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Sexualization and aggression against women: A focus on sexualized characters in video games

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"It's dangerous to go alone! Take this."

When I started my Ph.D., I did not meet an old sage in a cavern and I did not receive a sword to face the difficulties along the road. Unarmed, I was sure to lose all my hearts before succeeding in my quest. But it was without counting on all the fairies I would meet on the way![1]

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[1] If you do not know the reference, the quotation comes from a 1986 video game called *The Legend of Zelda*. In that game, your health is represented by hearts you lose every time you get hit by a monster. Fairies are the best way to recover all your hearts and they can even resurrect you if you die!

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Prologue

> If Pac-Man had affected us as kids, we'd all be running around in dark rooms, munching pills and listening to repetitive electronic music.
> – Marcus Brigstocke, English comedian, actor and satirist

Whether you find them stupid and useless or fun and useful, no one can deny that video games are part of our everyday life and have an impact on our culture. Video games have created icons known by everybody such as Mario, Pac-Man, Lara Croft, and Pikachu. Even if you never touched a video game console in your life, you are probably familiar with these characters. Video games started on computers and consoles, but they soon invaded movie theaters, TV screens, literature, and the other forms of media. Currently, *Grand Theft Auto V* is considered the most profitable cultural product of all time (Cherney, 2018). In short, video games are everywhere and even if you do not like them, you have to deal with them.

Video game players are always able to tell you about the positive impact that video games have had for them. Some may just say that video games are fun and help them relax. Others may tell you that the story of a certain video game almost made them cry – they definitely cried, but they might never admit it. Video game players sometimes even explain that video games have taught them important things (e.g., patience, perseverance, friendship, history). However, if they can admit that video games had a positive influence on them, they rarely admit that they can have a negative influence.

Potential negative consequences of video games have always been a worry. More precisely, the content of video games and its potential impact have raised a lot of concerns. Recently, awareness has been raised among the general public about the presence of sexualized and sexist content in video games. Both Anita Sarkeesian (in the United State) and Mar_Lard (in France) have pointed out that women are poorly represented in video games, are often represented as damsels in distress or as sex objects. They also denounce the harassment and discrimination faced by female players in the video game community.

Despite the many specific examples given by Anita Sarkeesian and Mar_Lard, the real consequences of sexualized video game content still remain unclear. Scientific research is needed to determine these consequences. The present thesis focuses on one main question: can sexualized content from video games impact aggression against women?

Five studies will be presented. In the first study, an objective instrument of evaluation of sexualized content was designed and validated. Three experiments were then carried to examine the possible impact of sexualized content on sexual harassment (Study 2), general negative attitudes toward women (Study 3), and dehumanization and rape myth acceptance (Study 4). Study 4 also evaluated the impact of sexualized media on aggression in video games but also in other forms of media.

Theoretical Section

Chapter 1: Aggression against Women

The concept of aggression is paradoxically both simple and complex. Aggression is simple because most acts of aggression are easily identified, such as by witnesses. Yet, aggression is complex for two reasons. First, the term aggression is used differently by lay people and researchers. For example, during a heated argument, one might be qualified as aggressive because he used a stronger voice. Second, aggression includes a large variety of behaviors and involves several moderators.

Definition

Among researchers, aggression is defined as any behavior intended to harm another person who does not want to be harmed (Baron & Richardson, 1994). This definition includes four important features (Bushman, 2017). First, aggression is an external and visible behavior (e.g., swearing, hitting, slapping and so on). Even if aggressive thoughts and emotions exist (see below regarding "aggressive cognition and affects"), they cannot be qualified as aggression. Second, aggression involves at least two people, which means that acts of self-harm do not qualify as aggression. Third, aggression is intentional rather than accidental. For example, painful actions that help rather than hurt the person (e.g., emergency stitches) are not considered aggressive behaviors. Fourth, the victim wants to avoid being harmed. Sado-masochistic practices are therefore excluded from aggression. Finally, it is important to note that failing to harm another while intending to, is still considered as an act of aggression. For example, throwing a stone at someone is aggressive, regardless of whether the stone hits the victim. Based on this definition, the previous example is not aggressive. The person that raised his voice is only trying to give more weight to his point of view without intending to harm anybody.

According to this definition, aggression includes a wide variety of behavior that can range from mild (e.g., dirty look) to extreme violence (e.g., mass shooting). Aggression must be distinguished from violence. Violence can be defined as any behavior intended to cause extreme physical harm, such as injury or death, to another person who does not want to be harmed (Bushman, 2017). For example, pushing someone to get him out of the way will be considered as aggression, but not violence, whereas intentionally pushing someone down the stairs would be an act of violence. All acts of violence are aggression, but not all acts of aggression are violence.

Aggressive Cognition and Affects

Aggressive cognition and aggressive affect are important precursors to aggression (J. J. Allen & Anderson, 2017). Aggressive cognition is defined as thoughts, memories, and ideas that are associated with aggression and violence. Aggressive cognition includes aggressive beliefs and attitudes (e.g., believing that it is acceptable for a husband to hit his wife), aggressive perceptual schemata (e.g., the tendency to perceive ambiguous situations in a hostile manner, such as believing that your wife is angry because she is quiet), aggressive expectation schemata (e.g., expecting aggressive comments from a feminist friend), aggressive behavioral scripts (e.g., thinking that it is necessary to play rough to sexually turn a woman on), and hostile attribution bias (e.g., interpreting the intention of others as aggressive, Anderson & Bushman, 2002). Aggressive affect includes feelings of anger, hostility, and irritability (Anderson & Bushman, 2002).

Both aggressive cognition and aggressive affect cannot be considered as aggression because they are not external and visible behaviors. However, their presence increases the probability of emitting aggressive behavior (J. J. Allen & Anderson, 2017). Indeed, those that have easily accessible aggressive cognition tend to perceive their surrounding as more hostile and to find aggressive solutions for their interpersonal conflicts. Similarly, aggressive affect can be caused by various situations (e.g., provocation), and will facilitate aggressive behavior. In other words, aggressive cognition and aggressive affect are mediators of aggressive behavior (Anderson & Bushman, 2002). However, neither aggressive cognition, nor aggressive affect are necessary or sufficient conditions to cause aggressive behavior. For example, someone can leave a provocative situation even if they have aggressive thoughts and feel angry inside. Similarly, aggressive behavior can occur without the presence of aggressive affect or cognition (e.g., acts of torture). Such kind of aggressive behavior is called instrumental aggression.

Aggressive Behavior against Women

In western society, several aggressive and violent acts mostly target women compared to men. At the top of the list come all types of sexual aggression. In the United States, women are four times more likely to be sexually assaulted and twice more likely to be sexually harassed than men (Stop Street Harassment, 2018). Prevalence numbers show that around 63% of women have been sexually harassed once in their life (FRA, 2014; Stop Street Harassment, 2018). Violence and sexual violence by an intimate partner (22%) accounts for two thirds of the global violence

and sexual violence committed against women (31.8%; FRA, 2014). During their lifetime, around 18.3% of women have been raped compared to 1.4% of men (CDC, 2010). European reports are more encouraging, but are still discouraging — 1 out of 20 women have been raped during their lifetime (FRA, 2014). Among all victims of human trafficking in Europe and North America, 76.5% are women or girls and mostly for sexual exploitation (UNODC, 2016).

Non-sexual violence against women includes a higher risk of violence in an intimate environment. For example, homicides tend to affects men four times more often than women, except for intimate partner/family-related homicides where two thirds of the victims are women (UNODC, 2013). Around 20% of women have experienced violence from a partner in Europe and North America, compared to around 12% of non-partner violence (WHO, 2013). Concerning online harassment, men and women are globally equally vulnerable to insults, bullying and physical treats. However, stalking and sexual harassment occurs 2 to 3 times more often to women than men (Pew Research Center, 2014).

Although it cannot be qualified as aggression (i.e., because we do not know if the motives are to hurt women), it is important to mention that women also suffer direct discrimination in various environments. Women are less likely than men to access senior and middle management positions and, for equivalent job positions, they usually earn significantly less than men (Blau & Kahn, 2016; United Nations Statistics Division, 2015). Access to some type of job is more difficult for women because they are considered as less competent than men for those jobs, for example, less than 30 percent of the world's researchers are women (Computer Science, 2018) and men are four times more likely to be hired in technology jobs (Brown, 2018). Further, some of these discriminations are even institutionalized. Indeed, 155 countries have at least one law discriminating on basis of gender (World Bank Group, 2016). In most countries, women have to pay more than men for similar products. This phenomena is called the pink tax and concern several product that cost more for women (e.g., toiletries, toys, clothing; Cone, 2019).

This list of aggressive behaviors against women is not exhaustive, but demonstrates the importance of studying the phenomenon. Aggression against women is an important societal problem. Despite obvious consequences such as injuries and death, violence and sexual violence by a partner causes sexual health problems (e.g., STDs), mental health difficulties (e.g., higher risk of depression, anxiety, PTSD, alcohol use disorders), and even suicide (WHO, 2013). Each of these behaviors have a cost due to increased demand in medical care, health care, police

intervention, diminution of the victim quality of life and productivity. For example, in the United States, rape alone has an estimated cost for society of $129 billion per year (National Institute of Justice, 1996).

Aggressive Attitudes toward Women

Attitudes can be defined as general evaluations that people hold about themselves, other people, objects, and issues (Petty & Cacioppo, 1986). Among the various aggressive attitudes toward women, four seem particularly important for predicting aggression against women: sexism, rape myth acceptance, dehumanization, and sexual objectification.

Sexism is probably one of the most studied aggressive attitudes in the literature. Sexism can be defined as "a multidimensional construct that encompasses two sets of sexist attitudes: hostile and benevolent sexism" (Glick & Fiske, 1996). Hostile sexism can be defined as all aspects of sexism that correspond to hostility and prejudice toward women. Hostile sexism is based on a hostile form of sexuality and on the idea that men are superior and more dominant than women (Dardenne, Delacollette, Grégoire, & Lecocq, 1996). Examples of hostile sexism include sexual harassment, sexist comments or jokes, and physical violence. Benevolent sexism is often wrongly perceived as being a positive form for the perceiver. This set of interrelated attitudes tend to elicit outwardly pro-social or intimacy-seeking behaviors, but still places women in an inferior position by viewing them in a stereotypical manner and in restricted roles. An example of benevolent sexism would be helping a woman to carry something heavy, which implies that she is too weak to do it herself. Benevolent sexism can be separated into three main forms that are: protective paternalism (i.e., women should be loved, protected and cherished because they are too weak to protect themselves), complementary gender differentiation (i.e., women complement men because of their purity, sensitivity, culture and moral sense), and heterosexual intimacy (i.e., men and women are incomplete without each other).

Rape myth acceptance can be defined as any belief that will cause to trivialize and minimize the act of rape, or to hold the victims partially or fully responsible for being raped (Burt, 1980; Lonsway & Fitzgerald, 1994; Loughnan, Pina, Vasquez, & Puvia, 2013). Such beliefs can concern the rape, the rape victim, or the rapist. Rape myths take many forms but can be generally grouped into four main categories (McMahon & Farmer, 2011): (1) the victim had it coming (e.g., her outfit was immodest and has caused the sexual desire of the perpetrator), (2) the rape cannot be considered as such (e.g., the victim did not clearly say "no" to the perpetrator), (3) the perpetrator

cannot be hold responsible (e.g., he was too drunk to understand what he did), (4) the victim lied about the rape (e.g., she cheated on her boyfriend so she pretended to be raped). A recent example of rape myth acceptance occurred during a trial in Ireland (BBC, 2018). A perpetrator was acquitted because his victim – a 17-year-old adolescent – was wearing a thong at the time of the rape. The thong was used as a proof for the victim consent.

Dehumanization is a process through which a person is treated as an animal, an object, or not completely human (Gervais, Bernard, Klein, & Allen, 2013; Haslam, 2006). The dehumanized person is delegitimized as a human being and morally excluded (i.e., moral values do not apply to that person). By dehumanizing others, one disengages himself/herself from moral self-sanction (Bandura, 2002). For example, a rapist might dehumanize his victim, which means that he will not feel guilt or remorse because usual moral values do not apply to the victim. Two main forms of humanness can be denied the person (Haslam, 2006): human uniqueness and human nature. Human uniqueness includes characteristics that distinguish human and other related categories of animals. Among these characteristics are social learning, refinement, civility, moral sensibility, rationality, logic, and maturity. Human nature includes characteristics that can be found among other species, but that are still fundamental and shared by all humans. For example, creativity might not be unique to human, but is an essential attribute of humanity. Such characteristics are emotional responsiveness, interpersonal warmth, cognitive openness, agency, individuality, and depth. The denial of these two forms of humanness corresponds to two forms of dehumanization. Denial of human uniqueness is called animalistic dehumanization and denial of human nature is called mechanistic dehumanization. More concretely, those that are animalistically dehumanized are perceived as being more animal than human. In other words, they are perceived as being immoral and immature, and their behavior appears to be driven by instincts, motives, and appetites, instead of mediated by cognition. Those that are mechanistically dehumanized are perceived as objects or automaton. They are seen as lacking in depth, as being cold, rigid, superficial, incapable of agency, interchangeable, and passive. Their behaviors are interpreted as the consequence of causal events instead of their own will. Even if dehumanization is not specifically an aggressive attitude toward women, dehumanizing women causes aggressive behavior toward them, such as sexual aggression, sexual harassment, and objectifying gazes (Gervais et al., 2013; Rudman & Mescher, 2012).

Objectification can be considered as a specific form of dehumanization. When applied to women, one of the most common forms of objectification is sexual objectification. Sexual objectification occurs when a woman become instrumental and is not seen as an entire human being because one focuses on someone's physical attributes or sexual function, instead of focusing on his/her face and other non-observable attributes, such as thoughts, feelings, and desires (Loughnan et al., 2010; Vaes, Paladino, & Puvia, 2011). In other words, when women are objectified, their sexual body parts or functions are separated from their person (Gervais et al., 2013). Sexual objectification provokes a large variety of behaviors that range from inappropriate compliments and sexual gaze on the one hand, to sexual assault, exploitation and trafficking on the other hand. Concrete examples of sexual objectification can be found among the clients of strippers and prostitutes.

In the literature, a large variety of attitudes toward women exists. However, these attitudes are often more specific forms or mixed forms of sexism, rape myth acceptance, dehumanization, and sexual objectification. As example of a specific form of hostile sexism is attitudes toward women as a manager (Peters, Terborg, & Taynor, 1974), which designates the attitudes about women's right and abilities in a business setting. An example of rape myth acceptance and hostile sexism combined is adversarial sexual beliefs, which refers to the expectation that sexual relationships are fundamentally exploitative, that each party to them is manipulative, sly, cheating, opaque to the other's understanding, and not to be trusted (Burt, 1980). All of these aggressive attitudes toward women interact with each other and can facilitate aggression.

Summary

Aggression is a concept that includes a wide range of behaviors from minor acts (e.g., name calling) to severe ones (e.g., murder). Aggression is influenced by several mediators, including aggressive attitudes, cognition, and affect. Women are the prime victims of several specific aggressive behaviors. Compared to men, women are more often the victims of sexual aggression, sexual harassment, violence committed by a partner, murder by a partner, stalking, and discrimination. These acts of aggression are particularly influenced by four aggressive attitudes toward women, namely sexism, rape myth acceptance, dehumanization, and sexual objectification.

Chapter 2: An Integrated Model to Explain Aggression against Women: The Confluence Model Integrated with the General Aggression Model

Two models are particularly relevant to explain aggression against women: the General Aggression Model (GAM; Anderson & Bushman, 2002, 2018) and the Confluence Model (Malamuth, Linz, Heavey, Barnes, & Acker, 1995). The first model is a meta-theory that describes the general underlying mechanisms of aggression. The second model focuses on the various factors that can specifically predict male-on-female sexual aggression. Both models have been integrated together to predict aggression against women (Anderson & Anderson, 2008). This chapter will first briefly describes the five theories that have been integrated together to create the original GAM (Anderson & Bushman, 2002), then describe the revised GAM (Anderson & Bushman, 2018), the Confluence Model (Malamuth et al., 1995), and the Confluence Model integrated into the GAM that was designed by Anderson and Anderson (2008).

One Model to Integrate Them All

The original version of the GAM (Anderson & Bushman, 2002) was designed to integrate and synthetize the five most used theory of aggression and learning at the time: cognitive-neoassociationistic theory, social learning theory, script theory, excitation transfer theory, and social interaction theory. It also extends these theories in important ways and has four advantages compare to individual theories. First, the GAM offers a more parsimonious theoretical framework. Second, it better explains aggressive behaviors that are based on multiple motives (e.g., instrumental and affect-based aggression). Third, the GAM aid for a better understanding of aggression development across time.

Cognitive-Neoassociationistic Theory

According to cognitive-neoassociationistic theory (Berkowitz, 1990), aversive events (e.g., provocation, frustration, loud noises) can produce negative affect that will stimulate thoughts, memories, expressive motor reactions (i.e., "automatic reactions that occur in conjunction with specific emotions, largely in the face", Anderson & Bushman, 2002), and physiological responses associated with fight and flight tendencies. Cognitive-neoassociationistic theory is based on the idea that memory consists of a network of concepts and of links between these concepts (A. M. Collins & Loftus, 1975). Each individual concept can be represented as a node, and

each relation between these concepts can be represented as links. Strongly related nodes become knowledge structures that can include emotions, behavioral responses, and beliefs. Nodes can be activated through priming, which leads to the activation of these knowledge structures. For example, a man who holds attitudes of hostile sexism and rape myth acceptance might associate together concepts such as "sexualized women" and "sexually available". If he tries to seduce a woman that represents such concepts for him and is turned down, his frustration, associated with the idea that women like to play "hard to get", might lead to sexual aggression.

Social Learning Theory

According to social learning theory, direct experience and observation are the two main ways to learn aggression-related behaviors, attitudes, expectations, beliefs, and perceptual schemata (Bandura, 1983, 2001; Mischel & Shoda, 1995). Such learning can occur in a number of different contexts such as direct social interactions, watching television or movies, or playing video games. Further, the learner not only observes the behavior itself but also whether the behavior is rewarded or punished. Therefore, a form of aggressive behavior might have been learned through observation, but the probability of performing the behavior will depend on whether it was rewarded or punished (Bandura, 1965; Bandura, Ross, & Ross, 1961). For example, one might observe a peer performing sexual harassment behavior in the street, but avoid performing it himself due to the presence of the police. However, later, when the risk of punishment has vanished (e.g., the police have left), he might perform the aggressive behavior in order to obtain the approval of his peers.

Script Theory

Scripts are well-learned, well-rehearsed, and highly associated concepts in mind, which often involve an understanding of causation, goals, and plans of action (Abelson, 1981; Schank & Abelson, 1977). Scripts are an important part of one's learning because they are used to organize knowledge, guide behaviors and define situations. When facing a situation, a person first selects a corresponding script and then assumes a role in the script. For example, a restaurant script helps one know what to expect when going to a restaurant (i.e., enter restaurant, wait for a host, host seats you at a table and gives you a menu, waiter/waitress takes your order, cook prepares your order, waiter/waitress brings your food to the table, eat food, ask waiter/waitress for a check, pay for food, exit restaurant). Therefore, scripts can be considered as a group of strongly linked concepts in memory that become a unitary concept. The more a script is rehearsed, the more accessible it becomes in memory. Rehearsal increases the number of paths through which a script can be activated and

the strength of the path themselves (e.g., one might find really difficult to travel by plane the first time, but the "airport script" will become stronger after going to an airport several times). Scripts can guide every kind of behavior, including aggressive behaviors. For example, being exposed to aggression through media can create scripts that involve aggressive behaviors (Huesmann, 1998).

Excitation Transfer Theory

According to excitation transfer theory (Zillmann, 1988), when two events occur within a short amount of time, the arousal caused by the first event might be misattributed to the second event, even if both events do not share the same hedonic value. Therefore, if a first event causes arousal (e.g., exercising), and a second event causes joy (e.g., receiving some good news), then the arousal of both events will add up to cause even more joy. In the context of aggression, the arousal from a first event (e.g., having a car accident) can add up with the arousal from an event that caused anger (e.g., being provoked by the other driver). Further, if the arousal is consciously attributed to anger, anger can last for long periods of time, leaving the person more prone to aggression even after the dissipation of the initial arousal. The anger can also be prolonged through rehearsing the event in memory.

Social Interaction Theory

Social interaction theory is particularly appropriate when trying to explain goal-motivated aggression (Tedeschi & Felson, 1994), also called "instrumental aggression.". In this theory, aggression is defined as a social influence behavior (i.e., aggression can be used to cause changes in the victim's behavior). For example, aggression can be used to obtain valuables (e.g., sex, services, money, information), to retaliate against a perceived injustice, or to bring about desired social and self-identities (e.g., appear manly, competent, tough).

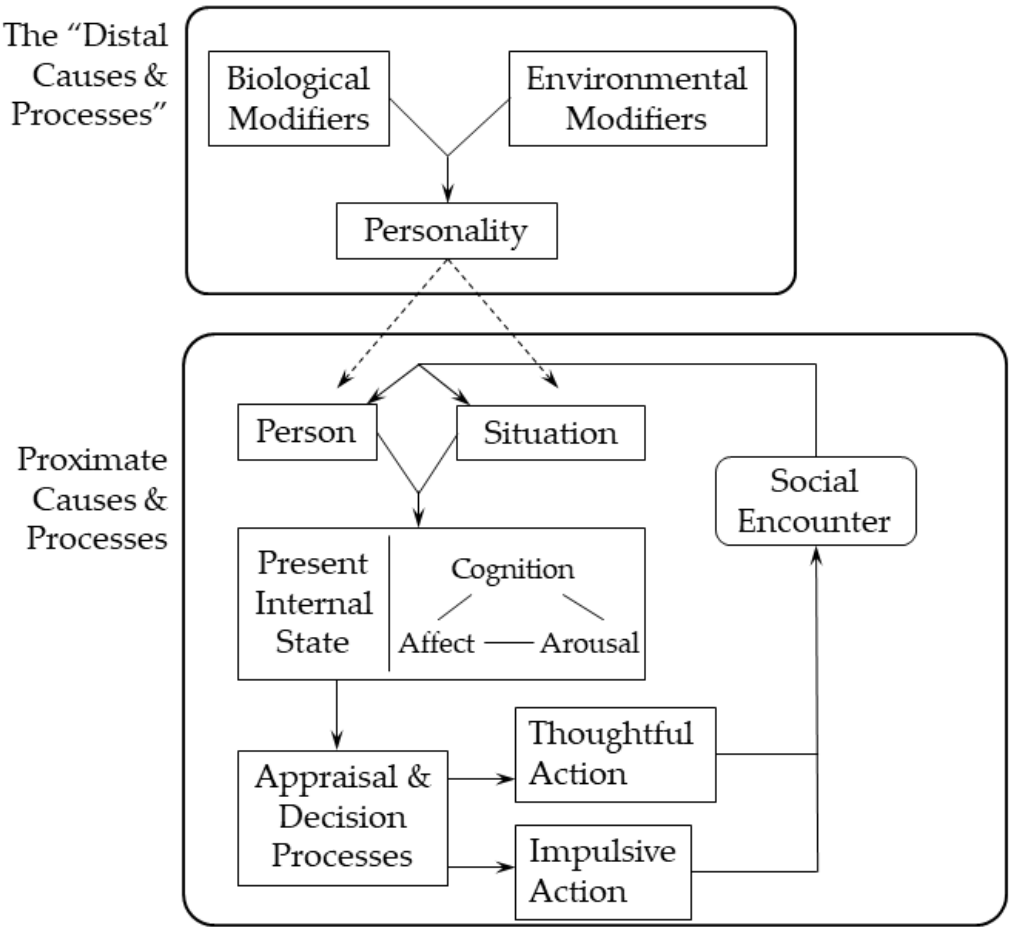
The General Aggression Model

The core of the General Aggression Model (GAM) has remained the same since it was first proposed (Anderson & Bushman, 2002). However, slight modifications have occur over time (e.g., Anderson & Bushman, 2018).

The General Aggression Model (GAM; Anderson & Bushman, 2002, 2018; Figure 1) is a model that describes each step leading to behavioral aggression. When facing a situation that can potentially result in aggression, proximate and distal causes and processes interact together to determine behavior. The core of the model – proximate causes and processes – describe an episode of social interaction. During that episode,

the interaction between the characteristics of a person and the features of the situation influence the present internal state. Modification of the present internal state will influence a process of appraisal of the situation that might result in aggression. The distal causes and processes described by the model are all the long-term influences that have modified the personality of the person, which influences the characteristics that a person brings into a social interaction.

Figure 1. General Aggression Model.



Proximate Causes and Processes

The core of the GAM is the proximate causes and processes consist of three main parts: (1) person and situation variables, (2) present internal state, and (3) appraisal and decision processes (Anderson & Bushman, 2018).

Person and situation variables. Aggression can be influenced by two types of input variables: personal and situational variables. Personal variables are all the characteristics that the person brings into the situation, such as gender, age, race, IQ, biological dispositions, personality traits, beliefs, attitudes, values, scripts, long-term goals, etc. Situational variables are all the features of the environment that can

influence aggression, such as presence of a weapon, a frustrating event, exposure to violent and/or sexualized media, a provocation, drug and alcohol use, aggressive peers, etc. Together, personal and situational variables can influence the individual's present internal state.

Present internal state. The present internal state is composed of three main routes that interact with each other: cognition, affect, and arousal (Anderson & Bushman, 2002). Input variables (i.e., personal and situational variables) can prime or activate aggressive thoughts, schemata, and scripts in memory. For example, playing a violent sexualized video game might activate hostile thoughts against women in memory. Affect corresponds to the negative or aggressive mood and emotions that can be directly influenced by input variables, which can thereafter influence behaviors (e.g., my car is damaged because of an accident, which makes me angry and more aggressive toward the other driver). The last route is arousal, which can initiate a person to be more ready to act (high arousal) or to inhibit (low arousal) behavior. For example, it has been shown that when someone is aroused through exercise, that person may act more aggressively (Zillmann, Katcher, & Milavsky, 1972). Each of these routes can either influence behavior directly or through their interactions. For example, affect and cognition can interact with each other through mood-congruent cognitions and mood-dependent memory (Buckley & Anderson, 2006). Mood-congruent cognition is a phenomenon in which a person's mood increases the processing of information that is affectively similar (e.g., depressed people have more difficulty to disengage their attention from sad faces than other expressions; Sears, Thomas, Lehuquet, & Johnson, 2010). Mood-dependent memory is the finding that information learned in a particular mood is best retrieved in that mood (e.g., depressed people better recall faces with a negative facial expression than faces with a positive facial expression; Ridout, Astell, Reid, Glen, & O'Carroll, 2003). In other words, people tend to pay more attention to mood-matching information and are more likely to store it in memory.

Appraisal and decision processes. The last step before the apparition of aggressive behavior is the appraisal and decision processes. The modification of the internal state caused by the inputs will provoke an immediate appraisal of the situation. Such automatic (i.e., effortless, occurring without awareness) interpretations of the situation can result in an impulsive behavior. For example, after being angered by his wife, a man could slap her. However, if the immediate appraisal is judged to be unsatisfactory and if the person has sufficient time and cognitive resources, then the situation might be reappraised and may lead to a

thoughtful action (e.g., revising the initial judgment). For example, if the man does not want to hit his wife – the outcome is unsatisfactory – he might choose to storm out of the room instead. However, the result of an immediate appraisal is not automatically aggression (e.g., facing a harasser, the impulsive reaction of a woman might be to flee). Similarly, the reappraisal process leads to a thoughtful action that might be aggressive (e.g., the same woman might find it unsatisfactory to flee in front of a harasser and therefore might choose to retaliate). Whether or not the immediate appraisal and reappraisal lead to an aggressive behavior is dependent on all the preceding mechanisms (i.e., person and situation inputs, and changes to the present internal state).

Distal Causes and Processes

The distal causal factors of aggression refer to stable factors that influence the development of personality (Anderson & Bushman, 2018). Distal factors include both biological and environmental modifiers. Biological modifiers include all the biological elements of a person that can influence aggressiveness such as impulsivity deficits, Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder, various genetic risk factors, hormones, etc. Similarly, environmental modifiers include all the long-term influences caused by one's environment such as poor parenting, antisocial peers, growing up in a violent neighborhood, repeated exposure to violent media, etc. Each of these variables creates and reinforces beliefs, attitudes, perceptual schema, expectation schema, behavior scripts, and affective components that are part of one's personality.

The GAM can be seen as a closed circle in which distal and proximate causal factors influence each other. The distal aspects of personality will influence the various elements that one brings into the proximal personal variable, as well as the interpretation of proximal situational variables. For example, a man that has developed hostile sexism through repeated exposure to pornography can more easily activate such beliefs when discussing with a feminist, which can lead to the activation of hostile sexist thoughts. In return, each social encounter causes learning, and the repetition of learning can lead to the modification of the personality. For example, someone living in a nonviolent neighborhood can expect people in the street to be nice and helpful. However, if the same person moves into a violent neighborhood, situations of aggression might occur more often and each of these social encounters might create the expectation schema that the street is a dangerous place where one can be assaulted at any moment.

The Confluence Model

The Confluence Model (Malamuth, 2003; Malamuth et al., 1995; Vega & Malamuth, 2007) was initially designed to specifically explain sexual aggression. The confluence model includes two main groups of variables that predict sexual aggression against women: hostile masculinity and promiscuous-impersonal sex.

Hostile Masculinity

Hostile masculinity can be described as a personality profile that combines (1) hostility, distrust, insecurity, defensive, and hypersensitive attitudes toward women, and (2) willingness to control and dominate women. High hostile masculinity is related to fear of rejection by women, anxiety about romantic relationship, and feelings of threat, especially by women in positions of power. In this context, dominance is a way to maintain control over women.

