were non-significant; all estimates are unstandardized; standard errors are in parentheses; analyses controlling for Buss-Perry Aggression Questionnaire scores, Caprara Irritability Scale scores, recruitment platform, and education; see Table 4 for full results; χ^2(df=4, n=449)=3.78, p=0.44, BIC=8404.28, CFI=1.00, TLI=1.06, RMSEA<0.001, SRMR=0.01.

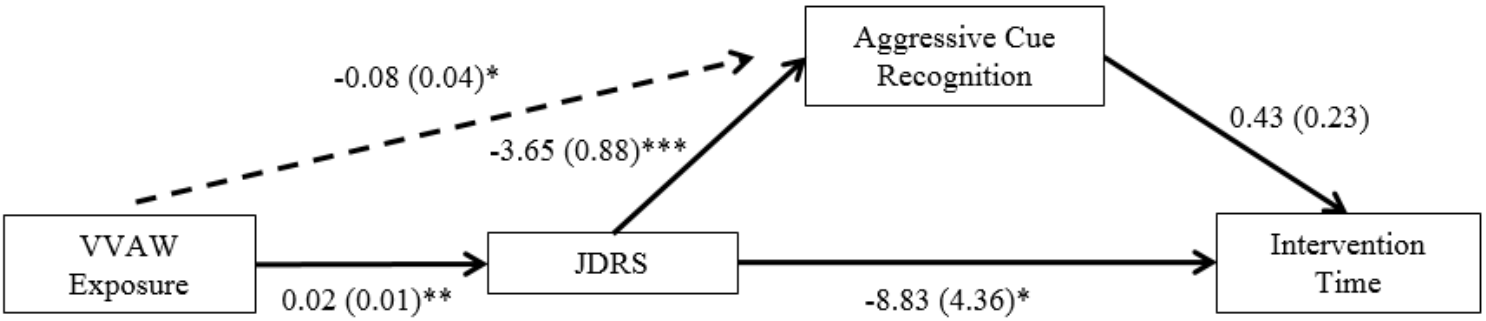

Figure 7. The relationship between JDRS and intervention time, as mediated by aggressive cue recognition and predicted by VVAW exposure.

Note: **p*<.05, ***p*<.01, ****p*<.001; JDRS= Justifications of Date Rape Scale, VVAWS= virtual violence against women; all other indirect effects were non-significant; all estimates are unstandardized; standard errors are in parentheses; analyses controlling for Buss-Perry Aggression Questionnaire scores, Caprara Irritability Scale scores, recruitment platform, and education; see Table 5 for full results; χ^2(df=5, n=501)=7.17, *p*=0.21, BIC=10482.27, CFI=0.98, TLI=0.93, RMSEA=0.03, SRMR=0.02.

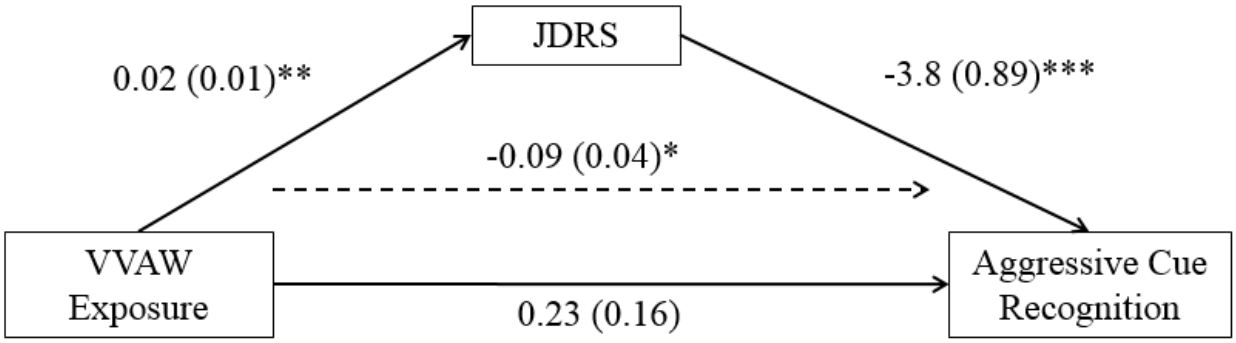

Figure 8. The relationship between VVAW exposure and aggressive cue recognition, as mediated by JDRS.

Note: *p<.05, **p<.01, ***p<.001; JDRS= Justifications of Date Rape Scale, VVAWS= virtual violence against women; all estimates are unstandardized; standard errors are in parentheses; analyses controlling for Buss-Perry Aggression Questionnaire scores, Caprara Irritability Scale scores, and education; see Table 6 for full results; $\chi 2$(df=1, n=501)=0.22, p=0.64, BIC=4844.74, CFI=1.00, TLI=1.08, RMSEA<0.001, SRMR=0.003.

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