Further, hostile masculinity accounts for two individual differences: masculine gender role expectations and general hostility. Stress associated with the traditional masculine role may cause men to believe that women can challenge their role fulfillment. In other words, in order to be a "real man", one must embrace masculine roles defined by society and culture such as seeking power, toughness, dominance, aggressiveness and competitiveness. In contrast, stereotypically feminine qualities must be rejected, such as softness, empathy, and sensitivity. Displaying traditionally feminine qualities for a hostile masculine male might be associated with loss of male identity and lead to dominating and/or aggressive behavior in order to recover masculine superiority. The second individual difference that was accounted for in hostile masculinity is general hostility. General hostility is a predictor of more general aggression against women (Malamuth et al., 1995). Indeed, general hostility appears to be a good predictor of nonsexual aggression, whereas hostile masculinity is a good predictor of sexual aggression.

Promiscuous-Impersonal Sex

Promiscuous-impersonal sex is defined as the tendency to have a noncommittal, game-playing orientation in sexual relations (Malamuth et al., 1995). The promiscuous-impersonal sex concept is similar to the sociosexuality concept, which corresponds to individual differences in willingness to engage in sexual relations without closeness or commitment (Gangestad & Simpson, 1990; Simpson & Gangestad, 1991). Individuals that are high in promiscuous-impersonal sex are more likely to report having sex earlier in their relationships, more than one current sexual

relationship, many different sexual partners in the past, partners with whom they had sex only once, and expecting to have many different partners in the future. Such attitudes toward sexuality and sexual partners have been associated with sexual aggression and distress in marital relationships (i.e., men with a sociosexual orientation tend to be less monogamous, which creates tensions in their current relationship).

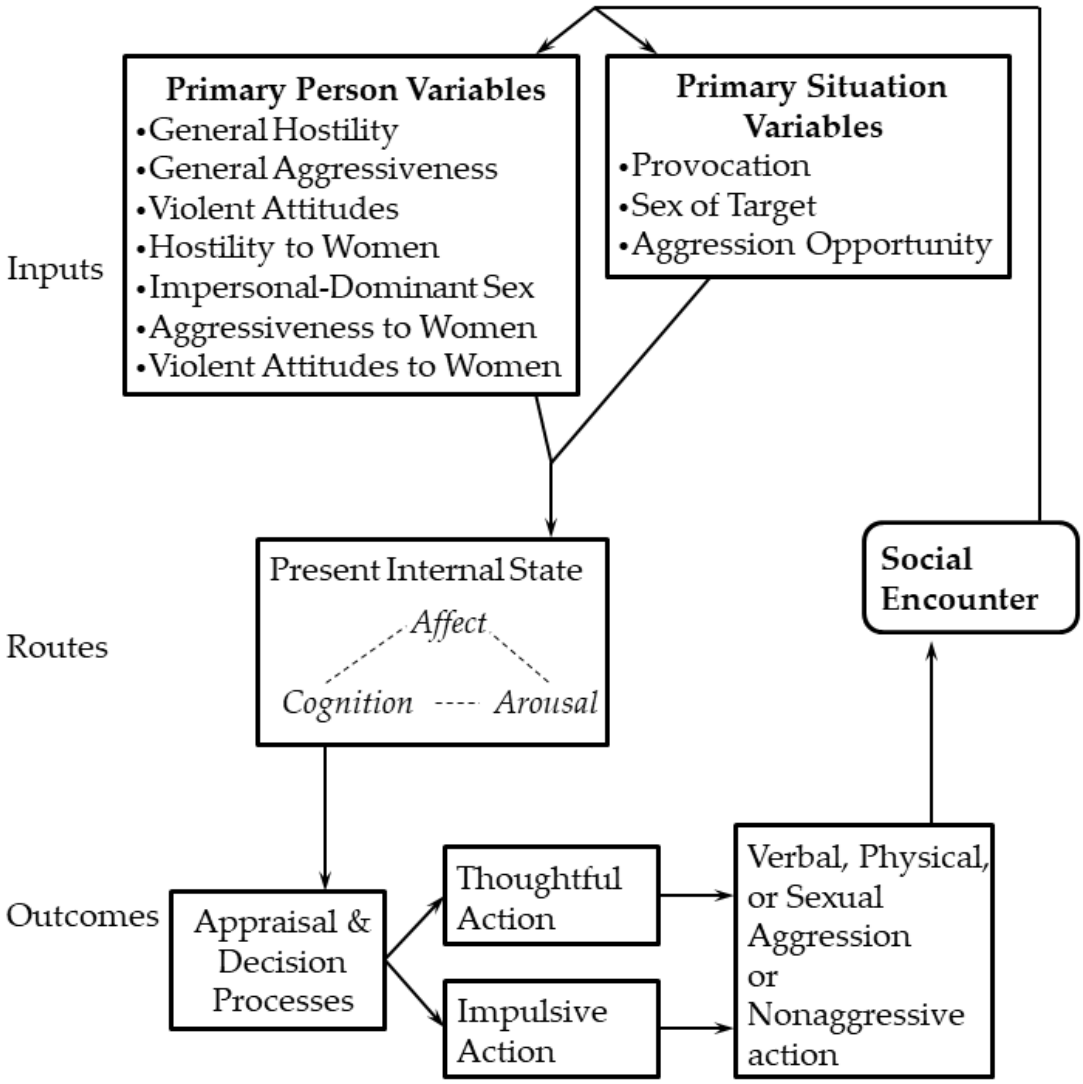
The Confluence Model Integrated into the General Aggression Model

The Confluence Model was initially independent from the General Aggression Model. However, both models have benefits and limitations. The General Aggression Model has been proven to be highly relevant to predict all kinds and forms of aggression (Anderson & Bushman, 2002, 2018), but might lack specificity, especially in its ability to predict more specific forms of aggression such as aggression against women. In contrast, the Confluence Model proposes various factors that can predict aggression against women but neglects situational factors such as provocation and the intermediate psychological processes (i.e., cognition, affects, and arousal; Anderson & Anderson, 2008). Thus, Anderson and Anderson (2008) integrated the Confluence Model into the GAM, and found that the integrative version of the model is highly relevant to predict aggression against women.

All the variables that are proposed as predictors of aggression in the Confluence Model can be considered as person input variables in the GAM (Anderson & Anderson, 2008) (Figure 2). When designing the model that integrates the Confluence Model into the GAM, seven variables have been shown to predispose men to aggress against women: (1) general hostility, (2) general aggressiveness, (3) violent attitudes, (4) hostility to women, (5) impersonal-dominant sex, (6) aggressiveness to women, and (7) violent attitudes to women. The integration of both models has also allowed the identification of three particularly important situational variables: (1) provocation, (2) gender of the target, and (3) aggression opportunity. Such variables may influence one's present internal state. Further, the Confluence Model adds to the potential choice of aggressive or non-aggressive behaviors by influencing the two types of appraisal processes described in the General Aggression Model. Indeed, the various personal variables proposed by the Confluence Model suggest that different paths might influence the choice of using verbal, physical, and sexual aggression. For example, if a man holds hostile attitudes toward women (person input), he might feel more depreciated and angered (present internal state) by a woman who has rejected his sexual advances. He might choose to follow her (thoughtful action) and later

assault her when she is alone (situational variable). Similarly, if the same man has less control over his reaction (e.g., he is drunk), he might immediately insult her (impulsive action).

Figure 2. Confluence Model integrated into the General Aggression Model (Anderson & Anderson, 2008).



Summary

Two models that are particularly relevant to explain aggression against women are the General Aggression Model (GAM; Anderson & Bushman, 2002, 2018) and the Confluence Model (Malamuth, 2003; Malamuth et al., 1995; Vega & Malamuth, 2007). The GAM is a meta-theory that was initially design to regroup and integrate mechanisms issued from cognitive-neoassociationistic theory, social learning theory, script theory, excitation transfer theory, and social interaction theory. According to

the GAM, situation and person inputs cause changes in the person's present internal state, which, in turn, can lead to aggressive behavior after either an automatic or controlled appraisal process. The Confluence Model is a more specific model that predicts aggression against women using variables issued from two main paths: hostile masculinity and promiscuous-impersonal sex. Recent work has integrated the Confluence Model into the General Aggression Model (Anderson & Anderson, 2008). Indeed, the individual factors described by the Confluence Model can be integrated as person inputs in the social encounter component of the GAM. According to this integrated model (Anderson & Anderson, 2008), the person inputs that predict the best aggression against women are: general hostility, masculine gender role stress, impersonal sex, hostile masculinity, and violent attitudes toward women.

Chapter 3: Representation of Women and Men in Video Games

Aggression against women is a problem in our society and the roots of this problem are complex and multi-determined. The causes of aggression against women can be examined at a societal, dyadic, individual and situational level (Krahé, 2017). For example, aggression against women is more likely in societies that promote patriarchal values (i.e., societal explanation). Low marital satisfaction is one of the best predictor of partner violence (i.e., dyadic explanation). Individual level risk factors of aggression against women are being younger, less educated, and less affluent. Examples of situational precipitators of violence against women are alcohol and drug consumption.

A recent situational precipitator might be sexualized and sexist video games. Indeed, video games are a recent media that started in the early seventies and is continuously growing since to become a billion dollar industry (WePc, 2018). In Western society, video games are played by around 64% of the population (Interactive Software Federation of Europe, 2018; Nielsen Games, 2017; UKIE, 2018). When picturing the stereotypical video game players, one typically imagines a young male. However, several surveys reveal that adolescents and young adults (i.e., between 16 and 24 years of age) only represent 26% of players, and that almost as many women play video games as men (Interactive Software Federation of Europe, 2018; UKIE, 2018). Despite this equivalent number of female and male players, video games are often described as being a hostile environment for female players (Gray, 2012a, 2012b; Kuznekoff & Rose, 2013). By consequence, video game exposure is regularly suggested as a potential cause of aggression against women (Dill, Brown, & Collins, 2008; Driesmans, Vandenbosch, & Eggermont, 2015; Fox & Potocki, 2016; Yao, Mahood, & Linz, 2010).

This chapter provides definitions of sexualization, examines why video games might be considered a hostile environment for women, and how this representation might influence aggression against women. First, a description of the way women are treated by the video game community and industry is provided. Second, current content analyses will be described to better understand how male and female characters are represented in video games. Third, it will be argued that content analyses have significant limits and that a new objective and accurate classification system is necessary in order to efficiently evaluate sexualization and roles in video games.

Definining Sexualization

Two main definitions of sexualization have been proposed in the scientific literature. Among these, one is a general one, the other is a multi-dimensional one. The general definition of sexualization states that "sexualization occurs when a person is held to a standard that equates physical attractiveness (narrowly defined) with being sexy" (R. L. Collins, Lamb, Roberts, & Ward, 2010, p. 1). A second definition of sexualization adds more precision to the first one by defining it as "a number of complex, interacting factors, such as the extent of nudity and revealing clothing and poses that are suggestive of sexual activity or availability" (Pacilli et al., 2017). In this thesis, we will use the second definition of sexualization as it allows a more precise operationalization of the concept of sexualization.

The Video game industry, the Video Game Community, and Video Game Content as a Hostile Environment for Female Players

Video games in general convey negative attitudes toward women (Stermer & Burkley, 2012). Attitudes such as objectification, dehumanization, sexism, and rape myth acceptance can be found both in the video game industry, in the video game community (Brehm, 2013), and in the video games themselves (Stermer & Burkley, 2012).

Few studies have focused on the video game industry. However, some authors have suggested that sexualization and objectification of women in video game are used as a selling point (Jansz & Martis, 2007; Near, 2013; Scharrer, 2004). For example, one study found that that female sexualization in video game covers is related to the financial success of the game (Near, 2013). In general, the video game industry is dominated by males, which has caused an overall masculine culture in the video game industry (Williams, 2006). In other words, video games are created by men for men and with the stereotypical idea of what men want in a video game. Many anecdotal examples of the consequences of such a culture range from the objectification and dehumanization of female characters in advertisements (e.g., an advertisement from PlayStation presented a woman's bust with breasts on both sides with the text: "Psvita, two tactile interfaces, twice more sensations") to objectification and even sexual harassment of real women (e.g., video game conventions often hire "babes," which are women wearing revealing outfits to staff the booths). All these elements convey the idea that male players are the dominating population in video games (Williams, 2006).

This overall idea that video games are essentially a male activity designed for men has led to consider female players as a minority that suffers the consequences (Brehm, 2013; Gray, 2012a; Kuznekoff & Rose, 2013). One online study (Brehm, 2013) examined in detail the sexist behavior of players in *World of Warcraft*, a massively multiplayer online role-playing game. The study used both multiple choice questions and open-ended question. Using both kinds of questions, participants were able to communicate if they had personally experienced sexism or if they had witnessed another player experiencing sexism, and to describe the sexist event. Based on the data collected from 294 participants, male video game players expressed both hostile and benevolent sexist attitudes toward women. Female video game players experienced both hostile (e.g., verbal aggression, sexual harassment, discrimination) and benevolent (e.g., some male players offer gifts to obtain favors from female players, and often treat them as if they are precious and delicate) sexist related behaviors. Negative attitudes sometimes even involved rape myth acceptance with the common use of rape jokes by male video game players.

A regularly suggested cause of these aggressive behaviors against women is the physical and the role representation of male and female video game characters (Dill et al., 2008; Driesmans et al., 2015; Fox & Potocki, 2016; Yao et al., 2010). Indeed, female and male video game characters are often depicted in stereotypical ways, both physically and in terms of their roles within the game.

Video Game Content Analysis

Usually, content analyses are used to examine the representation of male and female characters in video games. Six content analyses are particularly important. Two of them described the evolution of the portrayal of female characters over time (Lynch, Tompkins, van Driel, & Fritz, 2016; Summers & Miller, 2014), two used the same classification system for both male and female characters, thus giving the possibility of comparing both studies (Burgess, Stermer, & Burgess, 2007; Downs & Smith, 2010), and two were the only ones to focus only on male characters (Martins, Williams, Ratan, & Harrison, 2011; M. K. Miller & Summers, 2011). Each content analysis is briefly described below.

Of the two content analyses that described the evolution of female characters over time, one examined the years 1983 to 2014 (Lynch et al., 2016) whereas the other examined the years 1988 to 2007. Both examined the sexualization of female characters, but focused on different attitudes. One focused on the capacities of female characters (Lynch et al., 2016) whereas the other focused on benevolent sexist

attributes endorsed by female characters (Summers & Miller, 2014). They also used different sampling methods.

More precisely, the 1983 to 2014 content analysis focused on the evolution of sexualization and competence of playable female protagonists (Lynch et al., 2016). They excluded video games that contained non-anthropomorphized characters, erotic video games, and video games that contained characters from pre-existing media franchises to only focus on characters exclusively created for video games. Their sampling method resulted in 571 video games, which were analyzed for a randomly selected 5-minute of gameplay. Sexualization of female characters was analyzed by coding if bare skin was exposed for breasts, buttocks, waists, and legs, if certain areas (i.e., breasts, buttocks, and waist-to-hips ratio) had a disproportionate size compared to the body, and if certain areas (i.e., breasts and buttocks) were accentuated by garments or artistic styling (e.g., shadings). They also coded for sexualized movement, described as "unnecessary undulation or jiggling that drew attention to their body in a sexual manner". Finally, they coded for physical capacity (i.e., "if they engaged in feats of physical strength or agility aside from routine activities such as walking or picking up objects") and degree of violent portrayal (i.e., "if they engaged in threats of physical force or use of such force against an animate being or group of beings"). The conclusions from this study were that sexualization first increased (from 1983 to 2006) then started decreasing in 2007. Further, secondary female characters were more sexualized than primary characters, and that sexualized female characters were more capable.

The 1988 to 2007 content analysis examined articles from magazines that included at least one full page of text and one picture that clearly described the video game character. Using the text or the picture, coders rated (on 8-point scales): how sexy, helpless, and innocent the character was, how revealing her clothing was, whether she was a princess, and whether she was being rescued. A total of 223 female characters from 175 game magazines articles were coded. Results showed that attributes associated with benevolent sexism (i.e., needing rescue, helplessness, innocence) tended to diminish over time, but not the overall presence of a princess. However, attributes associated with sexualization (i.e., sexiness, revealing clothes) tended to increase over time.

Both studies have similar limits. Indeed, the sampling method of both studies might have biased their conclusion. The 1983 to 2014 content analysis (Lynch et al., 2016) only focused on video games featuring a playable female character. By choosing such a sampling method, the researchers excluded all video games

featuring a male character as the only playable character. This sampling method excluded many video games in which female characters are not playable characters (e.g., *Grand Theft Auto V*). The 1988 to 2007 content analysis (Summers & Miller, 2014) only coded articles from magazines that described a female character. Therefore, the female game character had to be sufficiently of interest to appear in a magazine article along with a full page of text. This sampling method excluded several video games in which female characters are of less interest. Another limit of both studies is related to the degree of inaccuracy and subjectivity. For example, Summers and Miller (2014) described innocence as "looking or acting innocent or sweet". Such a description is too inaccurate and subject to the interpretation of each coder. Although it can be concluded that Lynch et al. (2016) are precise concerning their evaluation of sexualized content, their description of sexualized movement and physical capacity are too subjective. For instance, concerning physical capacity, which activity can be considered as a routine activity or not? Because of these limits, no clear conclusion can be drawn about the evolution of female sexualization. Further, both studies cannot be compared with each other because they used different classification systems. Despite their limits, the authors of both content analyses concluded that female characters are sexualized, and that their role seems to have evolved from being submissive, helpless, and innocent, to being more capable and strong.

Several content analyses have included both male and female characters (Burgess et al., 2007; Downs & Smith, 2010; Ivory, 2006; M. K. Miller & Summers, 2007; Near, 2013), which allows for a comparison between genders. Two of them appear to be particularly relevant because they used similar sampling methods and classification systems (Burgess et al., 2007; Downs & Smith, 2010). The earlier one used a thorough classification system to analyze objectification (Burgess et al., 2007). First, a distinction was made between objectification role and physical objectification. Objectification role was coded using five variables: (1) being portrayed without action, (2) being in a submissive role, (3) being a reward to others, (4) appearing unnecessary to the goal of the game, and (5) requiring rescue without any clear attempts to help oneself. Physical objectification was analyzed using any combinations of five variables: (1) being portrayed in a sexy way, (2) having an exaggerated bust (groin area for male characters), (3) wearing vulgar or tight clothing that accentuates body parts, (4) wearing a revealing dress, and (5) only being portrayed as part of a body without showing the face. They also evaluated the breast size of female characters and the degree of muscularity of male characters. Breast size was evaluated using three categories: normal, busty (i.e., "having breasts larger than normal, but not unnaturally so") and super-busty (i.e., "unnaturally large breasts

that, due to size and/or shape, were not natural"). Similarly, muscularity was evaluated using three categories: normal, muscular ("healthy body that had muscles clearly evident; the muscles were not emphasized but readily visible"), and super-muscular (i.e., "specific muscle groups being visible, unnaturally large muscles, and/or a muscle group larger than another part of the body that should not normally be comparable"). The authors analyzed the portrayals of female and male characters depicted on video game covers. Results showed that male characters were twice more likely to be represented on video game covers than female characters. Female characters were significantly more likely to be role objectified (33%) than male characters (1%). Similarly, female characters were more likely to be physically objectified (47%) than male characters (14%). Further, female characters were more likely to be busty or super-busty (49%) than male characters were to be shown muscular or super-muscular (26%). Limits of this study include inaccuracy, subjectivity and poor choice of sampling method. First, instead of using a score to evaluate role and physical objectification, authors only coded the presence or absence of these variables. Therefore, a character that had multiple physical objectification variables (e.g., wearing a revealing dress, having an exaggerated bust, and being portrayed in a sex way) was considered as equally physically objectified compared to a character with only one of these physical objectification variables. Further, their categories were highly subjective. For example, breast size was coded using vague categories such as: "normal", "busty," and "super-busty". Busty was defined as "having breasts larger than normal, but not unnaturally so", super-busty was defined as "unnaturally large breasts that, due to size and/or shape, were not natural". All other types of breasts were defined as being "normal". This operationalization of breast size is clearly subjective as well as potentially culturally-based. What is considered as a "normal" or a "large breast size" can potentially vary greatly from person to person, and from country to country. Finally, their sampling method was not adapted for some variables. Indeed, the sample only contained stationary images (i.e., video game covers), which is not suitable for analyzing variables such as role objectification (i.e., being portrayed without action, being in a submissive role, being a reward to others, appearing unnecessary to the goal of the game, requiring rescue without any clear attempts to help oneself). That last limitation was addressed in the second content analysis (Downs & Smith, 2010), which analyzed the 60 top-rated games of the three main game consoles popular at the time. The authors used two types of sampling units: (1) images of video game characters, and (2) video segments from the video game itself. Specifically, images of video game characters were used to analyze physical aspects of the characters,

whereas 20-minute gameplay videos were used to analyze character roles. Eight variables were coded from videos of gameplay: (1) revealing clothing, (2) nudity, (3) body proportion, (4) appropriateness of attire, (5) breast size, (6) waist size, (7) presence of sex talk, and (8) presence of sexual behavior. Results showed that male characters were overrepresented compared to female characters, and were more often the primary character. Further, female characters were more likely than male characters to be sexualized (i.e., wearing revealing clothing, exposing partial or full nudity, having unrealistic body proportions, and having a small waist). Sex talk and sexual behavior were not analyzed due to their infrequent occurrence, and breast size was only evaluated for female characters. Like other content analyses, the classification system was too inaccurate and subjective. For example, body proportion "was gauged by the propensity of characters to resemble an average male or female human". However, what resemble and average male or female human would be highly dependent from one coder to another. These two studies underscore the importance of an accurate and objective system of classification and sampling method.

The two last content analyses are particularly relevant to this thesis because they focused on the representation of male characters. One of them included precise measures of muscularity (Martins et al., 2011), and the other described the evolution of male video game characters over time (Miller & Summers, 2011). In the first content analysis (Martins et al., 2011), the 150 top-selling video games were examined. Of these, the games that included adult male human characters were analyzed, which included 1074 male characters. Each character was 3D modeled by a professional computer graphic artist. All the 3D models were scaled to the same height. Muscularity was determined by measuring head, chest, waist and hips. These measures were compared to a similar 3D model based on the average anthropometric data provided by the CAESAR (Civilian American and European Surface Anthropometry Resource; Harrisson & Robinette, 1998). Results showed that in general male video game characters have significantly larger head, chest, waist and hips than the average American man. Further, they have a significantly smaller V-shape proportion compared to the average American man. In other word, male video game characters are larger than the average man, but are not especially more muscular. Further, video game characters were compared based on age rating of the video game. Male video game characters have a larger V-shape proportion in games rated E 10+ or younger than in games rated T or older. Based on these results, the authors concluded that hypermuscularity is mostly present among video games rated for children than among video games rated for adults. The measurement

method (i.e., comparing characters that are scaled to the same height) is the only one that computes a score for muscularity which, if reproduced could help compare various sample of video games. However, that method might be difficult to replicate because it requires the involvement of a professional computer graphic artist.

The second content analysis (Miller & Summers, 2011) used magazine articles from 1988 to 2007 as the sampling material. Masculinity was coded using six characteristics associated with masculinity that are powerful, danger-seeking, anti-social, unsympathetic, successful, and muscular. These characteristics were coded on an 8-point scale. Other coded variables were: sexiness, attractiveness, innocence, helpless, mad, happy, afraid, carefree, presence or absence of abilities and weapons. Results showed that, across time, male characters have become more muscular, attractive, sexy, and mad, but became also less happy, carefree, and innocent. Again, inaccuracy and subjectivity were the main limitations of this content analysis. Conclusions from both studies are not similar, with one study concluding male characters are more muscular (Miller & Summers, 2011) and the second one showing that male video game character are larger, but not especially more muscular, than the average male population (Martins et al., 2011). This stresses the necessity for a classification system that uses an objective measurement system similar to the one used by Martins et al. (2011). Indeed, such a measurement method create a precise score that can be used for statistical analyzes and eventual comparisons between studies.

Physical representations of female and male characters in video games. Based on the previous content analyses, several conclusions about the representation of male and female characters can be drawn. First, female characters are globally underrepresented in video games. Indeed, there are at least twice as many male characters as female characters on video game covers and reviews (Ivory, 2006; Near, 2013; Stermer & Burkley, 2015), and over seven times more male characters as female characters in gameplay footage (Downs & Smith, 2010). Further, all content analyses concluded that female characters are sexualized. Indeed, female characters frequently have large breasts and buttocks, small waist-to-hips ratios, large amounts of exposed skin, often dressed in revealing clothing (e.g., revealing cleavage or midriff) that are inappropriate for the task at hand, and are portrayed as sexy and attractive (Burgess et al., 2007; Downs & Smith, 2010; Ivory, 2006; Lynch et al., 2016; M. K. Miller & Summers, 2007; Near, 2013).

Concerning the physical representation of male characters, muscularity is the main physical feature analyzed by content analyses. With one exception (Martins et al.,

2011), all content analyses have found that male video game characters are muscular, especially compared to female characters (Burgess et al., 2007; Miller & Summers, 2007, 2011).

Role representations of female and male characters in video games. Female and male video game characters mainly engage in stereotypical roles. Female characters assume three main roles (Summers & Miller, 2014). The first role is described by Summers and Miller (2014) as a benevolent sexist role and corresponds to being portrayed as needing rescue, and being helpless and innocent. In other words, female characters often adopt the role of a "damsel in distress". Further, they are often passive and secondary characters (i.e., they are usually not playable characters, possess less capacities than male characters, are not central in the game, and are unnecessary to the goal of the game; Ivory, 2006; Miller & Summers, 2007; Near, 2013). The second role is being a sex object. Female characters are often objectified (e.g., the cover of a video game showing only parts of the female bodies; Burgess et al., 2007). They act as a reward for the player (e.g., in *Resident Evil 5*, when the players finish the game, they are rewarded by being allowed to change the outfit of the female character to a more sexualized outfit) or are sex objects (e.g., the strippers and prostitutes in *Grand Theft Auto V*, Burgess et al., 2007). The third role combines three characteristics: sexy, strong, and secondary (Lynch et al., 2016). An example of such a character would be Mad Moxxi in the video game *Borderlands*. Mad Moxxi is described as sadistic and dangerous (i.e., strong), is a non-playable character that is the hostess of a fighting arena (i.e., secondary), and is wearing a highly sexualized outfit that reveals her cleavage, thighs, and undergarments.

In video games, male characters assume two main roles. The first role is being the main protagonists in the game. Most heroes in video games are male, and most playable characters are male (Burgess et al., 2007; Downs & Smith, 2010; Ivory, 2006; M. K. Miller & Summers, 2007). The second – that can pair with the first one – is being hyper-masculine. Hyper-masculinity can be defined as an exaggeration of "macho" characteristics, where displays of emotion are considered a weakness, where physical aggressiveness is a fundamental part of what it is to be masculine, and where belittling women, engaging in romantic relations, and exhibiting risk-taking behavior are also typical male characteristics (Scharrer, 2004). Indeed, male characters are more aggressive, "mad" (i.e., have an angry appearance or try to hurt someone), display more weapons and abilities, display more competence, and are more powerful than female characters (Burgess et al., 2007; M. K. Miller & Summers, 2007, 2011). Male characters are also less happy and carefree (i.e., sweet and caring,

law abiding) and less innocent in most recent video games compared to less recent video games (Miller & Summers, 2011).

Furthermore, these male and female roles are the expression of negative attitudes toward women (i.e., sexism, dehumanization and objectification, rape myth acceptance). Benevolent sexism is represented by the role of the damsel in distress among females (Summers & Miller, 2014) and male characters often assume the role of the hero that attempts to save her (e.g., in *Super Mario Bros*, the whole objective of the video game is to save the Princess Peach). Hostile sexism is represented by two roles, the role of the sexy and strong secondary female character (Lynch et al., 2016) and the hyper-masculine male character (Miller & Summers, 2007, 2011). Indeed, the sexy, strong and secondary female character is the female that threatens male masculinity by seeking to control men, often through sex (Matthews, Lynch, & Martins, 2016), and the hypermasculine male character exhibits violent macho characteristics (M. K. Miller & Summers, 2007, 2011; Scharrer, 2004). For example, in *God of War 3*, Kratos is a hyper-masculine male character that meets Aphrodite, the goddess of love (a sexy, strong/powerful, and secondary character). During their interactions, Aphrodite trades sex for information (i.e., controlled Kratos), and Kratos is aggressive during their sexual intercourse. Female characters are dehumanized and objectified when they assume the role of a sex object or reward for players (Burgess et al., 2007; Stermer & Burkley, 2012). Although we could find no content analyses that examined rape myth acceptance in video games, some anecdotal example can be found (e.g., in *God of War 3*, Aphrodite enjoyed the rough sexual intercourse). In summary, video game content often conveys negative attitudes and beliefs toward women.

The Need for an Objective Instrument to Evaluate Video Game Content Regarding Sexualization and Stereotyped Roles

It is practically impossible to compare the results of the different content analyses in the literature, and therefore impossible to draw clear conclusions about the evolution of both the stereotypical appearance and the roles of male and female characters due to the variability of sampling methods and the inadequacy of most classification systems. Sampling methods vary mostly in terms of four characteristics: (1) examined material (e.g., video game covers, magazines, gameplay), (2) selection of video games (e.g., including the 60 top-rated video games that have sold at least 10,000 copies), (3) type of characters analyzed (e.g., only female, only male, both male and female; playable vs. non-playable characters), and (4) the age rating of the video

game. The variability of the sampling method is highly dependent on the main objective of the authors. For example, in one study (Near, 2013), the objective was to determine the relation between video game sales and sexualization. Therefore, the sampling method only included video game covers because it is one of the most important selling features of a video game in a store. Further, the authors focused on video games sold mostly to young males, games rated T (for Teens 13+) or M (for Mature players 17+) according to the ESRB (2018) system. The results of such a sampling method meets its objective, however, it does not provide a clear picture of the current state of the sexualized content of a large number of video games rated appropriate for younger players (i.e., rated eC to E 10+), and also does not examine the actual content of the video game (e.g., the cover of *Batman: Arkham Asylum* only represents male characters and excludes Harley Queen, a sexualized female antagonist). Other content analyses only focused on video games with female playable characters (Lynch et al., 2016). Thus, no conclusions can be drawn about the real evolution of female characters in video games. Indeed, most of the video games featured a male character as the only playable character. For instance, in *Darksiders*, the only playable character is the male character War. However, the video game still pictured Uriel, a sexualized female character wearing skin-tight armor. Such video game would be excluded using Lynch et al.'s sampling method and therefore, the sexualized female character is not coded.

Further, the classification systems used by previous content analyses often contain a number of limitations such as: high levels of inaccuracy, high degree of subjectivity, and narrow focus. When carrying out a content analysis, one must first define the concept that one wishes to operationalize. Some authors lack accuracy in their description of the concept. For example, one study did not define "muscularity" – a concept they wanted to evaluate among male video game characters (M. K. Miller & Summers, 2007). Most of the content analyses have used highly subjective evaluations. For instance, one analysis (Near, 2013) coded sexualization if the female character was represented with disproportionately large breasts, clothes prominently showing the midriff or cleavage, clothing similar to swimwear, dress revealing any undergarments, or a suggestive pose. In this coding, the meaning of "disproportionately large", "prominently", "similar to", and "suggestive pose" depend on each coder's estimation. In two other content analyses, all evaluations were made on a culturally-based training — "how a typical person in the US would view the character" (M. K. Miller & Summers, 2007; Summers & Miller, 2014). Yet, what can be considered as a typical person in the US remains unclear. The last limit of most classification systems is their narrow focus. Usually, only a limited number

of variables are analyzed. For instance, in one analysis (Martins et al., 2011) only muscularity was analyzed to determine how male characters are physically represented in video games. In another analysis (Near, 2013), only sexualization was coded and only for female characters.

Therefore, there is a clear need for an appropriate and objective instrument to evaluate the actual sexualized and role content of video games. Such a classification system should address the limits of previous content analyses by possessing a certain number of elements, including defining a clear sampling method, specifying accurate and objective concepts, and keeping a broad focus. First, a clear sampling method should be defined. Based on previous content analyses, images should be used to evaluate the physical features of characters, and videos (e.g., trailers, gameplay recording) should be used to evaluate player roles. Second, the conceptualization of each coded concepts should be accurate, objective, and free of any risk of cultural interpretation. For example, body proportion could be evaluated using a direct measurement instead of a vague estimation. Finally, the focus of the classification system should be large and include both male and female video game characters. In addition, similar concepts should be evaluated for male and female characters (e.g., body proportion, sexualized clothing, and muscularity). Such an evaluation instrument should help researchers to create a score of sexualized content and role for each character in a game. This would allow the direct comparison of studies and would allow relating sexualization and stereotyped roles to any other variable of interest, such as aggression and negative attitudes toward women.

Summary

Despite an equivalent number of female and male players, video games represent a hostile environment for women. The video game industry and the video game community are aggressive against women. Indeed, female players are often the victims of sexual and gender harassment (i.e., hostile sexism), including rape jokes (i.e., rape myth acceptance). They are often treated as if they were delicate, fragile, and need protection (i.e., benevolent sexism), and they are surrounded by dehumanization and objectification (e.g., booth babes and advertisements).

These negative representation and attitudes toward women are also directly present in the content of video games. Representations of female and male video game characters are often stereotyped. Female characters in video games are often globally underrepresented, sexualized, and conform to stereotyped roles (i.e., a damsel in distress, a sex object, or a strong character but sexy and secondary). Male

characters are usually muscular, hyper-masculine (i.e., aggressive, dominant, powerful, mad), playable characters, and game heroes.

Representations of male and female video game characters have been evaluated by content analyses. However, these content analyses have limits that prevent one from drawing clear and definitive conclusions about the current state of sexualization and roles endorsed by video game characters. These limitations are a high degree of inaccuracy and subjectivity, a limited focus, and an inadequate sampling method. There is thus a need for an instrument of evaluation that addresses these limits.

Chapter 4: Impact of Female Sexualized Content on Aggression against Women

Questions have been raised about the potential impact of video game content on behaviors and attitudes. Most of the previous work has focused on the impact of violent video game content on aggressive behavior (Anderson et al., 2010; Greitemeyer & Mügge, 2014; Prescott, Sargent, & Hull, 2018), and on the impact of prosocial video game content on prosocial behavior (Greitemeyer & Mügge, 2014). Recently, attention has been drawn on the potential impact of sexualized content on aggression and negative attitudes toward women. As it has been shown by previous content analyses (Lynch et al., 2016; Martins et al., 2011; M. K. Miller & Summers, 2011; Stermer & Burkley, 2012; Summers & Miller, 2014), video game players are exposed to several types of contents that include female sexualization, female stereotyped roles, and dominating males. In addition, if they play an online game, they might be exposed to negative attitudes toward women expressed by members of the video game community (Brehm, 2013). Presently, it is difficult to affirm whether video content is the cause of aggressive behavior and attitudes or whether video games have adapted their content in order to please their community. However, based on the Confluence Model integrated into the GAM (Anderson & Anderson, 2008), female sexualized content from video games might theoretically lead to aggression against women.

A Brief Description of Previous Video Game Content Research

Until recently, research about the impact of video game content focused on two areas: (1) the impact of violent video game content on aggression and aggression-related outcomes, as well as feelings of empathy and prosocial behavior, and (2) the impact of prosocial video games on prosocial behaviors.

The impact of violent video game content has been largely debated among scholars during the past years. While a consensus appears to be reached about a positive impact of violent video game content on aggression (Anderson et al., 2010; Bushman, Gollwitzer, & Cruz, 2015; Bushman & Huesmann, 2014; Greitemeyer & Mügge, 2014; Krahé, 2014; Warburton, 2014), some researchers argue that the impact of violent video game on real-world aggressive behavior is overstated (Elson & Ferguson, 2013; Ferguson, 2007, 2008, 2009, 2010, 2015a, 2015b; Ferguson & Kilburn, 2009). Other researchers note that there is a link between exposure to violent video

games and violent criminal behavior, but the magnitude of the effect is smaller (Bushman & Anderson, 2015).

Two meta-analyses (Anderson et al., 2010; Greitemeyer & Mügge, 2014) have provided with arguments in favor of a positive impact of violent video game content on aggression. The first meta-analysis (Anderson et al., 2010) was conducted on 136 research papers with 130,296 participants published prior to 2009. This meta-analysis showed that violent video game content had a causal impact on increased aggressive behavior, aggressive cognition, aggressive affect, and arousal. Further, playing violent video games also had a negative impact on feelings of empathy and on prosocial behavior. The second meta-analysis (Greitemeyer & Mügge, 2014) was conducted on 98 studies published from 2009 to 2014 with 36,965 participants (Greitemeyer & Mügge, 2014). The objective of this second meta-analysis was to replicate the results of the first one (Anderson et al., 2010) and to analyze the impact of prosocial video game content on prosocial outcomes. Results showed a positive impact of violent video game content on aggressive behavior, thoughts and feelings, and a negative impact of violent video game content on prosocial behavior, thoughts, and feelings. Both meta-analyses thus present coherent results despite analyzing studies from different time periods. In both meta-analyses, the impact of video game content was present for all methodological designs (i.e., cross-sectional, experimental, and longitudinal), for both males and females of all ages, and no presence of a publication bias was found.

However, some authors have argued that these effects were invalid and raised four main criticisms relating to video game content research (Ferguson, 2009, 2010, 2015a, 2015b; Ferguson & Kilburn, 2009). First, video game researches rarely use measures of overt aggression. Indeed, several studies, especially experimental studies, used "nonserious" aggression measures for ethical reasons (e.g., the competitive reaction time task or the hot sauce paradigm; (Epstein & Taylor, 1967; Lieberman, Solomon, Greenberg, & McGregor, 1999). Second, studies did not include important covariates such as gender, trait aggression, family/parenting, and negative life events. Therefore, the effect could be attributed to a third variable relationship in transversal and longitudinal studies. Third, when only the studies that have addressed the two first criticisms are included in a meta-analysis, a publication bias might exist in favor of studies showing a relation between violent video game play and aggression. Forth, even if the reported effect sizes are significant, the effects are usually weak. According to the same authors, when all these criticisms are addressed, studies showed an absence of effect of violent video game content. For

example, three longitudinal studies have shown an absence of effect of violent video game content on overt aggression (Ferguson, 2011; Ferguson, Garza, Jerabeck, Ramos, & Galindo, 2013; Ferguson, Miguel, Garza, & Jerabeck, 2012).

A recent meta-analysis (Prescott et al., 2018) addressed these criticisms by only including studies that have assessed the relation between exposure to violent video game content and overt physical aggression. More specifically, 24 studies were included with over 17,000 participants. Studies included were longitudinal with a time lag ranging from 3 months to 4 years and controlled for trait aggression as well as other covariates of interest. Results showed that violent video game play increased overt physical aggression, even when trait aggression was controlled for. Further, the effect remained even after controlling for all covariates included in each study. Finally, the meta-analysis used three different publication bias methods that all showed an absence of publication bias. In other words, this meta-analysis addressed three out of four of the main criticisms raised against studies about the impact of violent video game content on aggression.

In summary, there has been proof that video game content can influence behaviors. Indeed, violent video game content has been shown to increase behavioral aggression, and prosocial video game content has been shown to increase prosocial behavior (Anderson et al., 2010; Greitemeyer & Mügge, 2014; Prescott et al., 2018). However, few studies have examined the potential impact that sexualized video game content might have on aggression against women.

Theoretical Arguments toward an Impact of Sexualized Female Content in Video Game on Aggression and Aggressive Attitudes toward Women

Recall from Chapter 2 that the GAM is a model designed to predict aggressive behavior. According to the GAM, aggressive behavior is the result of several factors that interact together. When a person is in a situation that can potentially result in aggressive behavior, the first elements that can influence the behavior are the features of the environment (i.e., situational variables) and the features of the person (i.e., personal variables). The interaction between situational variables and personal variables influence the present internal state that includes affect, cognition, and arousal. Modification of the present internal state influence appraisal and decision processes. First an immediate appraisal of the situation occurs which, if not reappraised, can lead to an impulsive (i.e., automatic) behavior. However, if the person judges the initial appraisal as unsatisfactory and if the person has sufficient time and cognitive resources, he might reappraise the situation, which could lead to

a more thoughtful behavior. The result of all the interactions between the components of the GAM might be an aggressive behavior.

The GAM is a useful theoretical framework to analyze the impact of media content on aggressive behavior (Anderson & Bushman, 2018). Indeed, the GAM has already been proved useful to predict aggressive behavior by exposure to violent content of media in general and by exposure to violent content of video games (Bushman, 2017). According to the GAM, media content can be considered as a situational variable. In this context, sexualized content from video games would act as a situational variable and interact with personal variables to modify the present internal state. In other words, sexualized content from video games might increase aggressive thoughts, feelings, and physiological arousal levels. Further, modifications of the present internal state are predicted to influence appraisal and decision processes. Video games might have a stronger impact on the appraisal and decision processes than other more passive forms of media (e.g., television, film, videos). Because of their interactive nature, video games consume more cognitive resources than passive forms of media (such as film and television; Lin, 2013). According the GAM, such a higher consumption of cognitive resources might interfere with the reappraisal process and therefore lead to a more impulsive action (i.e., a more automatic behavior) instead of a thoughtful action. If sexualized content did influence the present internal state and the appraisal and decision processes, the result of the GAM cycle might be an aggressive behavior against women.

Further, the Confluence Model integrated into the GAM (Anderson & Anderson, 2008) postulates that the aggressive outcome should be more likely if several specific personal variables and situational variables are present. The personal variables identified by the integrated model are general hostility, general aggressiveness, violent attitudes, hostility toward women, impersonal-dominant sex, aggressiveness to women, and violent attitudes to women. The situational variables identified are provocation, a female target, and an aggressive opportunity.

State of the Actual Empirical Research about the Impact of Female Sexualized Content on Aggression against Women

If sexualized content from video games can theoretically cause aggression against women, empirically, only a handful of studies have tried to analyze the impact of sexualized content from video games on aggression against women. To the best of our knowledge, only four studies have manipulated sexualization alone (Behm-morawitz & Mastro, 2009; Driesmans et al., 2015; Fox, Ralston, Cooper, & Jones, 2015;

Read, Lynch, & Matthews, 2018). In those studies, sexualization was manipulated by modifying the outfit of the character or the character itself. Further, four other studies are of interest concerning the potential impact of video games on aggression against women (Breuer, Kowert, Festl, & Quandt, 2015; Dill et al., 2008; Fox & Potocki, 2016; Yao et al., 2010), but have limits or too broad a focus concerning the impact of sexualized content.

Among the four studies that manipulated sexualized content alone, one focused on hostile sexist attitudes (Behm-morawitz & Mastro, 2009), one on rape myth acceptance (Fox et al., 2015), one on both rape myth acceptance and tolerance toward sexual harassment (Driesmans et al., 2015), and one on both hostile sexism and rape myth acceptance (Read et al., 2018). None focused on actual aggressive behavior.

The first study (Behm-morawitz & Mastro, 2009) examined the impact of a sexualized video game on gender stereotyping. To evaluate the impact of sexualized content, participants were separated into three groups. One group was exposed to a sexualized video game — *Tomb Raider: Legend* with the classic character that wears revealing clothing. A second group was exposed to a non-sexualized version of the same video game with a fully clothed character (i.e., the character wore a snow suit). The third group was a control group that did not play any video game. Four different types of gender stereotypes were measured using the Attitudes Toward Women Scale (Spence & Helmreich, 1972): (1) female cognitive capacity, (2) female physical capacity, (3) career and domestic labor (i.e., men's and women's responsibilities related to household chores and childrearing, and appropriateness of their roles in professional and manual labor jobs), and (4) appearance (i.e., gender expectation about how women should maintain their bodies and appearance for others). Results showed that playing a sexualized video game compared to no video games at all significantly increased the belief that women are less cognitively capable. No significant differences were found between the sexualized video game and the non-sexualized video game. Further, results showed that women in the sexualized condition significantly considered that women were less physically capable than females in the non-sexualized condition. All other comparisons were found to be non-significant. Therefore, there was no effect of video game condition on career and domestic labor and on appearance.

The objective of the second study (Fox et al., 2015) was to determine the impact of a sexualized characters on self-objectification and rape myth among female participants. Using the video game *Second Life,* the authors created two sexualized and two non-sexualized characters (i.e., *Second Life* gives a lot of freedom in the

customization of avatars). The sexualized characters were rated to be significantly sexier and suggestively dressed than the non-sexualized characters by an independent sample of participants. Participants played either with a sexualized character or with a non-sexualized character. State self-objectification was measured using the Twenty Statements Test (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998), and rape myth acceptance was measured using the Rape Myth Acceptance Scale (Burt, 1980). Results showed no direct effect of sexualized condition on rape myth acceptance. However, self-objectification significantly mediated the relation between sexualization exposure and rape myth acceptance. Specifically, exposure to a sexualized avatar increased self-objectification, which, in turn, led to greater rape myth acceptance.

The third study (Driesmans et al., 2015) recruited adolescent between 12 and 15 years of age. They played the video game *The Story of Arado* with either a sexualized female character or with a non-sexualized male character. After gameplay, tolerance toward sexual harassment was measured using the Tolerance for Sexual Harassment Inventory (Lott, Reilly, & Howard, 1982), and rape myth acceptance was measured using the Rape Myth Scale (Lonsway & Fitzgerald, 1995). The wording of both scales was adapted to the age group of the study. Results showed that sexualized content from the video game significantly increased rape myth acceptance and tolerance toward sexual harassment among adolescents.

The last study that focused on sexualized content alone also manipulated cognitive load (Read et al., 2018). Their objective was to investigate how task demand and avatar sexualization influence rape myth acceptance and hostile sexism. First, participants were played a sexualized or a non-sexualized video game. Sexualization was manipulated using the same video game: *The Elder Scrolls V: Skyrim*. The sexualized female character was wearing an outfit that left sexual regions nude and accentuated. Her body featured exaggerated body proportions with large breasts, a small waist, and full hips. The non-sexualized female character wore armor that covered her torso in such a way that her chest size and hip-to-waist ratio was proportionate to her body. Further, cognitive load was also manipulated during gameplay. Participants were asked to retain symbols (7 in the high condition, 2 in the low condition) that would be used at the end of the game to open a door. In this study, rape myth acceptance was measured using the Short Form of the Illinois Rape Myth Acceptance Scale (D. L. Payne, Lonsway, & Fitzgerald, 1999), and hostile sexism was measured using the Ambivalent Sexism Inventory (Glick & Fiske, 1996). Results showed that sexualization significantly interacted with cognitive load.

Specifically, when high sexualized content was combined with high cognitive load, both rape myth acceptance and hostile sexism were lower than when cognitive load was low.

Results from these studies showed mixed conclusions about the impact of sexualized content on aggressive attitudes toward women. First, one study showed that sexualization might increase tolerance toward sexual harassment (Driesmans et al., 2015). Further, another study showed that women are considered as less cognitively capable when exposed to a sexualized video game content compared to no video game at all (Behm-morawitz & Mastro, 2009). The same study showed that among female participants, playing a sexualized video game diminished the belief that women are physically capable compared to playing a non-sexualized video game or not playing any video game at all. One study (Read et al., 2018) showed that aggressive attitudes toward women (i.e., hostile sexism and rape myth acceptance) diminished when exposed to sexualized video game content, but only if participants experienced cognitive load. However, that study is in opposition with two others that have shown that sexualized video game can directly increase rape myth acceptance (Driesmans et al., 2015) or indirectly increase rape myth acceptance through an increase of self-objectification (Fox et al., 2015). In summary, results tend to show that sexualized video game increase aggressive attitudes toward women, but that various variables (e.g., self-objectification and cognitive load) might need to be accounted for in order to better understand the exact nature of that relation. One main limitation can be addressed to these four studies. All of them used trait measures of aggressive attitudes toward women. Specifically, the Attitudes toward women Scale (Spence & Helmreich, 1972), the Ambivalent Sexism Inventory (Glick & Fiske, 1996), the Tolerance for Sexual Harassment Inventory (Lott et al., 1982), the Rape Myth Scale (Lonsway & Fitzgerald, 1995), the Short Form of the Illinois Rape Myth Acceptance Scale (D. L. Payne et al., 1999), and the Rape Myth Acceptance Scale (Burt, 1980). Such measures are supposed to be stable across time and situations. Therefore, it is uncertain whether the difference of results is obtained because of the different sexualization conditions or by chance.

Other studies, although not directly relevant to this dissertation, reported interesting results. One study showed that being exposed to sexualized images from video games compare to images of female politicians did not significantly influence rape myth acceptance but significantly increased tolerance toward sexual harassment (Dill et al., 2008). This study also used a trait measure to evaluate rape myth acceptance, but was the first to use a state evaluation of tolerance toward sexual

harassment. Participants read an ambiguous story of sexual harassment perpetrated by a male college professor against a female student. After reading, participant answered six questions about the event: (1) whether the incident constituted sexual harassment, (2) how serious the event was (3) the degree of damage caused by the event, (4) blame of the victim, (5) empathy for the victim, and (6) choice of punishment for the perpetrator. Compared to trait measures of tolerance toward sexual harassment, state measures evaluate an immediate judgment about the situation. One main limit of this study is its lack of ecological validity. Indeed, participants were only exposed to sexualized images from video games instead of being exposed to actual video game content.

Another study (Yao et al., 2010) focused on the impact of a sexually explicit video game on the occurrence of sexual thoughts, sexual objectification of women, and self-reported tendency of sexually harassing a woman. Participants played either the sexually explicit game *Leisure Suit Larry: Magna Cum Laude* or one of two non-sexually explicit control games (i.e., *The Sims II*, *PacMan II*). *Leisure Suit Larry: Magna cum Laude* is a sexually suggestive video game that contains sexualized female characters, sexist attitudes and sexuality. After gameplay, participants completed a Lexical Decision Task to measure sexual thoughts. That task measured how quickly participants could distinguish real words that were either sexual words (e.g., *sex*, *penis*, etc.), neutral words (e.g., *door*, *bank*, etc.), or scrambled words. A Lexical Decision Task was also used to measure sexual objectification of women, the words used were sexually objectifying of women (e.g., *slut*, *whore*, *bitch*), neutral words (e.g., *sister*, *nurturer*, *niece*), or scrambled words. The last measure was the Likelihood to Sexually Harass Scale, which measures how participants would act in 10 scenarios depicting situation in which they have the opportunity to sexually harass a woman. Results showed that playing the sexually explicit video game, compared to the neutral ones, significantly increased the occurrence of sexual thoughts, increase the tendency for men to view women as being sex objects, and increased their self-reported tendency to sexually harass a woman. In this study, one main limit is that sexualization was confounded with other factors including: the presence of sexism (i.e., negative remarks about women) and sexuality (i.e., presence of a sexual act).

Finally, two studies (Breuer et al., 2015; Fox & Potocki, 2016) used overall consumption of video games to predict hostile sexism and rape myth acceptance. One study (Fox & Potocki, 2016) carried a transversal study and found a positive indirect effect of time spent playing video games on rape myth acceptance through an increase of interpersonal aggression and hostile sexism. The second study (Breuer

et al., 2015) was longitudinal and did not find any impact of video game consumption on hostile sexism. Obviously, these two studies are difficult to interpret because they did not separate consumption of sexualized video games from overall consumption of video games.

These previous studies have several limitations. First, one study (Dill et al., 2008) lacked ecological validity by using static images of video games. Video games are interactive by nature. Future studies should have participants play a video game instead. A second limitation is the presence of confounding variables. For example, one study used a sexually explicit video game that contained sexualization, sexism, and sexuality (Yao et al., 2010). By using such a video game, it is impossible to determine to which variable the effect can be imputed. Confounding variables need to be avoided in control conditions too. Another study (Dill et al., 2008) used images of female politicians as a control. However, pictures of politicians might have primed various concepts in memory (e.g., competence, authority, justice, etc.). It is unclear whether the impact is due to an increase of tolerance toward sexual harassment after exposure to sexualized video game character, or whether it is due to a diminution of tolerance toward sexual harassment after exposure to politicians. Future studies need to avoid any manipulation that does not concern only sexualization in order to clearly conclude about its impact on aggressive behavior and attitude toward women. A third limit of previous studies is having a too broad a focus. For example, two studies in particular have tried to predict aggressive attitudes toward women using time spent playing video games (Breuer et al., 2015; Fox & Potocki, 2016). Such a method might lead to diluted results because video games are a complex media with a lot of various contents. One last limitation is the use of trait measure as dependent variables in experimental studies (Behm-morawitz & Mastro, 2009; Dill et al., 2008; Driesmans et al., 2015; Fox et al., 2015; Read et al., 2018). All of these limits need to be addressed in future studies.

The second reason for which no clear conclusion about the impact of sexualized video game can be reached yet is that studies need to vary the aggressive variables examined. Based on the confluence model integrated into the GAM (Anderson & Anderson, 2008), sexualized content might theoretically influence aggressive behavior, cognition and affect. However, most studies have focused on aggressive attitudes toward women. Only two studies have evaluated the impact of sexualized content on aggressive cognition. One study measured the thoughts of participants about a sexual harassment situation (Dill et al., 2008), whereas the other study measured the accessibility of sexually objectifying thoughts (Yao et al., 2010). None

of the previous studies have analyzed the impact of sexualized content on actual aggressive behavior against women, or on aggressive affect. There is a clear need for future studies about the consequences of sexualized content from video game.

Summary

Female sexualized content from video game has identified as a potential cause of aggression against women. Theoretically, the confluence model integrated into the General Aggression Model (Anderson & Anderson, 2008) predicts that female sexualized content might lead to aggressive behavior and attitudes toward women. Empirically, no conclusion can be drawn yet about the impact of the sexualized content of video games on attitudes toward women. Indeed, the existing studies are both scarce and often have major limitations (i.e., lack of ecological validity, using a sexualized stimulus that is confounded with other factors, having a too broad focus, using trait measures as dependent variables). Further, there is a lack of studies that examined the impact of sexualized content from video game on actual aggressive behavior against women.

There is a real need for further studies that aim to determine the actual effect of the sexualized content of video games on aggressive behavior and attitudes toward women. These future studies should try to avoid the limits of previous studies. First, experimental research on video games should use an ecological means of exposure to sexualized content by asking participant to actually play the video game. Second, studies about the impact of sexualized content should try to avoid confounding variables in order to clearly determine the cause attributed to sexualization. Finally, in the case of experimental studies, the dependent variable should be adequately evaluated using a state measure.

Aims of the Thesis

The present thesis has three main aims:

1) To develop an instrument of evaluation of sexualized and stereotyped role content of video games. Such an instrument of evaluation should be based on a classification system that is objective, reliable, and valid. Both male and female video game characters should be evaluated indiscriminately. The instrument of evaluation should be sufficiently clear and precise to be used by any researcher regardless of their degree of video game experience. Furthermore, the predictive validity of such a classification system concerning negative attitudes toward women will also be investigated.

2) To explore the impact of female sexualized content on aggressive behavior and attitudes toward women. Studies on this topic are scarce and there is therefore a need for more studies that examine various forms of aggression against women. Such studies need to address the limit of previous ones by being ecologically valid, avoiding the presence of other confounding variables, and using state measures of aggressive behavior and attitudes.

3) To draw a clearer picture of the actual impact of sexualized content on aggression, regardless of the media and/or whether or not this is specific to certain types of media. No recent quantitative review exists about the impact of any visual sexualized media on aggressive behavior, cognition, affects and attitudes. A meta-analysis will therefore be carried out with the aim of providing a better understanding of how sexualized content of media influences aggressive behavior, cognition, affect, and attitudes.

Experimental Section

The Development and Validation of an Objective Measure of the Sexualized Content of Video Games: the Video Game Sexualization Protocol

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Abstract

Sexualization is an integral part of many video games. Based on content analyses, female characters often have large breasts and buttocks, a small waist, and usually wear revealing clothes. Male characters often have big muscles with less revealing clothes. However, there is no objective instrument to measure sexualized content in video games. The objective of this study was to develop and validate such an instrument, which is called the "Video Game Sexualization Protocol" (VGSP). In Study 1, the initial two-factor (male / female) VGSP was created. The VGSP possessed good inter-coder validity and internal consistency. Study 2 had two objectives: (1) to make the measures of female and male sexualization more uniform, and (2) to determine whether the VGSP can predict negative attitudes toward women. A three-factor structure ("sexualized body" / "muscularity" / "revealing outfit") was observed for both female and male characters. This revised version of the VGSP also had a good internal consistency and good inter-coder validity. Results showed that exposure to various features of video game characters predicted negative attitudes toward women. Benevolent sexism was predicted positively by exposure to female characters wearing revealing outfits, and negatively by exposure to female characters with sexualized bodies. Hostile sexism was predicted positively by exposure to male characters with muscular bodies, and negatively by the interaction between exposure to female characters wearing revealing outfits and to female characters with muscular bodies. Rape myth acceptance was predicted by exposure to male characters with revealing outfits, but positively when interacting with exposure to male muscularity and negatively when interacting with exposure to male characters wearing a sexualized outfit. These findings indicate that, in order to predict negative attitudes toward women using sexualized video games, it is necessary to analyze various features of that media.

Introduction

Video games are an important type of media in Western society. According to several surveys, video games are played by around 64% of the Western population (Interactive Software Federation of Europe, 2018; Nielsen Games, 2017; UKIE, 2018). Further, almost as many women as men play video game (Interactive Software Federation of Europe, 2018; UKIE, 2018).

Frequent video game exposure may have a number of consequences, including reinforcing stereotyped male and female roles in society (Dill et al., 2008; Driesmans et al., 2015; Fox & Potocki, 2016; Yao et al., 2010). More specifically, sexualized content from video games has already been shown to increase negative attitudes toward women. For example, one study (Dill et al., 2008) showed that being exposed to images of sexualized content from video games increased tolerance toward sexual harassment. Another study (Driesmans et al., 2015) showed that playing a sexualized video game (compared to a non-sexualized video game) increased rape myth acceptance among adolescents.

Sexualization is an integral feature of many video games. Female characters are often portrayed with large breasts and buttocks, a small waist, a large amount of exposed skin, and revealing clothes (Downs & Smith, 2010; Lynch et al., 2016; Summers & Miller, 2014). In contrast, male characters are often portrayed as being very muscular (e.g., large arm- or chest muscles) and wearing less revealing clothes (Dill & Thill, 2007; Downs & Smith, 2010; Scharrer, 2004). The degree of sexualization of video game characters has been evaluated in previous studies, albeit via a number of different methods. Further, each content analysis has its own classification system, without a clear consensus between them. Also, these classification systems are subject to a high degree of inaccuracy, subjectivity, and a narrow focus.

Some classification systems are too inaccurate. For instance, some studies do not even take into account the content of video games (Breuer et al., 2015; Fox & Potocki, 2015). Instead, they use time spent playing video games as an evaluation of sexism.

Another limitation of some classification systems is that they are too subjective. Often, the coding categories and the instructions to the coders were not clearly defined (Burgess et al., 2007; M. K. Miller & Summers, 2007; Summers & Miller, 2014). For instance, one classification system evaluates breast size using vague categories such as “normal”, “busty” and “super-busty” (Burgess et al., 2007). However, a “normal” breast size will vary from one person to another. In two studies

(M. K. Miller & Summers, 2007; Summers & Miller, 2014), coders were "trained to code based on how a typical person in the US would view the character". Yet, what can be considered as a typical person in the US remains unclear. The consequence of such a high degree of subjectivity makes the results from content analyses difficult to replicate.

Finally, some classification systems have a limited focus. For example, one classification system only focused on clothing and breast size (Beasley & Collins Standley, 2002). More variables need to be coded if one is to evaluate the presence of sexualization in an adequate manner. As another example, some classification systems exclude male characters (Summers & Miller, 2014). Even systems that include both male and female characters placed more emphasis on female characters. In theory, both male and female video game characters can influence stereotyped attitudes about males and females in the real world.

A classification system that addresses these limitations is urgently needed. It should be based on accurate, precise, and objective measurements that can be easily replicated. Further, a classification system should assess sexualization in video games for both genders. Such an instrument is essential for researchers who wish to study the potential effects of video game characters on stereotypes regarding male and female roles in society.

Study 1

The objectives Study 1 were twofold. First, to create an objective, reliable and valid classification system that can be used by researchers regardless of their degree of video game experience. Second, to examine the psychometric properties of this new instrument.

Method

Sampling

Participants were 99 adolescents (54 male, 42 female) 12 to 18 years old (M = 15.26, SD = 1.86) from various secondary schools in Belgium. Participants listed their 5 most recently played video games. They played video games for an average of 9.8 hours a week (SD = 11.11, range 1-72 hours).

After duplicates were eliminated, the sample contained 195 unique video games. The final sample included video games from each of the five Pan European Game Information (PEGI, 2018) age categories (i.e., 3+, 7+, 12+, 16+, 18+) and from each

genre based on Entertainment Software Rating Board (ESRB, 2018) classification (e.g., Action, Role Play Gaming, Puzzle, Simulation, Adventure, Strategy, Racing, Sports). Appendix 1[2] contains a list of the 195 video games included in the sample. In order to code the degree of sexualization of the video game characters, 4 pictures of humanoid main characters were used for each game (if the game contained characters). Preferentially, the 4 pictures had to include two males (the main protagonist and the main antagonist) and two females (the main protagonist and the main antagonist).

Coding

Sexualization of female characters. Four observation scores were assigned to female characters: (1) breast, (2) hips, (3) uncovered body parts, and (4) clothing. To avoid variation due to image size, the measurements for breasts and hips were proportions.

Breast. Breast size was measured by dividing the width of the bust (largest point) by the width of the waist (smallest point).

Hips. Hip size was measured by dividing the belt width (smallest point) by the width of the waist (smallest point).

Uncovered body parts. One point was given for each of five possible naked body areas: (1) shoulders, (2) belly and/or the back, (3) neckline and/or the breast, (4) buttocks, and (5) thighs. Thus, points could range from 0 to 5.

Clothing. Points (0 to 5) were also given for sexualized clothes. The following clothes were coded 1 point: mini-skirt, shorts, top neckline, bottom neckline, slit dress, high boots, fishnet stockings, and tattoo. The following clothes were coded 2 points: bikini bottom, bikini top, swimsuit, bra, underpants, corset, and garters. Naked characters or characters where the breasts or buttocks were fully revealed were coded 5 points. Skin-tight clothes (e.g., leather) that revealed body shapes were coded according to the body parts concerned. For example, a leather pant would be coded two because it concerns the buttocks and the thighs.

Sexualization of male characters. Four observation scores were assigned to male characters: (1) shoulder span, (2) biceps, (3) uncovered body parts, and (4) clothing. To avoid variation due to image size, the measurements for shoulder span and biceps were proportions.

[2] Appendix 1 can be found in Annex 1

Shoulder span. Shoulder span was measured by dividing the width of the shoulders (largest point) by the width of the head (largest point), using the bottom of the eyes as a guide for the ruler.

Biceps. Biceps were measured by dividing the width of the biceps (largest point) by the width of the head (largest point), using the bottom of the eyes as a guide for the ruler.

Uncovered body parts. One point was given for each of five possible naked body areas: (1) shoulders, (2) biceps, (3) abdominal muscles and/or the back, (4) pectoral muscles, and (5) buttock.

Clothing. Points (0 to 5) were also given for sexualized clothes. The following clothes were coded 1 point: shorts and tattoo. The following clothes were coded 2 points: underpants, sleeveless shirt, open shirt. Naked characters or characters where the torso or buttocks were fully revealed were coded 5 points. Skin-tight clothes (e.g., leather) that revealed body shapes were coded according to the body parts concerned.

Coder Training

Two coders (undergraduate University students) coded all the images extracted from the video games. One coder was a man that described himself as a video game player, the other coder was a woman that described herself as having little knowledge about video games.

Statistical Analyses

An exploratory factor analysis was used to determine the factor structure of the "Video Game Sexualization Protocol" (VGSP). Oblimin rotation was used because we expected our factors to be correlated with each other (Sass & Schmitt, 2010; Yong & Pearce, 2013). Pearson's correlations were then conducted to evaluate the relationship between the various factors of the VGSP. According to Cohen (1988), a "small" correlation is .10, a "medium" correlation is .30, and a "large" correlation is .5.

Results

Intercoder Reliability

Pearson's correlations were used for measures that involved proportions (i.e., breast, hips, shoulder span, and biceps), and intraclass correlations were used for categories (i.e., female and male uncovered body parts and clothing). As can be seen

in Table 1, intercoder reliability was excellent for coded dimensions for both female and male characters.

Table 1

Intercoder Reliability using Pearson's correlations and intraclass correlations

Measure	Pearson's correlation	Intraclass correlation
Breast	.968	
Hips	.864	
Female uncovered body parts		.963
Female clothing		.939
Biceps	.938	
Shoulder Span	.943	
Male Uncovered Body Parts		.974
Male Clothing		.956

Exploratory Factor Analysis (EFA)

Two exploratory factor analyses were used to determine the best model for sexualization of female video game characters and sexualization of male video game characters. For the sexualized female video game characters, the EFA with Oblimin rotation suggested extracting two factors (Table 2), which accounted for 92.38% of the variance (eigenvalue = 0.99). Breasts and hips loaded on Factor 1, and uncovered body parts and clothing loaded on Factor 2.

Table 2

Corrected Item-Total Correlation and Factor Loadings from EFA for measures related to female characters

Items	Corrected item-total correlation	Factor 1 Loading	Factor 2 Loading
Breasts	.833	.952	
Hips	.833	.962	
Female Uncovered Body Parts	.862		.960
Female Clothing	.862		.969

For the sexualized male video game characters, the EFA with Oblimin rotation suggested extracting two factors (Table 3), which accounted for 94.93% of the variance (eigenvalue = 1.27). Biceps and shoulder size loaded on Factor 1, and uncovered body parts and sexualized clothing loaded on Factor 2.

Table 3

Corrected Item-Total Correlation and Factor Loadings from EFA for measures related to male characters

Items	Corrected item-total correlation	Factor 1 Loading	Factor 2 Loading
Biceps	.859	.964	
Shoulder size	.859	.972	
Male uncovered body parts	.920		.992
Male clothing	.920		.966

Descriptive Statistics, Internal Consistency, and Inter-Correlation of the Female and Male Two-factor Model

Descriptive results, internal consistency, and intercorrelations between all factors of both two-model factors of the VGSP are reported in Table 4. Internal consistency was evaluated with Cronbach's α coefficient, which ranged from .91 to .96. Many methodologists recommend a minimum coefficient of .65. Thus, these coefficients were very high.

Table 4

Descriptive statistics, internal consistency and inter-correlations of all facets of the VGSP

Factors	*M* (*SD*)	Cronbach α	1	2	3
1 - Female Sexualized Body	2.30(1.08)	.91	-	-	-
2 - Female Sexualized Outfit	3.19(3.45)	.92	.46***	-	-
3 - Male Sexualized Body	4.11(1.56)	.93	.13	.23***	-
4 - Male Sexualized Outfit	2.83(3.68)	.96	.20**	.51***	.34***

**$p < .01$; ***$p < .001$

Discussion

The first objective of Study 1 was to create and validate a classification system that evaluates the degree of sexualization of male and female video game characters, called the Video Game Sexualization Protocol (VGSP). The VGSP was designed to be as objective, reliable, and valid as possible, and to be used independently from the coder's video game experience. The second objective was to examine the inter-coder reliability, internal structure, and internal validity of the VGSP.

Exploratory factor analysis revealed that a 2-factor structure best explained variances for both male and female video game characters. These two factors can be described as "Sexualized Body" and "Sexualized Outfit". All facets possessed excellent internal consistency (Cronbach α's > .91). Finally, all facets were intercorrelated except for "male sexualized body" and "female sexualized body".

Results also revealed that the VGSP possesses good intercoder reliability, suggesting that the VGSP is sufficiently precise and objective. Recall that coder 1 was an experienced male video game player, whereas coder 2 was a female with little video game experience. Yet agreement between them was very high, which suggests that codings were not influenced by video game experience.

Although the results are generally promising, a number of improvements are required in order for the VGSP to be an even better instrument. First, the protocol could be more uniform when comparing male and female video game characters. For example, skirt was coded for female video game character, but not for male video game characters. If a male video game character would have worn a kilt, it would not have been coded as being sexualized clothing. Second, the structure of the protocol should be replicated with more video games. Study 1 only contained 195 video games, with a total of 167 female characters and 192 male characters analyzed. Finally, future studies should try to determine if the VGSP possesses predictive validity. For example, can the VGSP predict negative attitudes toward women? A second study was conducted to overcome these limitations.

Study 2

Study 1 provided evidence that the Video Game Sexualization Protocol (VGSP) is a valid measure of the sexualized content of video games. Study 2 aims to improve the VGSP further and to examine if it can be used to predict negative attitudes toward women.

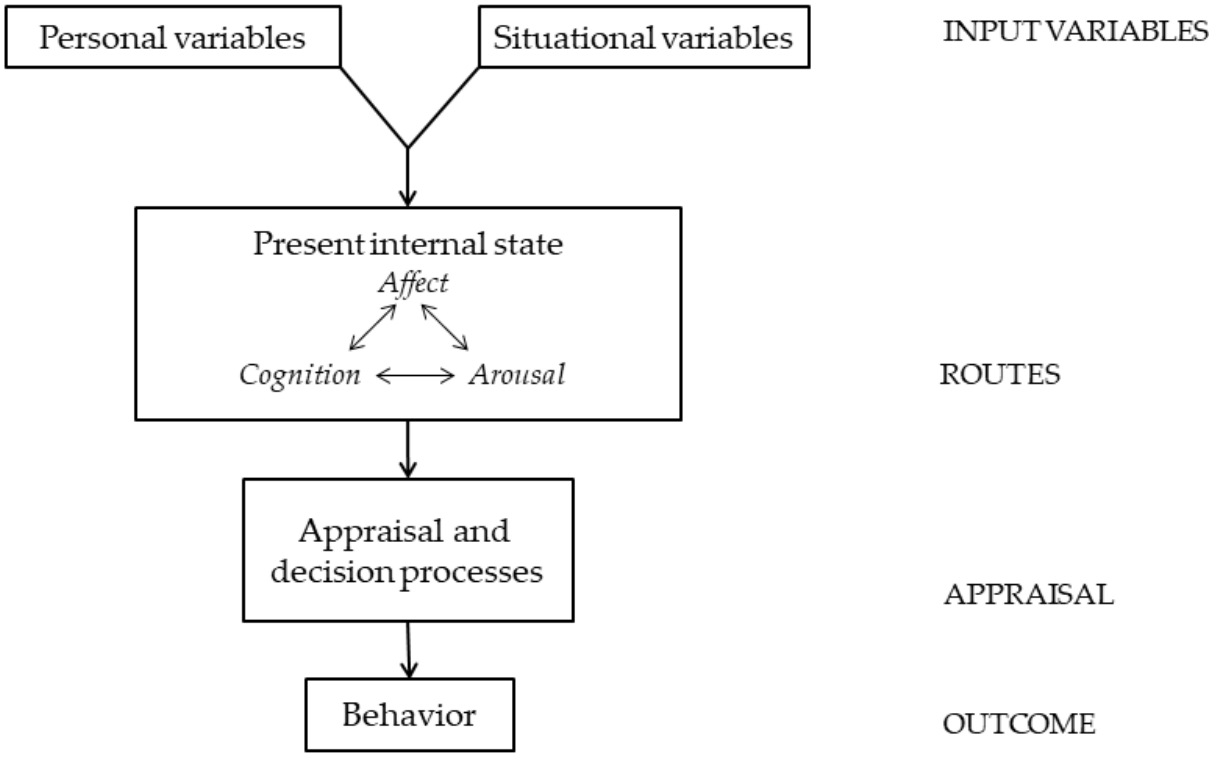
Although the results from Study 1 were promising, the VGSP was improved in Study 2. First, the protocol was made uniform for some variables between male and female video game characters. For example, although the outfits were different between male and female characters, the same outfit wore by a man or a woman should be considered as being equally sexualized. Second, a measure of a sexualized body had been added for men. Indeed, all sexualized body measures concerned the muscularity of the male character. However, one measure – the V-shape – is rarely evaluated in content analyses even though is an important measure of sexualization. Indeed, the V-shape in men is more associated with a high degree of male sexual desirability than large biceps and a large shoulder span (Braun & Bryan, 2006). Therefore, the V-shape could be seen as an even more suited measure of sexualization of male characters. Similarly, muscularity of female characters was included. Muscular female video game characters might be perceived as stereotype inconsistent information and might interact with sexualization to predict attitudes.

Second, the VGSP might be useful to predict negative attitudes toward women. Theoretically, sexualized content in video games could impact negative attitudes toward women. Based on the General Aggression Model (GAM; Anderson & Bushman, 2018; Bushman, 2017; Figure 1), sexualized content in video games could act as a situational variable that will influence one's internal state, including negative attitudes toward women. However, this hypothesis has not been adequately tested because there is no instrument that examines, in a precise and valid manner, the sexualized content of video games. Previous studies (Breuer et al., 2015; Fox & Potocki, 2016; Stermer & Burkley, 2015) that have tried to relate video game content to negative attitudes toward women, but have used inadequate measures, leading to inconsistent results. For example, two studies used time spent playing video games as a predictor of negative attitudes toward women, and found either no results (Breuer et al., 2015) or an indirect effect on hostile sexism and rape myth acceptance (Fox & Potocki, 2016). Another study used the subjective evaluation of sexist content by male players themselves (Stermer & Burkley, 2015), and found a relationship for benevolent sexism but not for hostile sexism.

The first objective of Study 2 was to further improve upon the VGSP. The second objective of Study 2 was to determine whether the VGSP could predict negative attitudes toward women. Study 2 explored how different characteristics of video game characters, and their interactions, will predict hostile sexism, benevolent sexism, trait aggressiveness, and rape myth acceptance. Further, rape myth acceptance has been shown to be influenced by the indirect effects of video game

consumption through interpersonal aggression and hostile sexism (Fox & Potocki, 2016). Therefore, a mediating effect of these two variables, and benevolent sexism on rape myth acceptance, will be analyzed. To test more efficiently the effect of our objective variables, we will control for subjective sexualization exposure (i.e., the degree of sexualization perceived by the participants). Further, since our dependent variable are hostile attitudes, we will control for subjective violence exposure (i.e., the degree of violence perceived by the participant).

Figure 1. The General Aggression Model. *Source.* Anderson and Bushman (2002), Krahé (2013).



Method

Participants

Participants were 574 video game players (63.94% male) between ages 18 and 51 (M = 24.49, SD = 5.57) that were recruited on social media for an online study. Participants spent between 0 and 120 hours per week playing video games (M = 13.49, SD = 14.27).

Questionnaires

Demographic information and video game consumption. Participants reported their gender, age, and the average number of hours they spend playing video games per week.

Subjective sexualization exposure. An adapted version of the Video Game Questionnaire (Anderson & Dill, 2000) was used to measure self-reported sexualization of the video games they played. Participants listed the three games they played the most the past year, and indicated the extent to which the female and the male characters in each game were sexualized (1 = *Not at all* to 7 = *Extremely*). Participants also reported how often they played each game (1 = *Rarely* to 7 = *Often*). The sexualized evaluation was multiplied by the frequency of play. All scores were added together then pondered by the number of cited video games.

Subjective Violence exposure. The Video Game Questionnaire (Anderson & Dill, 2000) was used to measure participant's exposure to violent video game content. Participants rated how violent each game they listed was (1 = *Not at all* to 7 = *Extremely*). The violence evaluation was multiplied by the frequency of play. All scores were added together then pondered by the number of cited video games.

Ambivalent sexism. Participants completed a French version (Dardenne et al., 1996) of the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996), which contains an 11-item hostile sexism subscale (e.g., "Most women interpret innocent remarks as sexist; Cronbach α = .92), and an 11-item benevolent sexism subscale (e.g., "Women should be cherished and protected by men"; Cronbach α = .84). All items were scored using a 6-point scale (0 = *Totally disagree* to 5 = *Totally agree*).

Rape myth acceptance. The Updated Illinois Rape Myth Acceptance Scale (McMahon & Farmer, 2011) was translated and back translated to create a French version for the purpose of this study[3]. This scale contains 19 items (e.g., "If a girl is raped while she is drunk, she is at least somewhat responsible for letting things get out of hand."; Cronbach α = .84) that are scored using a 5-point response scale (1 =

[3] The French version of the Illinois Rape Myth Acceptance scale was validated using a Confirmatory Factor Analysis. Three items were dropped because they lowered the internal consistency of the sub-factor "He Didn't Mean To". The four-factor model of the French Illinois Rape Myth Acceptance Scale was validated in a sample of 268 participants. The model possessed an excellent fit, χ^2 (148) =1331.31, $p < .001$; RMSEA = .037; CFI = .994; AGFI = .720; NFI = .979; NNFI = .993.

Strongly Agree to 5 = *Strongly Disagree*). For all statistical analyses, the score of the Updated Illinois Rape Myth Acceptance Scale was reversed so that higher scores indicate stronger rape myth beliefs.

Trait aggression. Participants completed a French version (Genoud & Zimmermann, 2009) of the Aggression Questionnaire (AQ; Bryant & Smith, 2001), which contains 12 items (e.g., "I have threatened people I know"; Cronbach α = .71) that are scored using a 6-point response scale (1 = *Not at all like me* to 6 = *Completely like me*).

Sampling

After elimination of the duplicates, the sample of video games resulted in 447 video games that contained a total of 610 female characters and 692 male characters. The final sample included video games from each of the different Pan European Game Information (PEGI, 2018) age rating categories (i.e., 3+, 7+, 12+, 16+, 18+) and from each genre based on the Entertainment Software Rating Board (ESRB, 2018) classification (e.g., Action, Role Play Gaming, Puzzle, Simulation, Adventure, Strategy, Racing, Sports). Appendix 2[4] contains a list of 447 video games included in the sample. In order to code the degree of sexualization of the video game characters, 4 pictures of humanoid main characters were used for each game (if the game contained characters). Preferentially, the 4 pictures had to include two males (the main protagonist and the main antagonist) and two females (the main protagonist and the main antagonist).

Coding

Female character evaluation. Six observation scores were observation scores were assigned to female characters: (1) breast, (2) hips, (3) shoulder span, (4) Biceps, (5) uncovered body parts and (6) Clothing. To avoid variation due to image size, the measurements for breasts, hips, shoulder span and biceps were proportions.

Breast. Breast size was measured by dividing the width of the bust (largest point) by the width of the waist (smallest point).

Hips. Hip size was measured by dividing the belt width (smallest point) by the width of the waist (smallest point).

[4] Appendix 2 can be found in Annex 1

Shoulder span. Shoulder span was measured by dividing the width of the shoulders (largest point) by the width of the head (largest point), using the bottom of the eyes as a guide for the ruler.

Biceps. Biceps were measured by dividing the width of the biceps (largest point) by the width of the head (largest point), using the bottom of the eyes as a guide for the ruler.

Uncovered body parts. One point was given for each of five possible naked body areas: (1) shoulders, (2) belly and/or the back, (3) neckline and/or the breast, (4) buttocks, and (5) thighs. Thus, points could range from 0 to 5.

Clothing. Points (0 to 5) were also given for sexualized clothes. The following clothes were coded 1 point: mini-skirt, shorts, top neckline, bottom neckline, slit dress, high boots, fishnet stockings, and tattoo. The following clothes were coded 2 points: bikini bottom, bikini top, swimsuit, bra, underpants, corset, garters, sleeveless shirt, open shirt. Naked characters or characters where the breasts or buttocks were fully revealed were coded 5 points. Skin-tight clothes (e.g., leather) that revealed body shapes were coded according to the body parts concerned. For example, a leather pant would be coded two because it concerns the buttocks and the thighs.

Male character evaluation. Five observation scores were assigned to male characters: (1) shoulder span, (2) biceps, (3) V-Shape, (4) uncovered body parts and (5) clothing. To avoid variation due to image size, the measurements for shoulder span, biceps and V-shape were proportions.

Shoulder span. Shoulder span was measured by dividing the width of the shoulders (largest point) by the width of the head (largest point), using the bottom of the eyes as a guide for the ruler.

Biceps. Biceps were measured by dividing the width of the biceps (largest point) by the width of the head (largest point), using the bottom of the eyes as a guide for the ruler.

V-Shape. V-shape was measured by dividing the width of the shoulder (largest point) by the width of the (waist smallest point).

Uncovered body parts. One point was given for each of six possible naked body areas: (1) shoulders, (2) biceps, (3) abdominal muscles and/or the back, (4) pectoral muscles, (5) thighs, and (6) buttock.

Clothing. Points (0 to 5) were also given for sexualized clothes. The following clothes were coded 1 point: mini-skirt, shorts, top neckline, bottom neckline, slit dress, high boots, fishnet stockings, and tattoo. The following clothes were coded 2 points: bikini bottom, bikini top, swimsuit, bra, underpants, corset, garters, sleeveless shirt, open shirt. Naked characters or characters where the breasts or buttocks were fully revealed were coded 5 points. Skin-tight clothes (e.g., leather) that revealed body shapes were coded according to the body parts concerned. For example, a leather pant would be coded two because it concerns the buttocks and the thighs.

Coder Training

Two coders (undergraduate University students) coded all the images extracted from the video games. One coder was a man that described himself as a video game player, the other coder was a woman that described herself as having little knowledge about video games. After evaluating the inter-coder reliability, a third coder was use to resolve any eventual differences of coding. The third coder was a male that described himself as a video game player.

Statistical Analyses

An exploratory factor analysis was used to determine the factor structure of the "Video Game Sexualization Protocol" (VGSP). Oblimin rotation was used because we expected our factors to be correlated with each other (Sass & Schmitt, 2010; Yong & Pearce, 2013). Pearson's correlations were then conducted to evaluate the relationship between the various factors of the VGSP. According to Cohen (1988), a "small" correlation is .10, a "medium" correlation is .30, and a "large" correlation is .50. Finally, regression analysis was used to determine the extent to which the VGSP predicts hostile sexism, benevolent sexism, interpersonal aggression and rape myth acceptance.

Results

Intercoder Reliability

Pearson's correlations were used for measures that involved proportions (i.e., breast, hips, shoulder span, biceps and V-shape), and intraclass correlations were used for categories (i.e., female and male uncovered body parts and clothing). As can be seen in Table 5, intercoder reliability was excellent for coded dimensions for both female and male characters.

Table 5

Intercoder Reliability using Pearson's correlations and intraclass correlations

Measure	Pearson's correlation	Intraclass correlation
Breasts	.929	
Hips	.958	
Female shoulder span	.987	
Female biceps	.907	
Female uncovered body parts		.975
Female clothing		.967
Male biceps	.975	
Male shoulder span	.996	
V-shape	.975	
Male uncovered body parts		.983
Male clothing		.989

Exploratory Factor Analysis (EFA)

Two exploratory factor analyses were used to determine the best model for the sexualization of female video game characters and the sexualization of male video game characters. For the sexualized female video game characters, the EFA with Oblimin rotation suggested extracting three factors (Table 6), which accounted for 83.06% of the variance (eigenvalue = 1.10). Breasts and hips leaded on Factor 1, female shoulder span and female biceps loaded on Factor 2, and female uncovered body parts and female clothing.

Table 6

Corrected Item-Total Correlation and Factor Loadings from EFA for measures related to the female characters

Items	Corrected item-total correlation	Factor 1 Loading	Factor 2 Loading	Factor 3 Loading
Breasts	.632	.890		
Hips	.632	.903		
Female shoulder span	.686		.840	
Female biceps	.686		.856	
Female uncovered body parts	.876			.968
Female clothing	.876			.963

For the sexualized male video game characters, the EFA with Varimax rotation suggested extracting three factors (Table 7), which accounted for 94.12% of the

variance (eigenvalue = 0.72). V-shape loaded on Factor 1, male shoulder span and male biceps loaded on Factor 2, and male uncovered body parts and male clothing.

Table 7

Corrected Item-Total Correlation and Factor Loadings from EFA for measures related to the male characters

Items	Corrected item-total correlation	Factor 1 Loading	Factor 2 Loading	Factor 3 Loading
V-shape	/	.993		
Male biceps	.828		.969	
Male shoulder size	.828		.935	
Male uncovered body parts	.859			.975
Male clothing	.859			.947

Descriptive Statistics, Internal Consistency, and Inter-Correlation of the Female and Male Three-Factor Models

Descriptive results, internal consistency, and intercorrelations between all factors of both three-model factors of the VGSP are reported in Table 8. Internal consistency was evaluated with Cronbach's α coefficient, which ranged from .77 to .93. Many methodologists recommend a minimum coefficient of .65. Thus, these coefficients were high.

Table 8

Descriptive statistics, internal consistency and inter-correlation of all facets of the VGSP

Factors	*M* (*SD*)	Cronbach α	1	2	3	4	5
1 - Female Sexualized Body	1.84(1.34)	.77					
2 - Female Muscularity	1.71(1.71)	.81	.15***				
3 - Female Sexualized Outfit	2.32(2.99)	.93	.38***	.22***			
4 - Male Sexualized Body	1.29(0.81)	/	.41***	.20***	.19***		
5 - Male Muscularity	3.05(2.07)	.91	.22***	.57***	.24***	.48***	
6 - Male Sexualized Outfit	1.51(2.86)	.92	.19***	.16***	.37***	.26***	.30***

Note. For mean and standard deviation, brut measures were used to compute all factors. For the inter-correlation, standardized measures were used to compute all factors.
***$p < .001$

Convergent Validity

Correlations were used to determine the degree of the relation between our objective (VGSP) and subjective measures (Table 9). Subjective violence, female sexualization and male sexualization were correlated with all our objective measures for both the first and the second selected character from the video game. All factors were computed using standardized measures.

Table 9

Pearson's correlations between all objective and subjective measures of video game content (N = 1680)

		Subjective Female Sexualization	Subjective Male Sexualization	Subjective Violence
First character	Female Sexualized Body	.29***	.24***	-.02
	Female Sexualized Outfit	.38***	.28***	.13***
	Female Muscularity	.39***	.34***	.30***
	Male Sexualized Body	-.01	-.01	-.06*
	Male Sexualized Outfit	.24***	.22***	-.09***
	Male Muscularity	.36***	.31***	.12***
Second character	Female Sexualized Body	.14***	.11***	-.03
	Female Sexualized Outfit	.40***	.27***	.01
	Female Muscularity	.14***	.16***	.19***
	Male Sexualized Body	.20***	.15***	.01
	Male Sexualized Outfit	.35***	.25***	.06*
	Male Muscularity	.35***	.28***	.07**

*$p<.05$; ***$p < .001$

Regression Analyses

To evaluate the global exposure to sexualized video game content, a score for each factor of the VGSP was created, as was done for the Video Game Questionnaire (Anderson & Dill, 2000). This score was computed by first standardizing each factor and adding a constant so that each score remains positive. Second, each score was multiplied by the time spent playing the video game. Third, each score was weighted by the number of characters evaluated in the video game. Finally, for each factor, the scores of all the video games listed by the participant were added together, weighted by the number of games. Correlations between objective measures of sexualization,

subjective measures of sexualization, trait aggression, rape myth acceptance, hostile sexism, and benevolent sexism are presented in Table 10.

Using regression analyses, we computed two models (Figure 2). In the first model, rape myth acceptance was the outcome variable, exposure to female sexualized body was the predictor variable, and hostile sexism, benevolent sexism and trait aggression were mediators, and both exposure to female muscularity sexualized bodies and exposure to a female sexualized clothing were the moderators between the outcome variable and both the predictor variable and the mediators. The second model is similar to the first one, except that the predictor variable was exposure to male sexualized body and the moderators were exposure to male muscularity sexualized bodies and exposure to a male sexualized clothing. In both models, subjective measures of video game violence, sexualization of female characters and sexualization of male characters were used as covariates.

Table 10

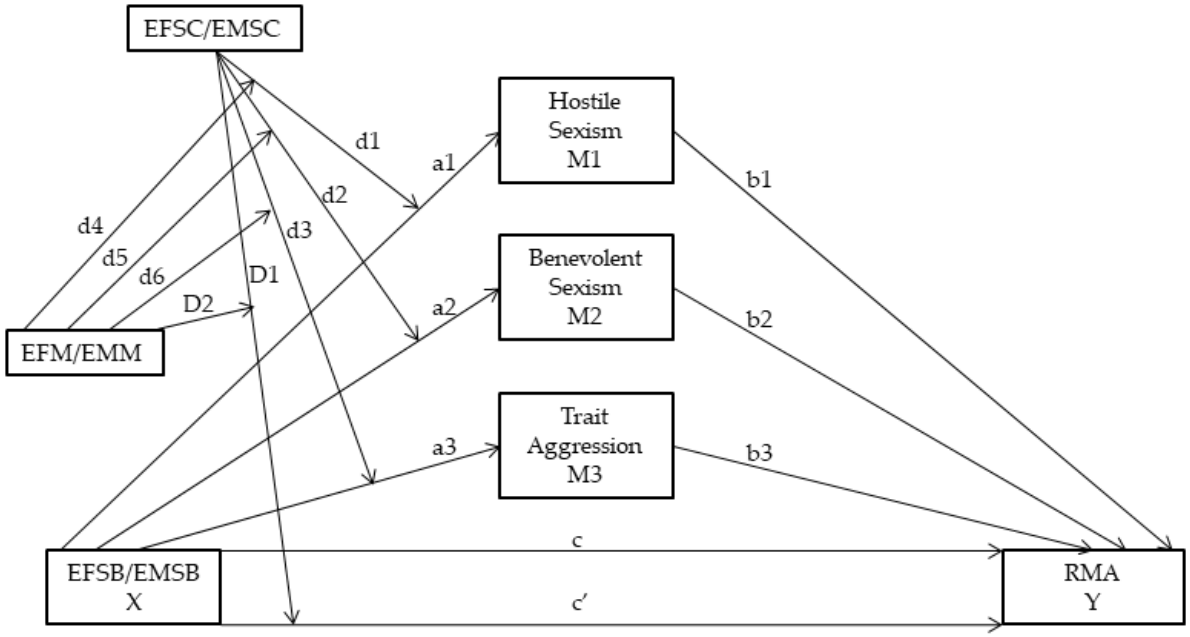
Pearson's correlations between all measure of exposure to sexualized and violent video games, trait aggression, hostile and benevolent sexism, and rape myth acceptance

	1	2	3	4	5	6	7	8	9	10	11	12
1 – EFSB	-											
2 – EFM	.98***	-										
3 – EFSO	.97***	.97***	-									
4 – EMSB	.63***	.62***	.63***	-								
5 – EMM	.70***	.69***	.70***	.86***	-							
6 – EMSO	.70***	.69***	.72***	.87***	.98***	-						
7 – SV	.55***	.57***	.52***	.49***	.52***	.50***	-					
8 – SFS	.69***	.69***	.69***	.43***	.50***	.49***	.54***	-				
9 – SMS	.63***	.63***	.62***	.42***	.49***	.49***	.55***	.84***	-			
10 – TA	.07	.07	.08	.05	.12**	.11**	.04	.07	.06	-		
11 – BS	.03	.05	.06	.09*	.12**	.12**	-.01	-.03	.00	.15***	-	
12 – HS	.06	.06	.08	.09*	.11**	.10*	.05	-.01	.01	.24***	.49***	-
13 – RMA	.04	.04	.04	.06	.08*	.08	.03	.03	.03	.11**	.39***	.63***

*$p<.05$; **$p < .01$; ***$p < .001$

Note. EFSB = Exposure to Female Sexualized Body; EFSO = Exposure to Female Sexualized Outfit; EFM = Exposure to Female Muscularity; EMSB = Exposure to Male Sexualized Body; EMSO = Exposure to Male Sexualized Outfit; EMM = Exposure to Male Muscularity; SV = Subjective Violence; SFS = Subjective Female Sexualization; SMS = Subjective Male Sexualization; RMA = Rape Myth Acceptance; HS = Hostile sexism; BS = Benevolent Sexism; TA = Trait Aggression.

Figure 2. Proposed model whereby the relation between Exposure to a Female/Male Sexualized Body (EFSB/EMSB) and Rape Myth Acceptance (RMA) is mediated by Hostile sexism, Benevolent Sexism, and Trait Aggression. All relations are moderated by Exposure to a Female/Male Sexualized Outfit (EFSO/EMSO) and Exposure to Female/Male Muscularity (EFM/EMM).



In the first model (Table 11), benevolent sexism was predicted by exposure to female characters with sexualized bodies (b = -0.70), exposure to a female characters with sexualized clothing (b = 0.56), and subjective female sexualization (b = -0.17). Hostile sexism was predicted by the interaction between exposure to female characters with sexualized clothing and exposure to muscular female characters (Table 12; Figure 3). Rape myth acceptance was predicted by hostile (b = 0.59) and benevolent sexism (b = 0.12). None of the indirect paths were significant.

Table 11

Path coefficients, indirect effects and 95% bias-corrected Confidence Intervals for multiple mediation analysis and moderation analysis. Effects of exposure to a female sexualized body on rape myth acceptance through hostile sexism, benevolent sexism and trait aggression, and effect of both exposure to female muscularity and exposure to a female sexualized outfit as a moderator between these variables

	R^2	F	p	Path					95% CI	
					β	SE	t	p	Lower	Upper
RMA (Y)	.417	30.84	<.001							
				Direct effect	-.123	.197	-0.63	.532		
				EFSB (c′)						
				EFSO (D1)	.193	.161	1.20	.230		
				EFM (D2)	-.072	.218	-0.33	.740		
				Interaction (c′ X D1)	-.048	.208	-0.23	.755		
				Interaction (c′ X D2)	.111	.165	1.20	.230		
				Interaction (D1 X D2)	-.062	.199	-0.31	.755		
				Interaction (c′ X D1 X D2)	.019	.016	1.23	.218		
				HS	**-.591**	**.038**	**-15.58**	**<.001**		
				BS	**-.122**	**.038**	**-3.26**	**.001**		
				TA	.055	.034	1.63	.104		
				SV	.022	.042	0.51	.610		
				SFS	-.124	.067	-1.86	.063		
				SMS	.044	.063	0.69	.489		
HS (M1)	.026	1.48	.143							
				EFSB (a1)	-.366	.253	-1.45	.148		
				EFSO (d1)	.324	.206	1.57	.116		
				EFM (d4)	.145	.281	0.52	.607		
				Interaction (a1 X d1)	.481	.267	1.80	.073		
				Interaction (a1 X d4)	.050	.212	0.24	.812		
				Interaction (d1 X d4)	**-.558**	**.255**	**-2.19**	**.029**		
				Interaction (a1 X d1 X d4)	.002	.020	0.08	.934		
				SV	.063	.055	1.16	.248		
				SFS	-.134	.086	-1.56	.118		
				SMS	.032	.081	0.40	.693		
BS (M2)	.035	2.05	.027							
				EFSB (a2)	**-.703**	**.251**	**-2.80**	**.005**		
				EFSO (d2)	**.565**	**.205**	**2.75**	**.006**		
				EFM (d5)	.260	.280	0.93	.353		
				Interaction (a2 X d2)	.190	.266	0.71	.476		
				Interaction (a2 X d5)	.195	.211	0.93	.355		
				Interaction (d3 X d5)	-0.42	.254	-1.64	.101		
				Interaction (a2 X d2 X d5)	.00	.020	0.09	.930		
				SV	-.030	.054	-0.56	.576		
				SFS	**-.173**	**.085**	**-2.03**	**.043**		
				SMS	.100	.081	1.24	.214		

Table 11 (continued)

	R^2	F	p	Path	β	SE	t	p	95% CI Lower	95% CI Upper
TA (M3)	.016	0.94	.495							
				EFSB (a3)	-.083	.154	-0.33	.744		
				EFSO (d3)	.270	.207	1.30	.193		
				EFM (d6)	-.129	.283	-0.46	.648		
				Interaction (a3 X d3)	.344	.269	1.28	.201		
				Interaction (a3 X d6)	-.077	.213	0.36	.717		
				Interaction (d5 X d6)	-.378	.257	-1.47	.141		
				Interaction (a2 X d3 X d6)	-.013	.020	-0.67	.503		
				SV	.017	.055	.302	.763		
				SFS	.050	.086	0.58	.563		
				SMS	-.011	.082	-0.13	.894		
Indirect effects										
				a1b1	-.001	.018			-.041	.022
				a2b2	-.000	.004			-.009	.005
				a3b3	-.001	.002			-.005	.001

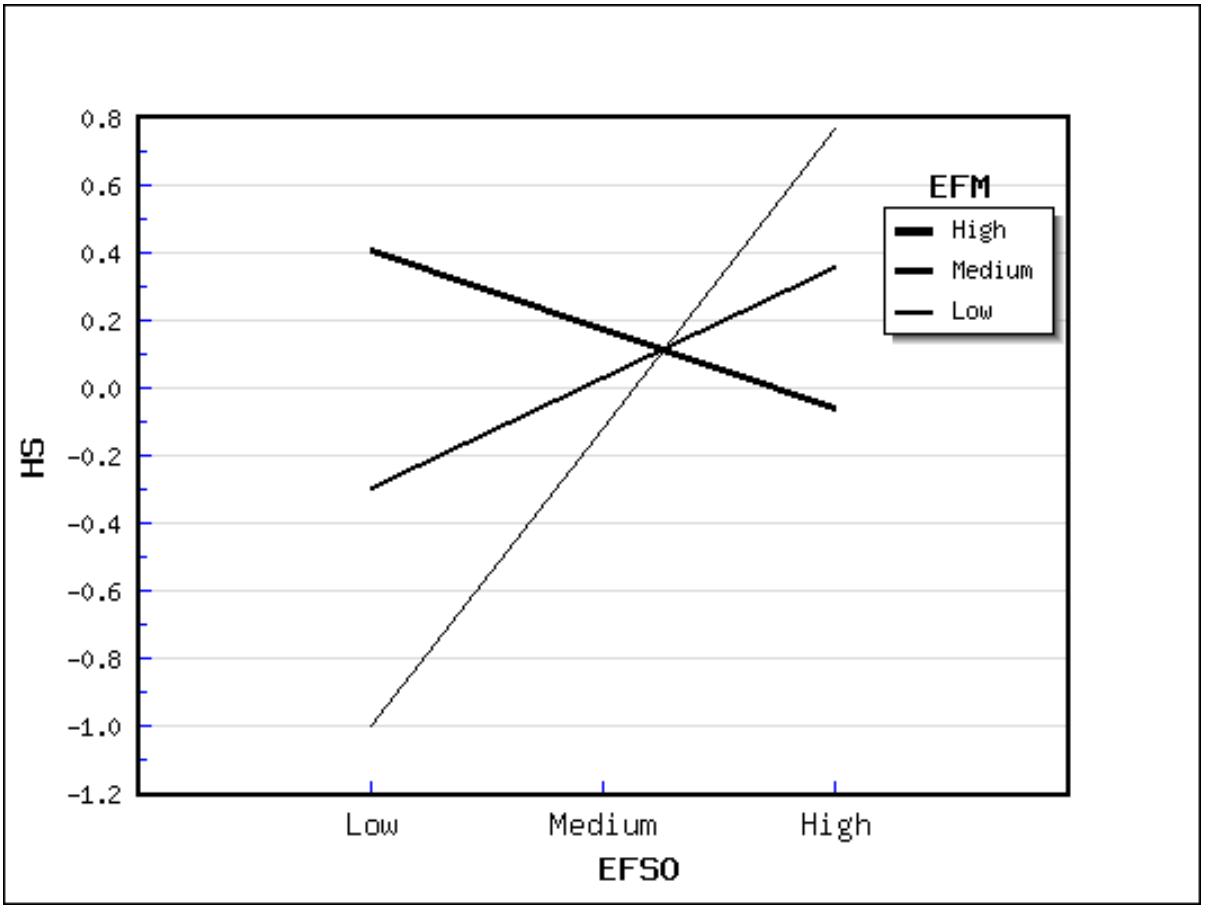
Note. RMA = Rape Myth Acceptance; HS = Hostile sexism; BS = Benevolent Sexism; TA = Trait Aggressiveness; EFSB = Exposure to a female sexualized body; EFSO = Exposure to a female Sexualized Outfit; EFM = Exposure to female Muscularity; SV = Subjective Violence; SFS = Subjective Female Sexualization; SMS = Subjective Male Sexualization.

Table 12

Conditional effects of exposure to a female sexualized outfit on hostile sexism

Muscularity	β	p	95% CI
One *SD* below mean	0.06	.889	-.089, 0.96
At the mean	-0.50	.357	-1.56, 0.56
One *SD* above mean	-1.06	.136	-2.45, 0.34

Figure 3. Interaction between exposure to female sexualized outfit and exposure to female muscularity on hostile sexism.



In the second model (Table 13), trait aggression was predicted by exposure to sexualized male bodies (b = -0.19). Hostile sexism was predicted by exposure to muscular male characters (b = 0.50). Rape myth acceptance was predicted by trait aggression (b = -0.07), benevolent sexism (b = 0.11), hostile sexism (b = 0.59), the interaction between exposure to a male characters with sexualized bodies and exposure to muscular male characters (see Table 14, Figure 4), and the interaction between exposure to male characters with sexualized bodies and exposure to male characters wearing sexualized clothing (see Table 14, Figure 5).

Table 13

Path coefficients, indirect effects and 95% bias-corrected Confidence Intervals for multiple mediation analysis and moderation analysis. Effects of exposure to male sexualized body on rape myth acceptance through hostile sexism, benevolent sexism and trait aggression, and effect of both exposure to male muscularity and exposure to male sexualized outfit as a moderator between these variables

	R^2	F	p	Path					95% CI	
					β	SE	t	p	Lower	Upper
RMA (Y)	.424	31.69	<.001							
				Direct effect	-.025	.070	0.36	.720		
				EMSB (c′)						
				EMSO (D1)	.377	.197	-1.91	.056		
				EMM (D2)	-.327	.194	1.69	.093		
				Interaction (c′ X D1)	**-.543**	**.196**	**2.78**	**.006**		
				Interaction (c′ X D2)	**.654**	**.199**	**-3.29**	**.001**		
				Interaction (D1 X D2)	-.092	.072	1.27	.203		
				Interaction (c′ X D1 X D2)	-.008	.018	0.45	.655		
				HS	**.599**	**.038**	**-15.81**	**<.001**		
				BS	**.113**	**.037**	**-3.02**	**.003**		
				TA	**-.067**	**.034**	**1.98**	**.048**		
				SV	-.029	.042	0.69	.490		
				SFS	.091	.062	-1.48	.141		
				SMS	-.038	.062	0.62	.534		
HS (M1)	.031	1.81	.056							
				EMSB (a1)	-.028	.091	-0.31	.759		
				EMSO (d1)	-.355	.253	-1.40	.161		
				EMM (d4)	**.495**	**.250**	**1.98**	**.048**		
				Interaction (a1 X d1)	-.002	.253	-0.01	.995		
				Interaction (a1 X d4)	-.171	.257	-0.67	.504		
				Interaction (d1 X d4)	.128	.093	1.38	.168		
				Interaction (a1 X d1 X d4)	.009	.023	0.40	.689		
				SV	.026	.054	0.48	.635		
				SFS	-.109	.080	-1.37	.171		
				SMS	.006	.080	0.80	.937		

Table 13 (continued)

	R^2	F	p	Path	β	SE	t	p	95% CI Lower	95% CI Upper
BS (M2)	.034	1.97	.034							
				EMSB (a2)	-.067	.090	-0.74	.462		
				EMSO (d2)	.229	.253	0.90	.366		
				EMM (d5)	.047	.249	0.19	.851		
				Interaction (a2 X d2)	-.149	.252	-0.59	.556		
				Interaction (a2 X d5)	.085	.256	0.33	.740		
				Interaction (d3 X d2)	.020	.093	0.21	.831		
				Interaction (a2 X d2 X d5)	-.003	.023	-0.13	.898		
				SV	-.071	.084	-1.31	.191		
				SFS	-.156	.080	-1.96	.051		
				SMS	.061	.080	0.77	.441		
TA (M3)	.033	1.90	.043							
				EMSB (a3)	**-.192**	**.091**	**-2.12**	**.034**		
				EMSO (d3)	.134	.253	1.17	.243		
				EMM (d6)	.134	.249	0.54	.591		
				Interaction (a3 X d3)	-.188	.253	-0.74	.457		
				Interaction (a3 X d6)	.300	.256	1.17	.243		
				Interaction (d3 X d6)	-.060	.093	-0.65	.516		
				Interaction (a2 X d3 X d6)	.005	.023	0.23	.822		
				SV	-.022	.054	-0.41	.684		
				SFS	.064	.080	0.81	.419		
				SMS	-.031	.080	-0.39	.700		
Indirect effects										
				a1b1	-.006	.013			-.030	.022
				a2b2	.000	.003			-.006	.006
				a3b3	.000	.002			-.003	.005

Note. RMA = Rape Myth Acceptance; HS = Hostile sexism; BS = Benevolent Sexism; TA = Trait Aggressiveness; EMSB = Exposure to a Male Sexualized Body; EMSO = Exposure to a Male Sexualized Outfit; EMM = Exposure to Male Muscularity; SV = Subjective Violence; SFS = Subjective Female Sexualization; SMS = Subjective Male Sexualization.

Table 14

Conditional effects of exposure to a male sexualized body on rape myth acceptance

Exposure to Male Muscularity	*β*	*p*	95% CI
One *SD* below mean	0.32	.131	-0.09, 0.73
At the mean	0.99	.009	0.25, 1.73
One *SD* above mean	1.66	.004	0.54, 2.78
Exposure to a Male Sexualized Outfit	*β*	*p*	95% CI
One *SD* below mean	-0.70	.001	-1.12, -0.28
At the mean	-1.23	<.001	-1.96, -0.51
One *SD* above mean	-1.76	.002	-2.84, -0.68

Figure 4. Interaction between exposure to male sexualized outfit and exposure to male sexualized body on rape myth acceptance.

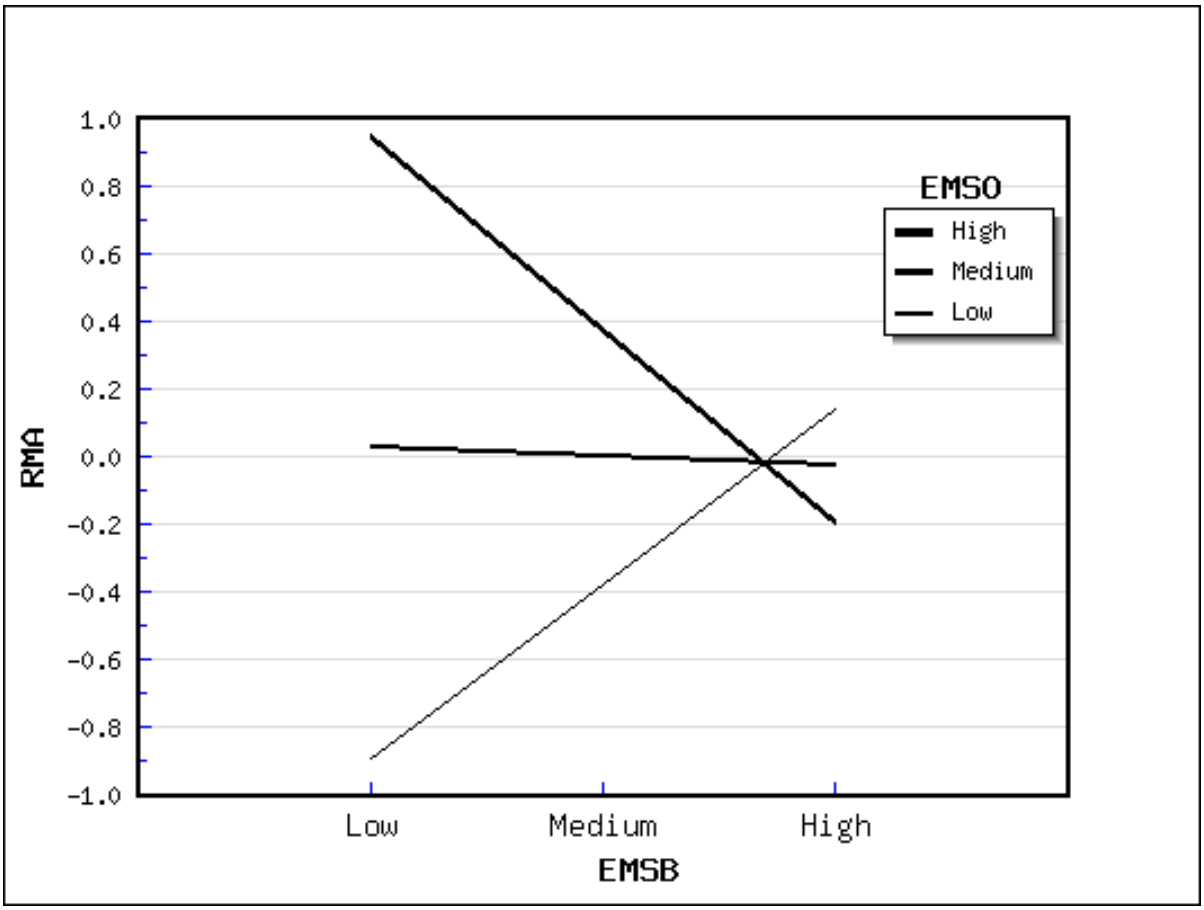
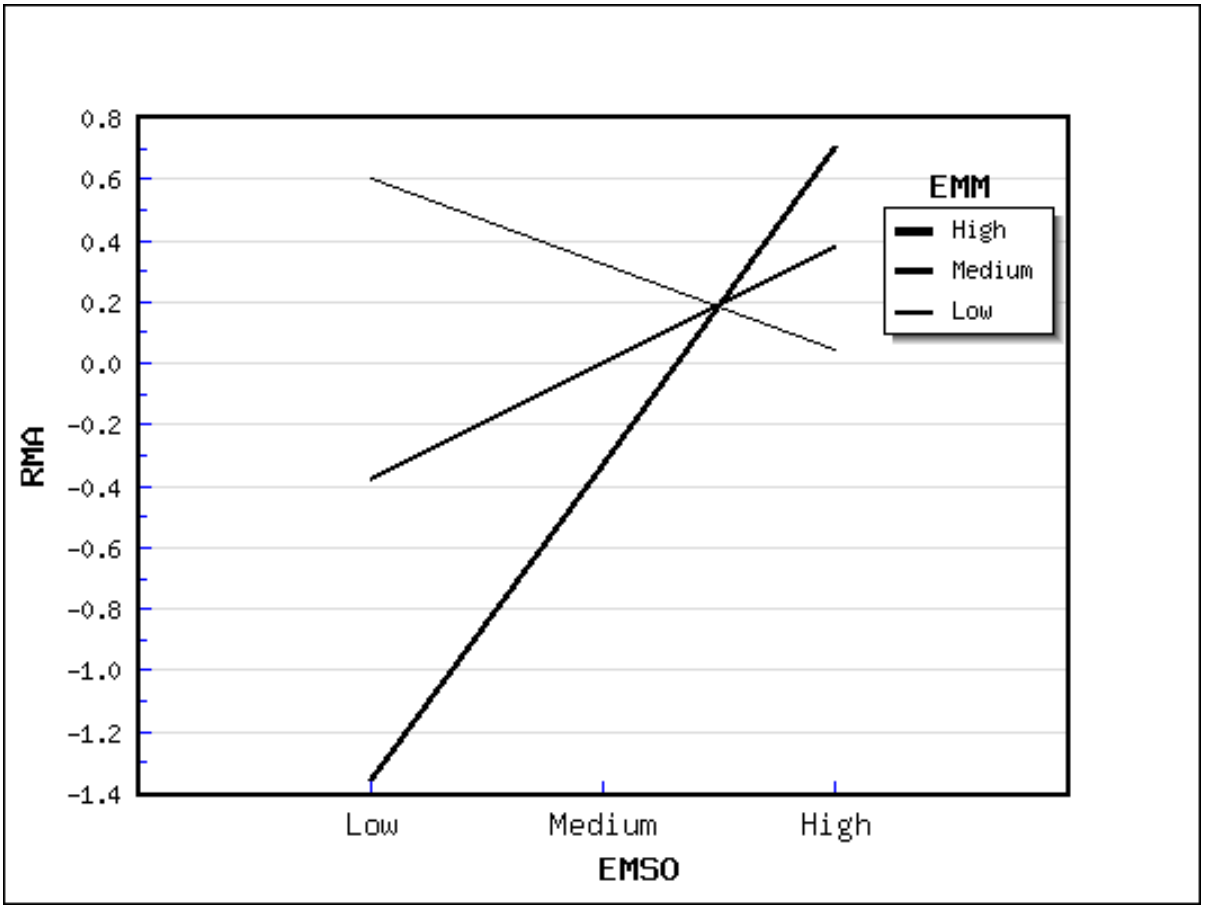


Figure 5. Interaction between exposure to male sexualized outfit and exposure to male muscularity on rape myth acceptance.



Age rating differences. Using an ANOVA (Table 15), the six factors of the VGSP were compared based on the official age rating of each of the games (PEGI, 2018). Results showed that sexualized content is the highest in video games rated PEGI 12 except for female sexualized body, which is the highest in video game rated PEGI 16.

Table 15

Main effect of PEGI ratings on the six factors of the VGSP

Factor	*N*	*F*	*p*	PEGI 3 *M(SE)*$_a$	PEGI 7 *M(SE)*$_b$	PEGI 12 *M(SE)*$_c$	PEGI 16 *M(SE)*$_d$	PEGI 18 *M(SE)*
FSB	594	13.74	<.001	5.18(0.20)	6.24(0.22)$_a$	6.59(0.13)$_a$	5.99(0.16)$_a$	5.50(0.13)$_c$
FSO	594	9.22	<.001	1.44(0.22)$_c$	1.80(0.24)$_c$	2.74(0.14)	2.27(0.18)	1.77(0.14)$_c$
FM	594	4.40	<.001	5.31(0.19)	5.09(0.21)	6.92(0.12)$_{a,b,d}$	7.70(0.15)$_{a,b,c}$	7.18(0.12)$_{a,b}$
MSB	674	11.77	<.001	1.77(0.10)	2.14(0.13)	2.58(0.07)$_a$	2.23(0.08)$_{a,c}$	2.07(0.07)$_c$
MSO	674	4.00	.003	1.20(0.21)	1.04(0.25)	1.68(0.14)	1.22(0.16)	0.90(0.14)$_c$
MM	674	31.48	<.001	3.21(0.19)	3.24(0.22)	5.15(0.13)$_{a,b}$	5.04(0.15)$_{a,b}$	4.92(0.13)$_{a,b}$

Note. Each age rating has a subscript attributed to it, if that subscript appears in another case, there is a significant 2-by-2 difference.

Discussion

There were two objectives to this study. The first objective was to improve the VGSP. The second objective was to determine if the VGSP could predict negative attitudes toward women. Both objectives were met.

Using an EFA on the second version of the VGSP, results showed that the models that explained the most variance contained three factors, for both male and female video game characters. These three factors were "Sexualized Body", "Sexualized Clothing" and "Muscularity". All three factors were internally consistent (all Cronbach α's > .77). Furthermore, all three factors were intercorrelated.

Compared with the first version of the VGSP, the second version of the VGSP contained more parallel measures for male and female video game characters (i.e., V-shape for male characters and breasts and hips for female characters, muscularity for both male and female characters). The second version, like the first, had excellent psychometric properties. Finally, the objective and subjective measures of sexualized video game content were associated, which shows convergent validity. All associations were small, suggesting that our objective measure and the subjective measure evaluate similar but not identical concepts. In summary, Study 2 met its first aim to create an objective evaluation protocol to examine the degree of sexualized content of video games.

Concerning the second aim, Study 2 tried to predict benevolent and hostile sexism, trait aggression and rape myth acceptance using the VGSP, after controlling for subjective evaluations of female and male sexualization, and violent video game content. Two models were computed, one using the objective measures for female characters and one using the objective measures for male characters.

In the female model, benevolent sexism was positively predicted by exposure to female characters in sexualized clothing. Surprisingly, benevolent sexism was negatively predicted by exposure to female characters with sexualized bodies (and also by the subjective female sexualization covariate). Hostile sexism was negatively predicted by exposure to muscular female characters in sexualized clothing.

In the male model, hostile sexism was positively predicted by exposure to muscular male characters. Further, rape myth acceptance was positive predicted by exposure to muscular male characters, especially if they also wore sexualized clothing.

To our knowledge, Study 2 is the first study to evaluate the impact of sexualized male and female video game characters on negative attitudes toward women using an objective instrument. Previous studies used either subjective instruments or did not distinguish between male and female video game characters.

Based on the GAM (Anderson & Bushman, 2018; Bushman, 2017), sexualized video game content is supposed to influence trait aggression and negative attitudes toward women. However, results from the present study are not as clear and straightforward as expected. The results from past studies on the sexualized content of video games showed that benevolent sexism was influenced by subjectively perceived sexism (Stermer & Burkley, 2015) and sexualization (Behm-morawitz & Mastro, 2009). The present study showed that benevolent sexism was positively predicted by exposure to female characters in sexualized clothing, which is coherent with previous research (Behm-morawitz & Mastro, 2009; Pacilli et al., 2017). However, the fact that benevolent sexism was negatively predicted by exposure to female characters with sexualized bodies is surprising. The opposite effect of two types of sexualization could be explained by the fact that they are not associated with the same concepts in people's mind. First, it has been shown that when women wear sexualized outfits, they are perceived as being less agentic, more vulnerable to sexual aggression, and more sexually open (Blake, Bastian, & Denson, 2016). Because women wearing sexualized clothing are perceived as being vulnerable and taking risks, this could foster the benevolent sexist idea that they need to be protected. In contrast, body shape – especially the waist-to-hips ratio – has been shown to be associated with attractiveness, cognitive ability, health, and self-efficacy (Chang & Kim, 2015; Kościński, 2014). Women with these attributes could be perceived as being more confident and, therefore, less vulnerable and less in need of protection.

Hostile sexism was negatively predicted by exposure to muscular female characters in sexualized clothing. This could be explained by the fact that tight, sexualized clothing tends to accentuate muscles. Muscularity among women can be seen as stereotypically inconsistent information that could lead to a diminution of hostile sexism. For example, female athletes have reported that they were often perceived as different from "normal girls" (Krane, Choi, Baird, Aimar, & Kauer, 2004). Further, hostile sexism was positively predicted by exposure to muscular male characters. This result is consistent with the hyper-masculine attitudes conveyed by muscular male characters in video games. Hyper-masculinity can be described as an exaggeration of "macho" characteristics, with tendencies to consider displays of emotion as a weakness, to consider physical aggressiveness as part of male nature, to

belittle women and romantic relations, and to exhibit risk-taking behavior (Scharrer, 2004). Hyper-masculine male video game characters are often hyper-muscular (Dill & Thill, 2007; M. K. Miller & Summers, 2007).

Trait aggression was negatively predicted by exposure to male characters with sexualized bodies. The V-shape in a man activates concepts of health, desirability, and safety but not of dominance (Braun & Bryan, 2006). Therefore, instead of priming aggressiveness, the male V-shape might prime feelings of safety.

Rape myth acceptance was positively predicted by exposure to muscular male characters in sexualized clothing, but was negatively predicted by exposure to male characters with sexualized bodies and clothes. This opposite result might be explained by the priming of different concepts. As explained earlier, V-shape among men tends to prime health and desirability (Braun & Bryan, 2006) and a more sexualized outfit might be associated with sexual availability rather than aggressiveness. However, Exposure to a V-shape combined with muscularity, would prime concepts of hyper-masculinity and aggressiveness. Another explanation of the interaction between exposure to a male sexualized body and exposure to a male character in sexualized clothing is highest in video games rated 12+ and is lowest in video games rated 18+. Video games rated 18+ are far more violent than video games rated 12+. Thus, when players are exposed to male characters in sexualized clothing, they are also exposed to less violent content.

In general, Study 2 provided some interesting results. First, sexualization of female characters alone does not seem to predict negative attitudes toward women. Indeed, only benevolent sexism was positively predicted by exposure to female characters in sexualized outfits. Other attributes of women either did not predict negative attitudes toward women (e.g., rape myth acceptance) or predicted it negatively (e.g., benevolent and hostile sexism). Second, male character attributes are important variables to consider in future studies. Exposure to sexualized and muscular male characters predicted hostile sexism and rape myth acceptance. This is a rather unique finding. In contrast, the majority of previous studies about the impact of sexualized or muscular male characters in video games have focused on self-esteem and body image (Matthews et al., 2016; Sylvia, King, & Morse, 2014; Vandenbosch, Driesmans, Trekels, & Eggermont, 2017).

Study 2 had two main limitations that should be addressed in future studies. First, our measure of sexualization exposure might not be sufficiently precise and exhaustive. Indeed, our measures focused on two male and two female characters for

each video game. Video games usually include more characters, which could also be sexualized. Further, even if we tried to use images that depicted the character with its most used outfit, some characters change their outfit often during the duration of the video game. Also, body proportions and outfits might not be sufficient to evaluate sexualization. Other authors have used suggestive pose, sexualized movement, or presence of sex talk as examples of a sexualized content (Downs & Smith, 2010; Lynch et al., 2016; Near, 2013). A second limitation is that attitudes about the characters were not evaluated. Indeed, sexualization alone did not seem to be the best predictor of negative attitudes toward women. Measuring the attitude of the characters would have been interesting. For example, muscularity among male characters might not have had the same impact if the character acts in a dominant and aggressive manner, compared to a passive and submissive way. Similarly, a sexualized woman might not prime negative attitudes if she is portrayed as being a strong and dominant character. Undoubtedly, these limitations warrant further research.

In conclusion, Study 2 developed the VGSP, which allows the measurement of sexualized body, sexualized outfits, and muscularity of both male and female characters in video games. This assessment protocol provides important knowledge about how different physical features of female and male video game characters can potentially influence attitudes toward women. Our results revealed a more complex and less straightforward impact of exposure to sexualized game characters. For example, benevolent sexism was positively predicted by exposure to female characters in sexualized outfits, but negatively predicted by exposure to female characters with sexualized bodies. Future studies are needed to better understand the impact of sexualized video game content on negative attitudes toward women. But the VGPS is the most objective protocol for measuring sexualized video game content.

Effects of Sexualized Video Games on Online Sexual Harassment

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The data are publicly available on Figshare and Dataverse.

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Abstract

Negative consequences of video games have been a concern since their inception. However, one under-researched area is the potential negative effects of sexualized video game content on players. This study analyzed the consequences of sexualized video game content on online sexual harassment against male and female targets. We controlled for a number of variables that might be related to online sexual harassment (i.e., trait aggressiveness, ambivalent sexism, online disinhibition). Participants (N = 211) played a video game with either sexualized or non-sexualized female characters. After gameplay, they had the opportunity to sexually harass a male or a female partner by sending them sexist jokes. Based on the General Aggression Model integrated with the Confluence Model of Sexual Aggression (Anderson & Anderson, 2008), we predicted that playing the game with sexualized female characters would increase sexual harassment against female targets. Results were consistent with these predictions. Sexual harassment levels toward a female partner were higher for participants who played the game with sexualized female characters than for participants who played the same game with non-sexualized characters. These findings indicate that sexualization of female characters in a video game can be a sufficient condition to provoke online sexual harassment toward women.

Introduction

"#METOO:

If all the women who have been sexually harassed or assaulted wrote "Me too" as a status, we might give people a sense of the magnitude of the problem."

"There's too many incidents to put out here. Being told I must suck because I'm a girl, being told that I should be on my knees giving oral sex to my man because that's my place, being told that I should be in the kitchen making food for my man and not on WoW (World of Warcraft)."

The first quote was written on Twitter by Alyssa Milano. After that tweet, thousands of women used the hash tag #MeToo as a way to denounce sexual harassment and assault. The second quote came from a female video game player during a study about gender harassment during a massively multiplayer online role playing game (Brehm, 2013).

In our society, sexual harassment is a serious problem faced by many women. Eighty-one percent of women have been sexually harassed or assaulted in their lifetime and 4 out of 10 women have experienced online sexual harassment (Stop Street Harassment, 2018). In particular, video game settings are hostile toward women (Gray, 2012a; Salter & Blodgett, 2012). A well-known example of online moral and sexual harassment from a video game community is the case of Anita Sarkeesian, who is a video-blogger that denounced sexism in video games in a video. After publishing her video, she received many death and rape threats, sexist insults, and pictures of her transformed into pornographic images. When women play video games, they are often the target of insults, sexist commentaries, and sexist (and even rape) jokes (Brehm, 2013; Tang & Fox, 2016). All of these acts of behavior, even the more subtle ones such as offensive or sexist jokes, are considered forms of sexual harassment (McDonald, 2012; O'Hare & O'Donohue, 1998; Pina & Gannon, 2006). Sexual harassment refers to a various forms of behavior that can be classified into three main forms: gender harassment, unwanted sexual attention, and sexual coercion (O'Hare & O'Donohue, 1998; Pina & Gannon, 2006). Gender harassment refers to a situation in which a person is subjected to offensive, gender-related, or sexual comments. Unwanted sexual attention refers to repeated attempts to establish a romantic relationship despite refusal, such as unwanted touching, sexual imposition, or assault. Sexual coercion refers to blackmail or rewards for sexual cooperation. However, it remains unclear what specific features of the video game

environment contribute to online sexual harassment. One potential feature could be the sexualized content in some video games. In video games, female characters are often portrayed as sexualized. For example, they are often depicted with large breasts, small waists, a large amount of exposed skin, and revealing clothing (Beasley & Collins Standley, 2002; Burgess et al., 2007; Downs & Smith, 2010; Summers & Miller, 2014). In theory, sexualized content in video games could increase sexual harassment.

Theoretical Foundations of the Present Research

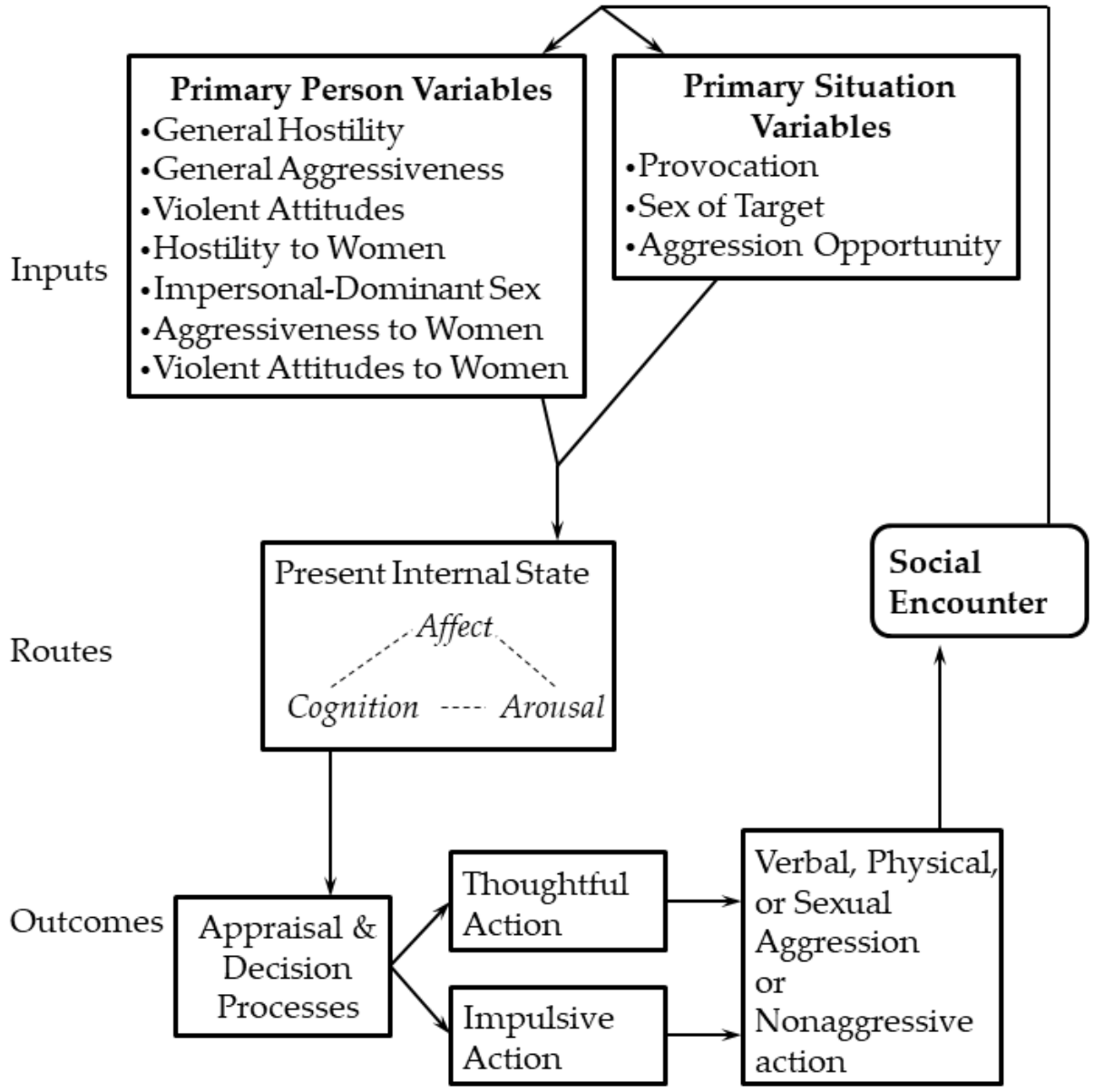
Two theoretical models are especially relevant for explaining the short-term impact of sexualized video games on sexual harassment, namely the General Aggression Model (GAM; Anderson & Bushman, 2002) and the Confluence Model of Sexual Aggression (Malamuth et al., 1995; Vega & Malamuth, 2007). In fact, both models have been integrated together (Anderson & Anderson, 2008). Before describing the integrated model, we briefly describe each model separately.

In the General Aggression Model (GAM; Anderson & Bushman, 2002) two types of input variables can influence aggression: (1) primary person variables, and (2) primary situation variables. Primary person variables include all the internal factors that can influence aggression. Primary situation variables include all the external factors that can influence aggression. Person and situation variables jointly influence the person's internal state, which includes aggressive thoughts, angry feelings, and physiological arousal (e.g., skin conductance, heart rate, blood pressure). Thus, there are three possible routes to aggression — through aggressive thoughts, angry feelings, and physiological arousal. However, the three routes are not mutually exclusive or even independent. For example, someone who has aggressive ideas might also feel angry inside and have elevated blood pressure. These internal states can influence appraisal and decision processes, such as whether ambiguous harmful behavior was intentional. The decisions and appraisals people make can influence their behavior, including whether they behave in an aggressive manner.

According to the Confluence Model of Sexual Aggression (Malamuth et al., 1995; Vega & Malamuth, 2007), two main paths can facilitate sexual aggression: (1) "impersonal sex," and (2) "hostile masculinity." Impersonal sex is characterized by a promiscuous, non-committal, game-playing orientation toward sexuality. Hostile masculinity is a personality profile that combines insecurity, hostility, and distrust, especially toward women.

The Confluence Model of Sexual Aggression, when integrated with the GAM (Anderson & Anderson, 2008), adds several specific individual differences as predictors of sexual aggression by creating hostile thoughts or feelings toward women (Figure 1). Two individual differences that appear to be particularly relevant to sexual harassment are trait aggressiveness (Coombs & Holladay, 2004; Thompson & Morrison, 2013) and ambivalent sexism (LeMaire, Oswald, & Russell, 2016; Russell & Oswald, 2016). The present research includes measures of both of these variables.

Figure 1. Integrated Confluence Model of Sexual Aggression and General Aggression Model (Anderson & Anderson, 2008) .



Three other more specific theoretical models are also relevant to the present research because they explain the creation of preexisting knowledge structures

relevant to sexual harassment and sexualized video games: (1) Expectation State Theory (Berger, Cohen, & Zelditch, 1972), (2) Social Cognitive Theory of Gender Development and Differentiation (Bussey & Bandura, 1999), and (3) Objectification Theory (Fredrickson & Roberts, 1997). According to Expectation State Theory, cultural norms dictate how men and women are supposed to act. Cultural norms help people anticipate the behavior of others during social interactions. In many societies, women still possess a lower status than men. Therefore, women are expected to act in a submissive and nonaggressive manner, whereas men are expected to act in a dominant and aggressive manner. In addition, the more men conform to these cultural norms, the more likely they are to sexually harass women (Pryor, 1987; Sinn, 1997).

Cultural norms about males and females can be learned by observing real people and by observing media characters, such as those in video games. The present research used sexualized video games to convey cultural norms about women. According to Social Cognitive Theory of Gender Development and Differentiation (Bussey & Bandura, 1999), media messages can influence gender-based attitudes and behavior. In video games, most of the main characters are men (Dill & Thill, 2007; M. K. Miller & Summers, 2007). In addition, most video games are created by men (Australian Bureau of Statistics, 2017), and are designed to appeal to heterosexual males (Shaw, 2011; Williams, Martins, Consalvo, & Ivory, 2009). Video games often convey messages about male dominance and female submissiveness (Dill & Thill, 2007; Jansz & Martis, 2007; M. K. Miller & Summers, 2007; Summers & Miller, 2014).

In addition, many video games that contain female characters sexually objectify them (Lynch et al., 2016; Summers & Miller, 2014). Sexual objectification occurs when a person's body parts or functions are separated from the person, reduced to the status of instruments, or regarded as capable of representing the entire person (Gervais et al., 2013). According to Objectification Theory (Fredrickson & Roberts, 1997), sexual objectification is a form of gender oppression. Further, sexual objectification is a specific case of dehumanization, which is described as a process in which a person is denied their humanness (e.g., treated like animals or objects; Bernard, Gervais, Allen, Delmée, & Klein, 2015). The more a person sexually objectifies and dehumanizes women, the more likely that person is to accept attitudes toward sexual harassment (Rudman & Mescher, 2012).

Within these theories, sexual harassment, male dominance, female submissiveness, and sexual objectification seem to be interrelated concepts. Such preexisting knowledge structures can be brought to a social encounter by an

individual before they even play a video game. During gameplay, sexualized images can prime or activate concepts related to sexual harassment in the minds of game players.

Collectively, these theories provide a firm foundation for the present research. Based on these theories, the present study tests the hypothesis that exposure to sexualized female video game characters will increase sexual harassment toward real females.

Objective of the Present Research

The objective of the present study was to determine the effect that playing a sexualized video game has on online sexual harassment behavior. Previous research has shown that sexualized content of video games can increase tolerance of sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010). However, considering our specific objective, we made three changes from previous studies. First, we had participants actually play a sexualized video game. For example, participants in one study were only exposed to screen shots of sexualized avatars (Dill et al., 2008). Second, we experimentally manipulated sexualization (i.e., wearing revealing clothes and exposing a large amount of skin vs. wearing modest clothing with little skin exposed). In previous studies, sexualization is often confounded with other factors. For example, participants in one study played either a neutral video game or a sexualized video game that contained other confounding factors, namely, sexuality (i.e., presence of a sexual act) and sexism (i.e., negative remarks about women, Yao et al., 2010). Such a design makes it impossible to isolate the influence of only one of these features on sexual harassment. Third, we used a measure of observable behavior of sexual harassment. Previous studies have used measures of attitudes toward sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010). Fourth, we controlled for several individual variables such as trait aggressiveness and sexism, as suggested by the Confluence Model. Further, online disinhibition may be a specific predictor of sexual harassment in an online video game environment. Online interactions are easily disinhibited due to structural characteristics such as anonymity and perceived lack of repercussions for antisocial behavior (Udris, 2014). By controlling for these individual differences, we can better isolate the impact of sexualized video games on sexual harassment.

Our first hypothesis is that the level of online sexual harassment behavior, especially toward women, will increase after playing a sexualized video game (i.e., we expected a two-way Sexualization X Partner Gender interaction). Furthermore, based on previous research (Dill & Thill, 2007; Yao et al., 2010) and based on the

Confluence Model of Sexual Aggression (Malamuth et al., 1995; Vega & Malamuth, 2007), our second hypothesis is that male players should be more likely than female players to sexually harass a real female after playing a sexualized video game (i.e., we expected a three-way Sexualization X Partner Gender X Participant Gender interaction).

Method

Participants

Participants were 211 students (49% male) 18 to 37 years old (M = 21.87, SD = 2.94) recruited from a Belgian university. Among the 211 participants, 114 identified themselves as video game players, and spent between 0 and 60 hours per week playing video games (M = 11.35, SD = 11.43). None of the participants had previously played the video game used in the present study.[5]

Materials

Video games. All participants played the same video game (Ultra Street Fighter IV). Sexualization was manipulated by changing the outfit of the characters (Figure 2). In the highly sexualized condition, both characters wore a revealing swimsuit, whereas in the non-sexualized condition, both characters wore non-revealing outfits.

Sexual harassment task. The sexual harassment task was similar to the computer harassment task used in previous studies (Galdi, Maass, & Cadinu, 2014; Siebler, Sabelus, & Bohner, 2008), except that sexist jokes instead of pornographic images were sent to a partner[6]. This measure of behavioral sexual harassment has been validated previously (Tang, 2016). In this task, participants were presented with 16 PowerPoint slides. Each slide contained a pair of jokes written in French. Odd-numbered slides contained two nonsexist jokes (e.g., "Why do sharks swim in salt water? Because pepper would make them sneeze!"), and even-numbered slides contained one sexist joke and one nonsexist joke. Sexist jokes were gender specific. That is, female sexist jokes were used for female partners (e.g., "Why is it called PMS? Because 'Mad Cow Disease' was already taken."), whereas male sexist jokes were used for male partners (e.g., "What do you call a man who has lost his

[5] Using the Tukey fences method, we determined that 26 participants were outliers in terms of time spent playing video games. When these participants were excluded, the pattern of results was the same, except that the main effect of participant gender was no longer significant.

[6] All jokes can be found in Annex 2

intelligence? A widower"). Participants had to decide which of the two jokes to send their partner using a Skype chat.

Figure 2. The top image is a screenshot of the sexualized video game condition, and the bottom image is a screenshot of the non-sexualized video game condition.

The measure of online sexual harassment was the number of sexist jokes the participant sent to their partner, which could range from 0 to 8. When the participant sent their partner a sexist joke, the partner sent a negative scripted response (e.g., "I don't like this joke"), and these responses became more negative every time a new sexist joke was sent (e.g., "This joke is disgusting"). When the participant sent the partner a non-sexist joke, the partner sent a positive scripted response (e.g., "lol ^^", "Haha, not bad!"). Sexual harassment thus occurs when the participant continues to send sexist jokes despite explicit disapproval from their partner.

Sexist jokes were chosen to be hostile and critical of a person based on their gender, whereas non-sexist jokes did not mention a person's gender. Both sexist and non-sexist jokes were chosen to be humorous. All jokes were translated from previously-used English jokes (Tang, 2016), except for jokes that did not make sense in French. A pilot study showed that the jokes within each pair did not differ in

terms of how humorous they were, that sexist jokes were rated as more sexist than nonsexist jokes, and that male and female sexist jokes did not differ in terms of how sexist they were (see Supplementary Materials[7]).

Questionnaires

Demographic information and video game consumption. Participants reported their gender and age. They also reported the average number of hours they spent playing video games each week, and their familiarity with the video game used in the present study.

Ambivalent sexism. Participants completed a French version (Dardenne et al., 1996) of the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996), which contains an 11-item hostile sexism subscale (e.g., "Most women interpret innocent remarks as sexist; Cronbach α = .92), and an 11-item benevolent sexism subscale (e.g., "Women should be cherished and protected by men"; Cronbach α = .84). All items are scored using a 6-point response scale ranging from 0 = *Totally disagree* to 5 = *Totally agree*.

Trait aggressiveness. Participants completed a French version (Genoud & Zimmermann, 2009) of a short form of the Aggression Questionnaire (AQ; Bryant & Smith, 2001), which contains 12-items (e.g., "I have threatened people I know") that are scored using a 6-point response scale ranging from 1 = *Not at all like me* to 6 = *Completely like me* (Cronbach α = .71).

Online disinhibition scale. Participants completed a French version of the Online Disinhibition Scale (Udris, 2014), which contains 11-items (e.g., "The internet is anonymous so it is easier for me to express my true feelings or thoughts") that are scored using a 6-point response scale ranging from 1 = *Strongly disagree* to 6 = *Strongly agree* (Cronbach α = .60). The scale was translated into French using the back-translation procedure.

Procedure

After giving informed consent, participants were told that they will participate in two separate studies about the impact of entertainment on psychological states – one on video games, and one on humor. First, they completed questions about demographics and video game consumption. Next, they were randomly assigned to play the sexualized or the non-sexualized version of the video game *Ultra Street Fighter IV* for 15 minutes. The video game was played on a desktop computer with a 24-inch (61-cm) screen and an Xbox controller. After gameplay, participants rated

[7] Supplementary material can be found in Annex 3.

how difficult, fun, frustrating, exciting, competitive, realistic, and violent the video game was (1 = *Not at all* to 10 = *Very much*). The games did not significantly differ on any of these dimensions (see Table 1).

Table 1

t-test between the sexualized and the non-sexualized condition for video game experience

	M_s	SD_s	M_{ns}	SD_{ns}	*T*	*P*	*d*
Difficulty	6.18	2.06	6.24	2.10	0.19	.848	0.03
Fun	4.42	2.08	4.53	2.31	0.36	.718	0.05
Frustration	6.48	2.74	6.49	2.47	0.04	.968	0.01
Excitation	4.17	2.26	4.01	2.30	-0.52	.607	0.07
Competition	6.74	2.46	6.27	2.49	-1.38	.169	0.19
Realism	1.98	1.32	2.25	1.58	1.32	.188	0.18
Violence	7.07	1.98	7.00	2.22	-0.23	.818	0.03

Note. df = 209; *s* = Sexualized; *ns* = Non-Sexualized, *d* = Cohen's standardized mean difference *d*.

Next, participants were told that they would participate in the second study on humor with a partner. The "partner", who was in a different room, was actually an accomplice pretending to be another participant. The second study was used to measure whether the type of video game participants played influenced their sexual harassment of their "partner". The sexual harassment task was implemented using a Skype chat window, with the camera turned off. The participant had one Skype account. Two other Skype accounts were created for this study, one for the first experimenter (who interacted with the participant) and one for the accomplice who played both the partner and the second experimenter (who interacted with the partner). Manipulation of partner gender was carried out using the Skype pseudo. The female partner was called "Alexandra" (a common French female name) and the male partner was called "Alexandre" (a common French male name). The procedure consisted of five steps. First, participants were asked for their first name, which served as their Skype pseudo. Second, using the Skype chat, the experimenter pretended to ask the second experimenter if he had already randomly selected which of the two participants was to be the sender of the jokes and which was to be the receiver of the jokes. Through a rigged lottery, the real participant was always "selected" to be the sender of the jokes by the second experimenter, whereas the partner was "selected" to be the receiver of the jokes. Participants were then told that their role was to send the jokes to their partner, and that we were only interested in their partner's response to the jokes. Third, to make the chat more realistic, participants were provided with five questions to ask their partner (i.e., "What is

your gender?", "What is your age?", "What are you studying at the university?", "Why did you choose this major?", and "What's your favorite TV show?"). The accomplice gave the standardized answers and asked the same questions to the partner. The gender question reinforced the name manipulation. Fourth, the participant was then shown the 16 slides, one at a time, and asked to send one of the two jokes to the partner on each trial. There were 16 trials, but only 8 of these trials contained a pair with a sexist joke. Thus, the number of sexist jokes sent could range from 0 to 8. Fifth, the participant completed the personality questionnaires (i.e., the Ambivalent Sexism Inventory, the Aggression Questionnaire, and the Online Disinhibition Scale, in that order). A debriefing followed. During the debriefing, the experimenter probed to determine whether the participant was suspicious.

Results

The first hypothesis was that the level of online sexual harassment behavior, especially toward women, will increase after playing a sexualized video game. Thus, we expected a two-way interaction between the type of video game participants played and the gender of their partner. This hypothesis was tested using a 2 (Sexualized video game vs. Non-sexualized video game) X 2 (Male vs. Female Participant) X 2 (Male vs. Female Partner) Analysis of Covariance (ANCOVA). Covariates included trait aggressiveness, hostile and benevolent sexism, and online disinhibition (Table 2)[8]. The ANCOVA revealed a significant main effect of participant gender and a significant main effect of partner gender. Male participants sent significantly fewer sexist jokes (M = 2.29, SE = 0.15) than female participants (M = 2.74, SE = 0.15). Male partners received significantly more sexist jokes (M = 2.13, SE = 0.15) than female partners (M = 2.89, SE = 0.15). This main effect was qualified by the predicted significant two-way interaction between type of video game and partner gender on sexist jokes (Figure 3). Planned contrasts revealed that being exposed to the sexualized video game (rather than the non-sexualized video game) significantly increased the number of sexist jokes sent to women, [$t(199) = 2.28$, $p = .024$, $d = 0.44$], but did not significantly influence the number of sexist jokes sent to men [$t(199) = -1.22$, $p = .222$, $d = 0.24$]. Thus, the first hypothesis was supported.

[8] The experimental manipulation (sexualized vs nonsexualized video game content) did not influence any of the covariates. However, a main effect of participant gender was found for benevolent sexism, with males having higher scores than females. Further, a main effect of online disinhibition was found for partner gender, with participants feeling less disinhibited when their partner was a woman compared to when their partner was a man.

A three-way interaction was used to test our second hypothesis, but it was not significant (see Table 3 for descriptive statistics for the experimental conditions). Thus, the second hypothesis was not supported.

Hostile sexism was the only covariate that had a significant influence on sexual harassment [$F(1, 199) = 7.02$, $p = .009$, $\eta_p^2 = .034$, $r = .19$]. All other main effects and interactions were non-significant.[9,10]

Table 2

ANCOVA on number of sexist jokes while controlling for general aggression, online disinhibition, hostile and benevolent sexism

Source	*F*	*Df*	*p*	η_p^2
Sexualization	0.56	1	.455	.003
Partner Gender	12.85	1	<.001	.061
Participant Gender	4.37	1	.038	.021
Sexualization*Partner Gender	6.13	1	.014	.030
Sexualization*Participant Gender	0.26	1	.612	.001
Partner Gender*Participant Gender	0.15	1	.694	.001
Sexualization*Partner Gender*Participant Gender	0.17	1	.678	.001
Hostile Sexism	7.02	1	.009	.034
Benevolent Sexism	2.16	1	.144	.011
Trait Aggression	1.84	1	.176	.009
Online Disinhibition	3.81	1	.052	.019
Error		199		

[9] Eleven participants expressed suspicion about the study, but the results did not change when they were excluded, except that the main effect of participant gender was no longer significant. Thus, we included all participants.

[10] We observed a "floor effect," with a median of 2 sexist jokes. The distribution was skewed to the right. However, the pattern of results was similar when the data were transformed to reduce skewness (using a logarithm method and a box-cox transformation), except that the main effect of participant gender was no longer significant. The results were also similar when we used nonparametric statistics (Mann-Whitney test) as when we used parametric statistics (ANCOVA). Thus, the results were quite robust. We report the untransformed data in this manuscript because the unit of measure is more intuitive. We also used parametric statistics rather than nonparametric statistics because they are more familiar to readers.

Figure 3. Interaction between exposure to sexualized media content and partner gender on the number of sexist jokes participants sent to their partner. Capped vertical bars denote 1 standard error.

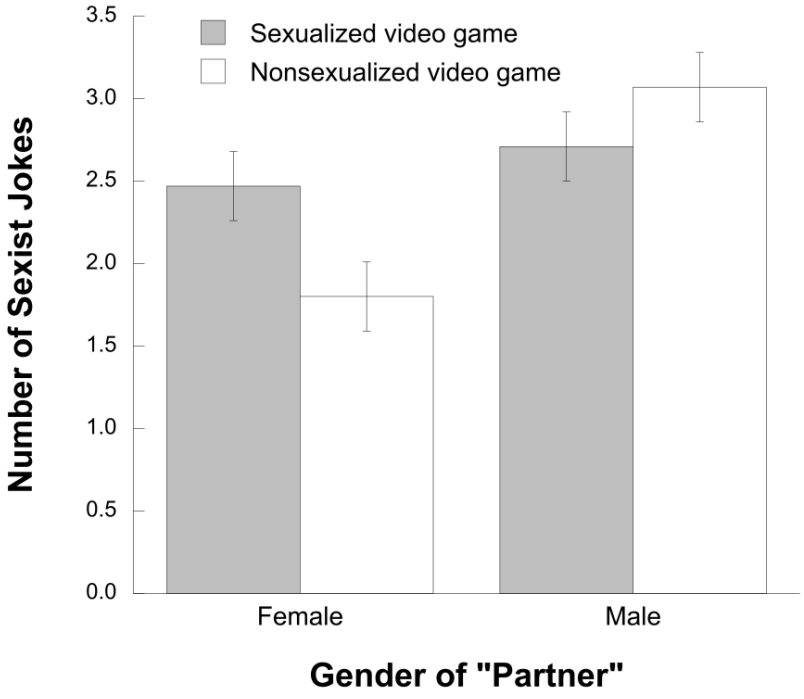


Table 3

Descriptive statistics for the experimental conditions

		Sexualization Condition	
		Non Sexualized	Sexualized
Participant Gender	Partner Gender	*M* (*SE*), *n*	*M* (*SE*), *n*
Male	Male	2.81 (0.29), 27	2.43 (0.30), 26
	Female	1.71 (0.30), 25	2.19 (0.30), 26
Female	Male	3.32 (0.29), 26	2.98 (0.30), 26
	Female	1.89 (0.28), 28	2.75 (0.29), 27

Discussion

This study examined the specific impact of sexualized content of video games on online sexual harassment. To the best of our knowledge, only one other unpublished study has examined online sexual harassment using a behavioral measure (Tang, 2016). The present study also controlled for several individual differences that could

be related to online sexual harassment, namely, hostile and benevolent sexism, trait aggressiveness, and online disinhibition.

Consistent with the first hypothesis, online sexual harassment was influenced by sexualization in video games. The significant two-way interaction showed that female sexualized video game content influenced online sexual harassment, but only toward female targets. These results remained significant even after controlling for individual differences in hostile and benevolent sexism, trait aggressiveness, and online disinhibition. The second hypothesis was not supported (i.e., the effects were not larger for male participants than female participants). Both male and female participants sexually harassed a female partner more after they had played a sexualized video game.

Theoretical and Practical Implications

The observed results are consistent with the integrated General Aggression Model (GAM) and Confluence Model (Anderson & Anderson, 2008). Sexualized content in video games is a sufficient situational variable to increase sexual harassment behavior. Female submissiveness might have been among the activated concepts related to both sexualization and sexual harassment. In addition, sexualization might have primed perceived humanness and agency. Previous research has found that when women are sexualized, they are also often dehumanized (Bernard, Gervais, et al., 2015; Puvia & Vaes, 2013, 2015; Vaes et al., 2011). One cause of dehumanization is a lack of perceived agency (Lebowitz & Ahn, 2016; Li, Leidner, & Castano, 2014; Morera, Quiles, Correa, Delgado, & Leyens, 2016; Tipler & Ruscher, 2014). Furthermore, perceived agency and humanness of women are known to mediate the relationship between exposure to sexual media and sexually aggressive attitudes (Blake et al., 2016; Rudman & Mescher, 2012). Consistent with Expectation State Theory (Berger et al., 1972) and the Social Cognitive Theory of Gender Development and Differentiation (Bussey & Bandura, 1999), the activation of stereotyped roles of women can explain the higher levels of sexual harassment of women. When the partner is a woman, participants will be more likely to sexually harass them due to the activation of concepts relating to female dehumanization, submission, and diminution of perceived agency.

An important contribution of these results to the video game research literature is that online sexual harassment behavior was provoked by exposure to sexualized female video game characters. This finding supports a number of studies that have found that sexualization, sexism, and sexuality in video games can influence sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010). In addition, this

study clarifies the results of past studies. Specifically, these results suggest that the sole presence of sexualized female characters (without the confounding influences of sexism or sexuality that were often involved in previous studies) is a sufficient condition to provoke online sexual harassment against females. Knowing that sexualization can influence negative behavior toward females is of primary importance, especially considering the large number of video games that contain female sexualized content (Beasley & Collins Standley, 2002; Burgess et al., 2007; Downs & Smith, 2010; Summers & Miller, 2014).

To the best of our knowledge, this study is the first to examine sexual harassment toward men following exposure to sexualized female characters in video games. Sexualization of female characters does not seem to influence online sexual harassment toward men. Further, as shown by our main effect on partner gender, more sexist jokes were sent to men than to women. This unexpected result might be explained by the fact that men, as the dominant group, are not usually targets of sexual harassment and thus may be more tolerant of sexual harassment (Pina & Gannon, 2006). Therefore, sexist jokes sent to men might be less likely to be identified as sexual harassment compared to sexist jokes sent to women.

Another unexpected result in this study was that female participants sent significantly more sexist jokes than male participants. This might be due to the fact that sexual harassment is perceived as usually committed by men, and toward women (Stop Street Harassment, 2018). Therefore, among our participants, women are likely to have experienced sexual harassment. Therefore, when sent to the in-group (i.e., another woman), it might be perceived as a simple joke, but when sent to a man, it might be perceived as a form of retaliation. Sexual harassment has been an important topic of discussion lately, notably with the #MeToo movement. This may have increased awareness among men, which may have caused them to send fewer sexist jokes. Indeed, prevention campaigns about sexual harassment has been shown to reduce such behavior (Diehl, Glaser, & Bohner, 2014).

Results from this study have important practical implications. We observed that exposure to sexualized females in video games increases online sexual harassment against female targets after the game is turned off. Sexual harassment is known to have deleterious consequences on women, such as reducing psychological well-being, satisfaction, commitment, and performance of the activity involving the harassment (Cantisano, Domínguez, & Depolo, 2008; Pina & Gannon, 2006).

Because sexualization might increase video game sales (Near, 2013), and because the video game industry is dominated by males, it is unlikely that the sexualized content of video games will be decreased in the near future. It is therefore important to educate players about the possible effect of exposure to sexualized female characters in video games on online sexual harassment. Parents should also limit the exposure of children and adolescents to video games with sexualized content. Further, prevention programs about the suffering of sexual harassment victims could be included in online video game environments. Indeed, such prevention strategies have been shown to reduce the likelihood of sexual harassment (Diehl et al., 2014).

Limitations and Future Research

The results of the present study raise several questions that should be addressed in future studies. The main objective of this study was to examine the influence of sexualized female characters on sexual harassment. Women are most often the targets of sexual harassment (Stop Street Harassment, 2018). However, it would be very valuable if future studies also included male sexualized characters in order to examine how video game content influences sexual harassment against both men and women.

Further, we do not know why participants sent sexist jokes to their partner. Future studies should assess such motivations. Especially in cases of more subtle forms of sexual harassment, the participant might not actually intend to sexually harass their partner. Motivations behind sexual harassment in general should be more researched because studies on this topic are scarce (McDonald, 2012). This study focused on online sexual harassment but it would be equally important to examine the extent to which observations from the present study also generalize to offline sexual harassment.

This study aimed to measure online sexual harassment behavior by using sexist jokes. However, this measure evaluated a specific form of gender harassment, rather than its global form. Future studies should try to replicate these results by evaluating the two other forms of sexual harassment, namely, unwanted sexual attention and sexual coercion.

One limitation of the present study is that it did not measure internal states. According to the GAM (Anderson & Anderson, 2008; Anderson & Bushman, 2002), the effects we observed should be mediated by internal states. For instance, one study found that playing a sexualized video game increased the occurrence of immediate sexual thoughts (Yao et al., 2010). Future studies could identify other such

potential mediators related to the internal state evoked by sexualized video games, such as affects, arousal or other cognitions (e.g., perceived degree of agency and degree of humanness). Further, according to both the GAM and the Confluence Model of Sexual Aggression (Anderson & Anderson, 2008), a large number of primary person variables can influence sexual aggression against women. The present study controlled for several of these individual differences (i.e., hostile and benevolent sexism, trait aggressiveness, and online disinhibition). However, Individual differences in gendered-stereotyped attitudes, such as a dominant or submissive attitude, should also be considered in future studies.

By only manipulating sexualization, this study succeeded in suppressing confounding variables often found in other studies such as sexism and sexuality. However, one limitation of this study is that both the sexualized and non-sexualized video games contained violence, which could be considered to be a confounding variable. Future studies might address this limitation by explicitly distinguishing between sexualized content and violent content.

Conclusion

These results help to contribute to a better understanding of the impact of sexualized video game characters on online sexual harassment toward women. Our results show that playing a video game with sexualized female characters increases online sexual harassment toward women. Sexual and general harassment are major problems in society, and video games depicting sexualized characters might be among the important underlying causes.

An Examination of the Possible Impact of the Sexualized Content of Video Games and Cognitive Load on Implicit Evaluations of Women

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Abstract

Video games are an important part of today's everyday life and there are concerns about their possible negative consequences. One under-researched area is the potential negative effects of sexualized video game content on attitudes toward women. The objective of the present research was to examine the consequences of sexualized video game and cognitive load on implicit attitudes towards women. Participants (N = 137) played a video game with either sexualized or non-sexualized female characters. Cognitive load was manipulated by setting the difficulty of the game on a low or high level of difficulty. After gameplay, an Affect Misattribution Procedure (AMP; B. K. Payne, McClernon, & Dobbins, 2007) was used to measure the implicit evaluation of women, whereby two kinds of targets were used (fully-clothed women and partially-clothed women). Based on the General Aggression Model (GAM; Anderson & Bushman, 2018; Bushman, 2017), we predicted that playing the game with sexualized female characters would diminish participants' positive implicit evaluations of women, especially regarding sexualized women and under conditions of high cognitive load. Results were not consistent with these predictions. Based on both inferential and Bayesian statistics, sexualization and cognitive load did not significantly influence implicit evaluations of women. However, among women participants, the partially-clothed women were perceived significantly more negatively than the fully-clothed women. Based on these results and results from similar studies, sexualization seems to influence both cognition and attitude, but does not seem to influence affects. Therefore, the GAM might not be an entierly suitable theoretical model in the context of the impact of video game sexualized content.

Introduction

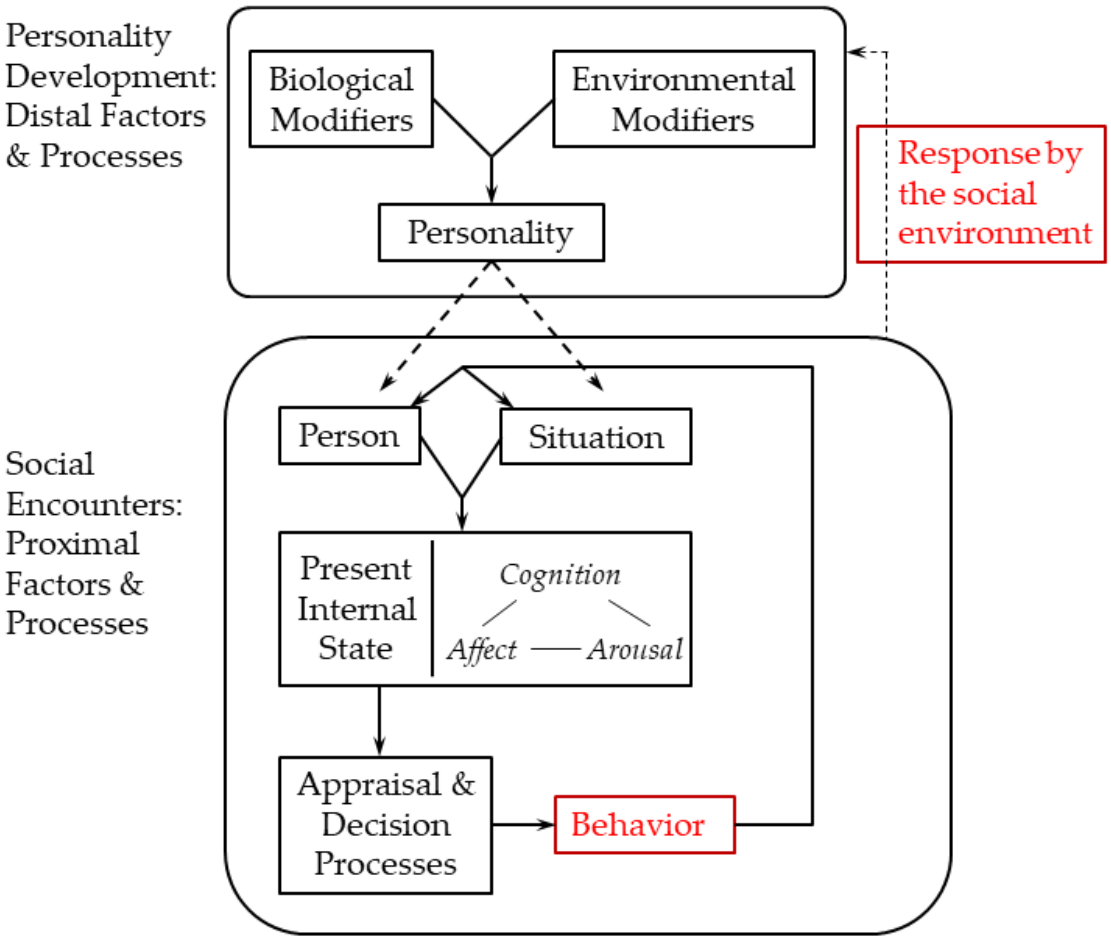
In our society, women are generally still considered as inferior to men. They are often the victim of negative behaviors and attitudes. For example, women are more likely than men to be sexually harassed or aggressed (World Health Organization, 2017). Women are less likely than men to access senior and middle management positions and, for equivalent job positions, they usually earn significantly less than men (Blau & Kahn, 2016; United Nations Statistics Division, 2015). Various attitudes and beliefs such as sexism (Glick & Fiske, 1996), rape myths, or beliefs about violence against women (Burt, 1980) may underlie such inequalities.

The General Aggression Model (GAM; Anderson & Bushman, 2018; Bushman, 2017) provides an explanation of the development of aggressive behavior and attitudes toward women via the repetition of social encounters. In particular, it claims that negative affect (e.g., hostility toward women) can be caused by an interaction between personal (e.g., sexist attitudes) and situational (e.g., sexualized video game content) variables. The modified affect, in interaction with cognition and arousal (i.e., together, these three interconnected routes represent the present internal state), will generate an immediate appraisal of the situation (e.g., general negative evaluation of women). If the immediate appraisal is judged to be unsatisfactory and if the person has sufficient time and cognitive resources, then the situation might be reappraised and may lead to a thoughtful action (e.g., revising the initial evaluation). On the other hand, if the person judges the immediate appraisal to be satisfactory (e.g., it aligns with the person's sexist attitudes) and/or if the person does not have sufficient time and/or cognitive resources available at the moment (e.g., by performing a cognitively demanding activity such as video game), this may lead to an impulsive behavior (Figure 1).

Being exposed to video games with a sexualized content may be considered an example of a situational variable that may influence a person's current internal state and, more particularly, his/her affects. According to social cognitive theory of gender development and differentiation (Bussey & Bandura, 1999), media messages can influence gender-based attitudes, norms, conducts and behaviors. Among popular forms of media, video games seem particularly relevant in this context. Indeed, video games are played by a large variety of players of every age and gender. Video games are played by around 64% of the Western population for an average of 7 hours a week (Interactive Software Federation of Europe, 2018; Nielsen Games, 2017; UKIE, 2018). Further, statistics relating to the video game industry have shown that almost

as many women as men play video games (Interactive Software Federation of Europe, 2018; UKIE, 2018). Despite this comparable gender distribution, female characters in video games are objectified (i.e., treated like objects instead of humans) and, by consequence, are dehumanized (Burgess et al., 2007; Summers & Miller, 2014). Indeed, in video games, female characters are either a damsel in distress, a reward, a sex object, or a sexy and aggressive character (Burgess et al., 2007; Summers & Miller, 2014). Furthermore, one of the most common general characteristic is that female video game characters are often sexualized. That is, that they wear sexually revealing clothing (they are only partially-clothed with large amounts of skin left exposed) and have unrealistic body proportions (Lynch et al., 2016; Summers & Miller, 2014). In other words, in the context of video games, sexualization is already associated with stereotyped gender roles (i.e., female characters in video games are perceived as submissive and/or sex objects, and/or aggressive, etc.). One can gradually acquire negative attitudes toward women by constantly being exposed to these associations.

Figure 1. The General Aggression Model.



It remains, however, unclear whether or not video games may be involved in causing a general negative attitude toward women. Only a handful of studies have examined this issue, showing that a sexualized content of video games may have negative consequences on attitudes toward women such as tolerance toward sexual harassment, rape myth acceptance, and sexism (Behm-morawitz & Mastro, 2009; Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010). In addition to being a small number of studies, they also possess a certain number of limits, such as possessing poor levels of ecological validity, the inclusion of a number of confounding variables, and an absence of implicit measures. For example, in one study that showed that sexualized content can increase tolerance toward sexual harassment (Dill et al., 2008), participants were only exposed to screen shots of sexualized avatars instead of asking participant to play the video game itself. Other studies (e.g., Yao et al., 2010) have failed to control for confounding factors such as sexuality (i.e., the presence of a sexual act) and sexism (i.e., negative remarks about women). Finally, previous studies have used measures that are highly transparent whereby participants can control their answers relatively easily. Using an implicit measure would, for example, allow these issues to be addressed and are furthermore good predictors of attitudes and behaviors in everyday life.

Video games are also at the same time an uncharacteristic media in that they consume more cognitive resources than other forms of media (such as film and television) as the player needs to concentrate on, and interact, with the media (Lin, 2013). Therefore, it can interfere with the appraisal and decisional processes described in the GAM. Indeed, when less cognitive resources are available, stereotype-consistent information is processed in a more optimal manner compared to stereotype-inconsistent information (Bartholow, Dickter, & Sestir, 2006; Kononova, 2013; Macrae, Milne, & Bodenhausen, 1994). By consequence, when exposed to a stereotyped and sexualized woman, players might automatically develop a negative evaluation of women and be unable to suppress that negative evaluation due to a higher cognitive load. The role of cognitive load in the context of a sexualized video game has, however, never been examined previously.

The objective of the present study was thus to examine this issue while at the same time taking into account the limits of previous studies. Specifically, we wished to examine whether the sexualized content of video games and higher cognitive load may have an impact on having a general depreciation of women. Furthermore, we wished to examine how these characteristics might impact one's attitude on an implicit level. Therefore, and based on the GAM, our hypothesis is that exposure to

sexualized female video game characters will diminish positive implicit evaluations of women (higher depreciation of women), especially of sexualized women, and especially when the video game is more cognitively demanding.

Method

Participants

One hundred and thirty-seven college students (49.63% male) between 18 and 33 years of age (M = 22.24, SD = 2.93) were recruited from a Belgian university. The recruitment period lasted from November 2016 to June 2016. Among the 137 participants, 43 identified themselves as video game players, and spent between 1 and 5 hours per week playing video games (M = 2.58, SD = 1.69).

Materials

Video games. All participants played the same video game (Ultra Street Fighter IV). This video game was chosen because the clothes of the characters were easy to modify. Two variables were manipulated in this study: sexualization and cognitive load. Sexualization was manipulated by changing the outfit of the characters (Figure 2). In the highly sexualized condition, both characters were partially-clothed, whereas in the non-sexualized condition, both characters were fully-clothed.

Cognitive load was manipulated by modifying the action of the computerized opponent. In the low cognitive load condition, the opponent was programmed to never fight back at the player, while in the high cognitive load condition, the opponent was programmed to fight back. In both conditions, participants were asked to learn the action provoked by each button and their combination.

Both cognitive load conditions were pre-tested using a dual-task methodology (Brünken, Steinbacher, Plass, & Leutner, 2002; Marcus, Cooper, & Sweller, 1996; Paas & Van Merrienboer, 1994). We used an objective and a subjective method to measure cognitive load: respectively an auditory 2-back task that the participant had to perform while playing the video game, and a mental effort scale presented after playing the video game. Participants were instructed to primarily focus on the video game while at the same time paying attention to the auditory 2-back task. In the auditory 2-back task, participants are presented with an audio recording of 300 numbers that were presented with a 1s interval. Participants had to use a verbal signal when the number heard (i.e., the target) was the same as the second to last one. In this N-back task, 20 % of the numbers were a target. Omissions and false alarms were recorded. The mental-effort scale consisted of a single item ranging from

1 (very low mental effort) to 9 (very high mental effort). When answering each item, participants were asked to only consider the mental effort provoked by the video game and not to consider the mental effort provoked by the secondary task.

Figure 2. The top image is a screenshot of the sexualized video game condition, and the bottom image is a screenshot of the non-sexualized video game condition.

Nineteen participants were randomly assigned to either the high cognitive load condition (*N*=10) or the low cognitive load condition (*N*=9). According to

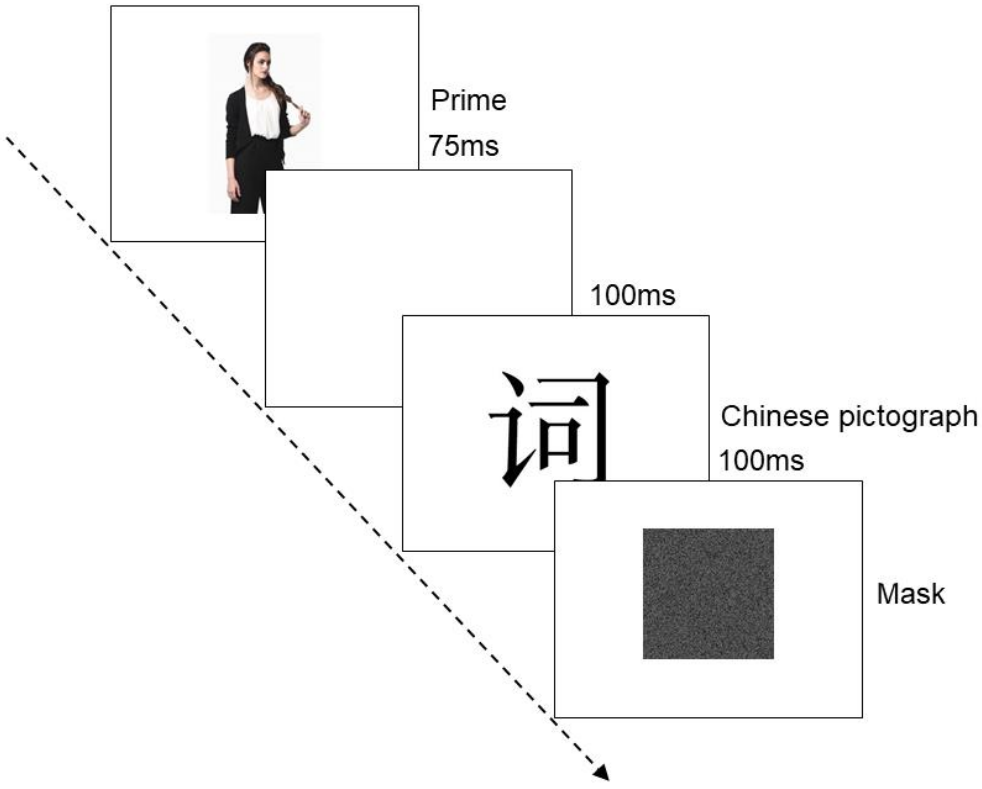
expectations, participants in the high cognitive load condition, compared to participants in the low cognitive load condition, committed significantly more omissions during the verbal 2-back task ($t(17) = -2.48$; $p<.05$) and rated the mental effort provoked by the video game as significantly higher ($t(7) = -2.20$; $p<.05$).

Affect misattribution procedure. The Affect Misattribution Procedure (AMP; B. K. Payne, Govorun, & Arbuckle, 2008; B. K. Payne et al., 2007) is a procedure that evaluates the misattribution of an affective reaction to a different source than the initial one, when the conditions are ambiguous (B. K. Payne et al., 2008). In the present study, this procedure was adapted to evaluate the misattribution of the affective reaction toward sexualized women. Participants were told that various Chinese pictographs will be presented to them. Their task was to press "Beautiful/Pleasant" if they found a pictograph to be more pleasant than average and to press "Not Beautiful/Unpleasant" if they found a pictograph to be less pleasant than average. Moreover, participants were told that the images of women will sometimes precede the apparition of the pictographs but that they had to do their best not to let these images influence their judgment of the pictographs.

In this version of the AMP, we wanted to evaluate the implicit affective answers of participants to sexualized women, compared to non-sexualized women. Therefore, six pictures were used as primes. Three of them represented models who were fully-clothed and the three others represented the same models albeit partially-clothed (Figure 3). All images were pre-tested by asking ($N = 49$), on a scale ranging from 1 = *Not at all* to 10 = *A lot*, how beautiful the woman on the picture was and how sexualized she was. Using a repeated ANOVA, all women in the pictures were judged as equally beautiful, $F(5, 44) = 1.70$, $p = .136$, $\eta^2_p = .034$, but the sexualized images (partially-clothed) were judged as significantly more sexualized than the non-sexualized images (fully-clothed), $F(5, 44) = 112.57$, $p < .001$, $\eta^2_p = .701$. During each trial, the prime was presented for 75 ms, then a blank screen for 125 ms, followed by a Chinese pictograph for 100 ms and finally a mask was presented that remained on the screen until the participant made a judgment (Figure 4). Participants completed 72 trials whereby 24 trials were primed by a sexualized picture, 24 trials were primed by a non-sexualized picture, and 24 trials were without a prime.

Figure 3. Example of primes used in the AMP (a non-sexualized example on the left and a sexualized example on the right).

Figure 4. Schematic representation of one AMP trial



Questionnaires

Demographic information and video game consumption. Participants reported their gender and age. They also reported the average number of hours they spend

playing video games each week, and their familiarity with the video game (i.e., Ultra Street Fighter IV) that was used in the present study.

Ambivalent sexism. Participants also completed a French version (Dardenne et al., 1996) of the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996), which contains an 11-item hostile sexism subscale (e.g., "Most women interpret innocent remarks as sexist; Cronbach α = .92), and an 11-item benevolent sexism subscale (e.g., "Women should be cherished and protected by men"; Cronbach α = .84). All items were scored using a 6-point response scale ranging from 0 = *Totally disagree* to 5 = *Totally agree*.

Rape myth acceptance. The Updated Illinois Rape Myth Acceptance Scale (McMahon & Farmer, 2011) was translated and back translated to create a French version for the purpose of this study. This scale contains 21-items (e.g., "If a girl is raped while she is drunk, she is at least somewhat responsible for letting things get out of hand.") that are scored using a 5-point response scale ranging from 1 = Strongly Agree to 5 = Strongly Disagree. This questionnaire possesses one global factor and four second-order factors: (1) "She Asked For It", (2) "He Didn't Mean To", (3) "She Lied" and (4) "It Wasn't a Rape". The French version possess good levels of internal consistency (α>.70), except for the second order factor "It Wasn't a Rape" (α = .66). For all statistical analyses, the score of the Updated Illinois Rape Myth Acceptance Scale was reversed in order to avoid confusion during the interpretation of the results.

Trait aggression. Finally, participants completed a French version (Genoud & Zimmermann, 2009) of the Aggression Questionnaire (AQ; Bryant & Smith, 2001), which contains 12-items (e.g., "I have threatened people I know") that are scored using a 6-point response scale ranging from 1 = *Not at all like me* to 6 = *Completely like me* (Cronbach α = .71).

Procedure

Upon arrival, participants gave their informed consent and were told that they will participate in a study about the impact of video games on physical attraction. First, they completed questions about demographics and video game consumption. Next, they were led in front of a computer with a 24" screen and trained to use the Affect Misattribution Procedure. After that, they were randomly assigned to one of the two sexualization conditions (i.e., sexualized vs. non-sexualized) and one of the two cognitive load conditions (i.e., high cognitive load vs. low cognitive load). Participants played the video game for 15 minutes using an Xbox controller for

computer. After gameplay, participants rated how difficult, fun, frustrating, exciting, competitive, realistic, and violent the video game was (1 = *Not at all* to 10 = *Very much*). Participants found the game to be significantly funnier and more exciting for the sexualized condition than for the non-sexualized condition. No significant difference was found for difficulty, frustration, competition, rhythm, realism, and violence. In the high cognitive load condition, the game was considered as being significantly more difficult, frustrating, competitive, and rhythmic (see Table 1) compared to the low cognitive load condition. No significant difference was found for fun, excitation, realism and violence.

Table 1

Main effect of sexualization and cognitive load for video game experience

Source	*F*	*df*	*p*	M_h	SD_h	M_l	SD_l
			Difficulty				
Sexualization	0.33	1	.563	4.95	0.23	4.76	0.24
Cognitive Load	163.27	1	<.001	6.99	0.23	2.71	0.24
			Fun				
Sexualization	5.65	1	.019	4.23	0.26	5.15	0.27
Cognitive Load	0.71	1	.401	4.85	0.27	4.53	0.28
			Frustration				
Sexualization	0.601	1	.440	6.10	0.30	5.77	0.31
Cognitive Load	18.332	1	<.001	6.85	0.30	5.03	0.30
			Excitation				
Sexualization	7.04	1	.009	3.57	0.26	4.58	0.27
Cognitive Load	7.74	1	.006	4.60	0.27	3.54	0.27
			Competition				
Sexualization	2.02	1	.157	4.28	0.29	4.88	0.30
Cognitive Load	97.34	1	<.001	6.66	0.30	2.50	0.30
			Rhythm				
Sexualization	0.50	1	0.48	5.59	0.29	5.88	0.30
Cognitive Load	27.25	1	<.001	6.81	0.29	4.66	0.29
			Realism				
Sexualization	0.00	1	.979	2.48	0.21	2.46	0.22
Cognitive Load	0.09	1	.863	2.50	0.21	2.45	0.22
			Violence				
Sexualization	2.91	1	.090	6.85	0.26	6.21	0.27
Cognitive Load	2.52	1	.114	6.82	0.26	6.23	0.27

Note. df error = 134; *h* = high sexualization or cognitive load; *l* = low sexualization or cognitive load.

Thereafter, the Affect Misattribution Procedure was administered. After the participants completed the 72 trials, they answered the Ambivalent Sexism Inventory, the Aggression Questionnaire and the Updated Illinois Rape Myth Acceptance Scale - in that order. A debriefing followed, whereby the experimenter probed to determine whether the participant was suspicious.

Results

Individual Differences

AMP responses were scored as a relative preference score by subtracting the percentage of pleasant responses on the sexualized trials from the pleasant responses on the non-sexualized trials (B. K. Payne et al., 2008, 2007) This produces a score for each participant, with higher values reflecting more positive responses towards sexualized women relative to non-sexualized women. Correlational analyses were carried out between the new AMP score and the individual variables (Table 2).

Table 2

Correlations between AMP score and individual variables separated for male and female participants

Variables	*R*	
	Male	*Female*
Age	.04	.24*
Years of education	.03	.27*
Hours per week spent on video games	-.06	-.08
Hostile sexism	.31*	.09
Benevolent sexism	.31**	-.04
Physical aggression	.40**	.09
Verbal aggression	.18	.03
Anger	-.01	.05
Hostility	.13	.06
She asked for it	.28*	.08
He didn't mean to	.15	.03
She lied	-.01	.06
It wasn't a rape	.25*	.05

Note. *p<.05, **p<.01, ***p<.001.

Implicit Responses in Experimental Conditions

AMP responses were scored by computing the percentage of pleasant responses on trials with sexualized women and non-sexualized women (B. K. Payne et al., 2008,

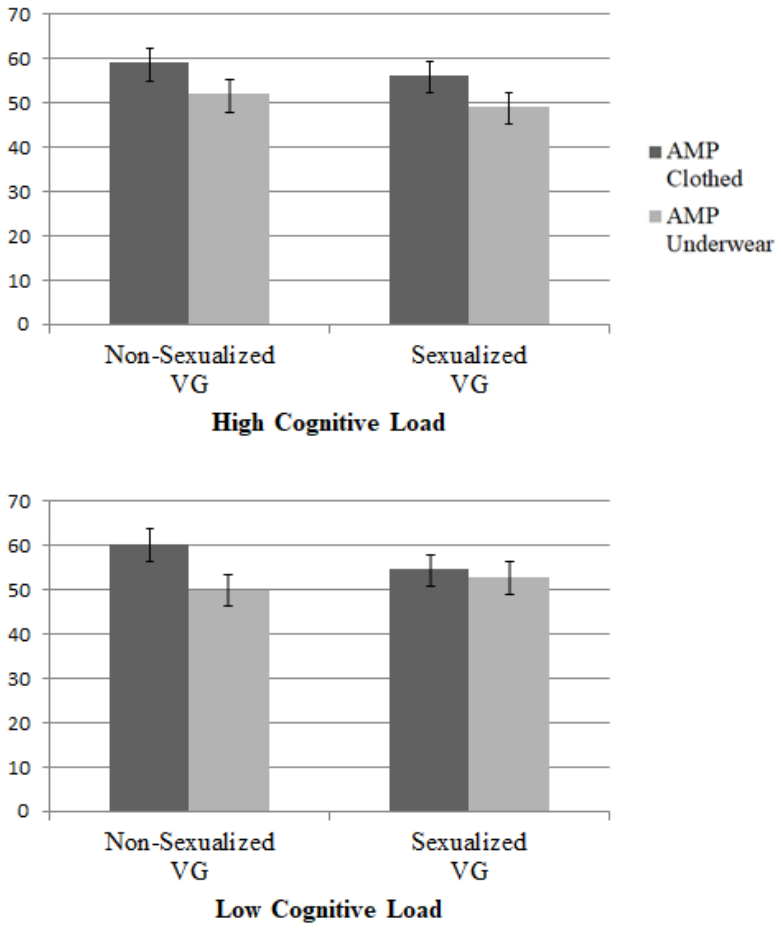
2007). Our hypothesis was that exposure to sexualized female video game characters will diminish positive implicit evaluations of women, especially of sexualized women and when the video game is more cognitively demanding. Thus, we expected a three-way interaction between type of AMP target, sexualized characters in the video game and cognitive load caused by the video game. This hypothesis was tested using a repeated analysis of covariance with AMP scores as a within-subjects factor (Partially-clothed vs. Fully-clothed), Sexualization (Sexualized vs. Non-sexualized video game), Cognitive Load (High vs. Low) and Sex (Male vs. Female) as between-subject factors, and hostile and benevolent sexism, as covariates. Results show a main effect of AMP score, $F(1, 127) = 30.03$, $p < .001$, $\eta^2_p = .191$, indicating a significant difference between fully-clothed women ($M = 57.57$, $SD = 1.82$), and partially-clothed women ($M = 50.92$, $SD = 1.76$). This was qualified by an interaction between AMP score and Sex, $F(1, 127) = 9.78$, $p = .002$, $\eta^2_p = .072$, an interaction between AMP score and sexualization, $F(1, 127) = 5.09$, $p = .026$, $\eta^2_p = .039$, and an interaction between AMP score, Sexualization and Cognitive Load, $F(1, 127) = 4.48$, $p = .036$, $\eta^2_p = .034$. All other main effects and interactions were non-significant, all $F \leq 3.42$, $p \geq .066$, $\eta^2_p \leq .026$ (see Table 3 for descriptive statistics for the experimental conditions). All interactions were decomposed with two-by-two comparisons using a Tukey's HSD. In the interaction between AMP target and sex, the partially-clothed women were judged more negatively by women ($M = 47.59$, $SD = 2.64$) than the fully-clothed women ($M = 57.47$, $SD = 2.55$, $p < .001$). The only other difference was that partially-clothed women, when evaluated by women, were judged more negatively than the fully-clothed women, when evaluated by men ($M = 57.67$, $SD = 2.65$, $p = .034$). Concerning the interaction between AMP targets and sexualization, the two-by-two comparison only showed an influence of the main effect with the fully-clothed women being judged more positively than the partially-clothed women in both the sexualized and the non-sexualized conditions. Finally, concerning the interaction between AMP targets, sexualization, and cognitive load, two-by-two comparisons showed that this interaction is mostly due to statistical differences, in the high cognitive load group, between Sexualized AMP and Non-sexualized AMP in both the sexualized ($p = .004$) and non-sexualized ($p = .011$) condition; and a statistical difference, in the high cognitive load group, between Sexualized AMP and Non-sexualized AMP in the Non-sexualized condition ($p = .004$), but not in the Sexualized condition ($p = .914$). Based on all the other non-significant two-by-two comparisons (All $p \geq .377$) and the graphic (Figure 5), this interaction is based on a slight non-significant increase of sexualized AMP and a slight non-significant decrease of non-sexualized AMP.

Table 3

Descriptive statistics for the experimental conditions

			AMP score	
			Fully-clothed Target	Partially- clothed Target
Sexualized condition	Participant gender	Cognitive load	*M (SD)*	*M (SD), n*
Non-Sexualized	Male	High	56.56 (5.16)	51.08 (5.00), 17
		Low	61.12 (5.39)	54.83 (5.22), 16
	Female	High	61.85 (5.36)	53.07 (5.19), 16
		Low	59.46 (5.18)	44.58 (5.01), 17
Sexualized	Male	High	60.40 (5.26)	56.81 (5.10), 18
		Low	52.61 (5.18)	54.32 (5.02), 17
	Female	High	51.70 (4.91)	41.34 (4.75), 19
		Low	56.86 (5.24)	51.37 (5.08), 17

Figure 5. Interaction between AMP target, exposure to sexualized media content and cognitive load. The Y-axis represents the AMP score. Capped vertical bars denote 1 standard error.



Bayesian Statistics

In light of these unexpected results, we wanted to make sure that our model was better than the null hypothesis. For that, we computed the same model using Bayesian statistics (Table 4).

Table 4

Bayesian analysis of effects for Sex, Sexualization, Cognitive Load, Hostile Sexism and Benevolent Sexism

Effects	*P(Incl)*	*P(incl|data)*	$BF_{inclusion}$
AMP	.886	1.000	$1.209e^{7}$
Sex	.886	0.965	3.507
Sexualization	.886	0.691	0.288
Cognitive Load	.886	0.485	0.121
SH	.500	0.321	0.472
SB	.500	0.329	0.491
AMP*Sex	.503	0.938	14.893
AMP*Sexualization	.503	0.442	0.782
AMP*Cognitive Load	.503	0.096	0.105
Sex*Sexualization	.503	0.267	0.361
Sex*Cognitive Load	.503	0.170	0.202
Sexualization*Cognitive Load	.503	0.140	0.161
AMP*Sex*Sexualization	.120	0.038	0.292
AMP*Sex*Cognitive Load	.120	0.008	0.062
AMP*Sexualization*Cognitive Load	.120	0.013	0.098
Sex*Sexualization*Cognitive Load	.120	0.017	0.126
AMP*Sex*Sexualization*Cognitive Load	.006	$3.897e^{-5}$	0.006

In Bayesian statistics, P(Incl) represents the theoretical probability of inclusion of the effect; P(incl|data) represents the actual probability of inclusion of that effect when comparing all the models that contain the effect with all the models that do not contain the effect; $BF_{inclusion}$ compares the theoretical probability with the actual probability. The higher the score, the more likely an effect is important in the model. If the score is inferior to one, the null hypothesis (absence of effect) is more likely to be true. In our model, only three effects have a strong probability of inclusion: AMP, Sex and the interaction between them. Concretely, it means these effects and this interaction is not due to any kind of sample bias and can be generalized outside of our sample. On the contrary, the mixed ANCOVA showed an interaction between AMP target and sexualization, and an interaction between AMP target, sexualization

and cognitive load. Based on Bayesian statistics, these results cannot be trusted and should be rejected because the $BF_{inclusion}$ is inferior to 1.

Discussion

The objective of this study was to examine the potential impact of sexualized content of video games on implicit attitudes toward women. To the best of our knowledge, this study is the first to use an implicit measure of attitudes toward women in the context of video game exposure. Further, this study is one of the first to have analyzed the potential impact of cognitive load in the context of a sexualized video game.

The results from this study did not support the hypothesis that exposure to sexualized female and cognitive load diminishes positive implicit evaluations of women. This conclusion was drawn by using both inferential statistics and Bayesian statistics. First, inferential statistics showed a main effect of AMP, an interaction between AMP target and sex, an interaction between AMP target and sexualization, and an interaction between AMP target, sexualization, and cognitive load. However, for both the interaction between AMP target and sexualization, and the interaction between AMP target, sexualization and cognitive load, the two-by-two comparison did not show any differences beyond the main effect of AMP stimuli. Further, when the full model (i.e., AMP target X Sexualization X Cognitive Load X Sex) was tested using Bayesian statistics, the impact of Sexualization, Cognitive Load (or the interaction of both variables with AMP target) on negative evaluation of women were considered as more probable to be rejected than the null hypothesis (i.e., an absence of effect). In other words, the only results that can be considered as certain are the main effect of AMP target and the interaction between AMP target and sex.

Theoretical and Practical Implications

This study is the first to evaluate how sexualized content of video game can influence affects toward women. The results are not in line with other studies that examined the negative consequences of sexualized video game on women. Indeed, sexualized content of video games usually increases negative cognitions, attitudes and behaviors concerning or toward women. For example, sexualized content increases tolerance toward sexual harassment (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010), sexual cognition (Yao et al., 2010), rape myth acceptance (Dill et al., 2008; Driesmans et al., 2015) and sexism (Behm-morawitz & Mastro, 2009).

For the first time, cognitive load was manipulated while playing a video game. However, during the data collection period of this study, one study was published that used a similar methodology (Read et al., 2018). In their study, participants were asked to play the same video game and manipulated several conditions both in the video game environment and in the laboratory environment (i.e., character sexualization, cognitive load, and interactivity). Sexualization was manipulated by using either a character wearing a revealing outfit or a fully-clothed character. Cognitive load was manipulated by asking participants to retain symbols (7 in the high condition, 2 in the low condition) that would be used at the end of the game to open a door. Finally, interactivity was manipulated by asking the participants to play or watch the video game. Results were similar to ours. Indeed, sexualization and cognitive load did not influence a state measure such as self-objectification. However, differences were found for the trait measure. Men who played with a sexualized avatar when cognitive load was high, showed less hostile sexism. Similarly, rape myth acceptance was lower in the high sexualized condition when cognitive load was high.

This study is the first to use an implicit measure (AMP) of affective evaluation of women with both fully-clothed and partially-clothed targets. The AMP, compared to other implicit measures, was particularly adapted to our reasearch interests because it used visual stimuli. Further, the AMP was chosen as it has been shown to have good internal validity, to be a good predictor of behavior and attitudes, and to measure automatic processes that are difficult to control by the participant (B. K. Payne, Cheng, Govorun, & Stewart, 2005; B. K. Payne et al., 2008, 2007). Despite the absence of results, the AMP used in the present study seems to possess a good level of external validity among male participant. Indeed, the relative preference score showed a positive association with hostile sexism, benevolent sexism, physical violence and two factors from the rape myth acceptance measure. This means that the more male participants showed a preference for a sexualized woman (compared to a non-sexualized woman), the more they are sexist, physically violent, tend to think that a woman would be responsible for her rape, and that a woman might lied about being raped for her own interest. Further, similar studies generally report a correlation of .20 between AMP and explicit measures of attitudes (Cameron, Brown-Iannuzzi, & Payne, 2012), which is similar to what we found in the present study.

The observed results are not consistent with the General Aggression Model (GAM, Anderson & Bushman, 2018; Bushman, 2017). First, sexualized video game content did not cause a general depreciation of women. According to the GAM, sexualized

content should have acted as a situational variable, which in turn would have influenced the affect measured by the Affect Misattribution Procedure (AMP). Further, the presence or absence of cognitive load should have influenced appraisal decisional processes. Indeed, the affects – that were previously supposed to be influenced by the sexualized content – should have created an immediate evaluation of the situation. In the high cognitive load condition, the reappraisal of the situation should not have been possible due to limited cognitive resources. Our results did not support the hypothesis that sexualized content interacts with cognitive load in order to influence affective evaluation of sexualized and non-sexualized women. However, we found a significant main effect of AMP, with sexualized women being considered as less pleasant than non-sexualized women. This main effect was confirmed by a significant interaction between type of AMP stimulus and the gender of the participants. This result was explained by one significant difference between two sub-groups: women found sexualized women to be less pleasant than non-sexualized women.

In summary, we observed an absence of effet of sexualization or the interaction between sexualization and cognitive load on the affective evaluation of women. The absence of effect of sexualization is not consistent with studies evaluating sexual cognition or negative attitudes toward women (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010). However, the absence of effect of the interaction between sexualization and cognitive load is consistent with the only other study (Read et al., 2018) that has evaluated this issue. In other words, sexualization seemed to influence both cognition and attitude, but did not seem to influence affects. Therefore, the GAM might not be entierly adapted to explain the impact of video game sexualized content.

Limitations and Future Research

The main objective of this study was to examine the influence of sexualized video game content and cognitive load on general evaluations of women when using an implicit measure. In this study, an implicit measure (the AMP) was used with fully-clothed women targets and partially-clothed women targets. The AMP is considered to be a good predictor of behavior and attitude. However, when evaluating prejudice effects such as racism, the AMP has been shown to be less sensitive a measure (Teige-Mocigemba, Becker, Sherman, Reichardt, & Klauer, 2017). This might also be true in the case of sexism. Our study did not find a main effect of sexualization and the interaction between AMP stimuli and sexualization is questionable according to Bayesian statistics. This might be due to the choice of the stimuli. Indeed, knowing

that the AMP has little/poor sensitivity for evaluating prejudice, using sexualized and non-sexualized women as stimuli might not be sufficiently discriminating. Future studies could try to create more distinct categories, for example, by using pictures of both women and men.

Further, the AMP might not be a sufficiently discriminating task to use with the GAM. Indeed, this study focused on affect, which is a component of the present internal state. The present internal state regroups three interconnected routes: affect, cognition, and arousal. However, according to some studies (Blaison, Imhoff, Hess, & Banse, 2012), the AMP might involve semantic processes instead of affect. In other words, it is unclear if the AMP evaluates affect or cognitions. In future studies, it might be relevant to evaluate general depreciation of women by using both implicit and explicit measures in order to externally validate the impact on affects.

Finally, this study tried to hold as many potential confounding variables constant as possible. For that, we chose a video game in which the clothes were easy to modify (i.e., Ultra Street Fighter). However, in that video game, muscularity of the female characters was more perceptible in the sexualized condition than in the non-sexualized condition. A sexualized and muscular female video game character might not have provoked the same priming effect as a sexualized non-muscular character. Indeed, sexualization is a stereotype-consistent type of information about women and therefore is probably treated more easily than muscularity, which is a stereotype-inconsistent type of information (Bartholow et al., 2006; Bodenhausen, 1988; Bodenhausen & Lichtenstein, 1987; Kononova, 2013; Macrae, Hewstone, & Griffiths, 1993; Macrae et al., 1994; D. T. Miller & Turnbull, 1986; Stangor & Duan, 1991; Stangor & McMillan, 1992).

Conclusion

In conclusion, this study provides new knowledge about the impact of sexualized video game content on affective reactions toward women. Our results show that playing a video game with sexualized female characters did not influence general positive or negative evaluations of women. This study needs to be replicated in order to confirm the absence of an impact of sexualized content on implicit attitudes toward women.

Impact of Sexualized Video Game and Cognitive Load on Rape Myth Acceptance and Dehumanization of the Perpetrator

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Abstract

The potential negative impact of sexualized video game on attitudes toward women has been a concern since the inception of video games. The two objectives of the present research were (1) to examine the consequences of sexualized video game and cognitive load on rape myth acceptance, and (2) to examine the mediating effect of dehumanization of the victim and the perpetrator. Participants (N = 142) played a video game with either sexualized or non-sexualized female characters. Cognitive load was manipulated by setting the difficulty of the game on a low or high level. After gameplay, participants read a rape date story, and then were asked to judge the victim and the perpetrator's responsibility and dehumanization. Based on the General Aggression Model (GAM; Anderson & Bushman, 2002, 2018; Bushman, 2017), we predicted that playing the game with sexualized female characters would increase the responsibility attributed to the victim and diminish the responsibility attributed to the perpetrator. Further, dehumanization of the victim and the perpetrator should mediate that relation. Results were partially consistent with these predictions. Playing a video game that contained sexualized female characters increased rape victim blame when cognitive load was high, but did not predict dehumanization toward the victim. Concerning the perpetrator, video game sexualization did not influence responsibility, but partly influenced dehumanization.

Introduction

In Europe, 215 000 violent sexual crimes were reported to the police in 2015. A large majority of the victims were women, and 99% of the perpetrators were men (Eurostat, 2015). In spite of such high figures, sexual violence is often trivialized, also even sometimes by the victims of sexual violence themselves. For instance, 24.4% of assaulted women in one survey reported that the violence they had experienced was no longer considered by them as being serious (Amnesty International, 2014).

Trivialization of sexual violence is an example of a rape myth. Rape myth acceptance (RMA) involves any belief that minimizes the act of rape or leads to victim blame, where the victim is seen as partially or fully responsible for being raped (Burt, 1980; Lonsway & Fitzgerald, 1994; Loughnan et al., 2013). Such beliefs vary but can be categorized into four main groups (McMahon & Farmer, 2011): (1) the woman provoked her own rape (e.g., she wore sexualized clothing or acted too suggestively or was drunk), (2) the rape was not really a rape (e.g., the woman did not fight back enough or was unclear when wanting to refuse the sexual act), (3) men are not responsible for a rape (e.g., men cannot control their sexual needs or may have been too drunk to understand that it was a rape) and (4) women can lie about the rape (e.g., she lied to protect herself or as an act of revenge).

Further, rape and its trivialization leads to victims being denied their humanness (Moradi, 2015 in Gervais et al.). This process is called dehumanization and occurs when a person is treated as an animal, an object, or – in a more subtle way – as not completely human (Gervais et al., 2013; Haslam, 2006). Two main forms of humanness can be denied of the person (Haslam, 2006): human uniqueness and human nature. Human uniqueness corresponds to attributes that are seen as distinguishing humans from other animals and reflects social learning and refinement. Its denial is called animalistic dehumanization and refers to the fact that the person is considered as more animal than human. Human nature, on the other hand, corresponds to features of humanity that are fundamental and shared by all humans, such as emotionality, agency, warmth, and cognitive flexibility (Haslam, 2006). Its denial is termed mechanistic dehumanization, meaning that the person is considered to be an object or an automaton. Dehumanization has already been related to RMA in various studies. One such study (Rudman & Mescher, 2012) showed that attitudes toward rape victims are predicted by the implicit association between women and animals. Further, the implicit association between woman and both animals and objects predicted the probability of raping someone (based on a

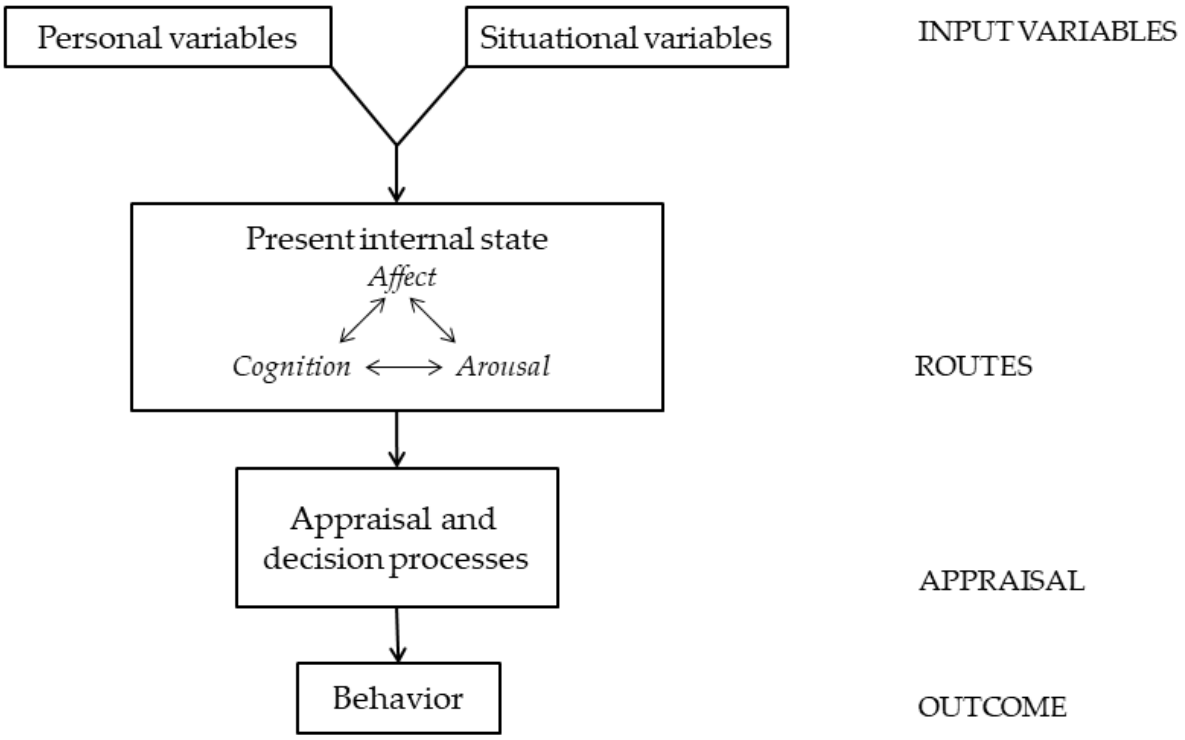
self-report measure). Another study (Blake et al., 2016) showed that when women are denied of their specific human qualities such as agency, they are considered as more likely to be sexually aggressed.

According to the General Aggression Model (GAM; Anderson & Bushman, 2002, 2018; Bushman, 2017; Figure 1), the development of such aggressive attitudes as RMA or the dehumanization of women can be learned through social encounters. In particular, the model claims that aggressive behaviors will arise through an interaction between personal (e.g., sexist attitudes or trait aggression) and situational (e.g., sexualized video game content) variables. The interaction between these two kinds of variables will influence the present internal state (i.e., three interconnected routes that are aggressive thoughts, angry feelings, and psychological arousal), which will generate an immediate appraisal of the situation (e.g hold the victim (and not the perpetrator) partially or fully responsible for being raped). If the immediate appraisal is judged to be unsatisfactory and if the person has sufficient time and cognitive resources, then the situation might be reappraised and may lead to a thoughtful action (e.g., revising the initial judgment). However, if the person judges the immediate appraisal to be satisfactory (e.g., it aligns with the person's sexist attitudes) and/or if the person does not have sufficient time and/or cognitive resources available at the moment (e.g., by performing a cognitively demanding activity such as video game), this may lead to an impulsive behavior.

Being exposed to video games with a sexualized content can be considered to be a situational variable that may influence a person's current internal state and, by consequence, influence their behavior. Video games are played by around 64% of the Western population for an average of 7 hours a week (Nielsen, 2017; ISFE, 2018; Ukie, 2018). Further, statistics relating to the video game industry have shown that almost as many women as men play video games (ISFE, 2018; Ukie, 2018). Despite this comparable gender distribution, female characters in video games are objectified (i.e., treated like objects instead of humans) and, by consequence, dehumanized (Summer & Miller, 2014; Burgess et al., 2007). Indeed, in video games, women are either a damsel in distress, or a reward, or a sex object. Furthermore, one of the most common general characteristics is that female video game characters are often sexualized. That is, that they wear sexually revealing clothing, have unrealistic body proportions, and large amounts of skin are often exposed (Lynch et al., 2016; Summers & Miller, 2014). In other words, in the context of video games, studies have already shown that sexualization is associated with dehumanization and rape myth acceptance. By constantly being exposed to these associations, exposure to sexualized

media can cause dehumanization of women in real life and the development of rape myths.

Figure 1. The General Aggression Model ; *Source.* Anderson and Bushman (2002), Krahé (2013).



It remains unclear, however, whether video games can cause dehumanization, RMA, or both. Concerning dehumanization, studies have shown that sexualized women are dehumanized (Blake et al., 2016; Loughnan et al., 2013; Puvia & Vaes, 2013; Vaes et al., 2011). However, these studies are rare and none of them were carried in the context of an actual video game (e.g., images were used). Concerning rape myth acceptance, the results are mixed. Several studies have shown that sexualized content of video games can directly increase RMA (Driesmans et al., 2015). Another study showed that video games indirectly increased RMA through increases in self-objectification (Fox & Potocki, 2016). Finally, two studies showed no effect of sexualization on RMA (Beck, Boys, Rose, & Beck, 2012; Dill et al., 2008). However, these studies have two main limitations. First, they all used a trait measure of rape myth acceptance. By consequence, it is unclear whether or not their results are due to their manipulation of sexualized content or due to a sample bias. Second, some of them possessed poor ecological validity. For example, in one study (Beck et al., 2012), participants watched another person play the video game instead of playing it themselves.

This last limitation is particularly important in light of a particular characteristic of video games, namely, the expenditure of cognitive resources. Indeed, video game players consume more cognitive resources than other forms of media because the player needs to concentrate on, and interact, with the media (Lin, 2013). Quantity of available cognitive resources can moderate the relation between sexualization and both dehumanization and RMA. Indeed, according to the GAM, one needs cognitive resources in order to reappraise a situation (e.g., to hold the victim or the perpetrator partially or fully responsible for the rape). Empirically, only one study (Read et al., 2018) has examined the potential moderating effect of cognitive load between sexualization and RMA. In this study, participants were exposed to sexualized or non-sexualized video game characters. Further, their cognitive load was manipulated by asking them to retain either two or seven symbols. Results showed that being exposed to a video game with a sexualized content, in addition to having few available cognitive resources, caused a diminution of RMA. However, this study also used a trait measure of RMA. Further, cognitive load was manipulated by asking participants to memorize and recall symbols during gameplay. However, gameplay itself can influence cognitive load and therefore, even participants in the low cognitive load condition might have lacked in sufficient available cognitive resources when trying to reappraise the situation.

The objective of the present study was thus to examine the impact of sexualized content of video games on RMA and the moderating effect of cognitive load, while at the same time addressing the limitations of previous studies and bring new innovations. A state (and not trait) rape myth acceptance measure was used (participants were asked to read a rape date story). Further, participants were asked to emit a judgment on both the rape victim and its perpetrator in order to evaluate all aspects of RMA. Finally, the mediating effect of dehumanization (of both the victim and the perpetrator) was examined concerning the relation between sexualized content of video game and RMA (which, to the best of our knowledge, will be done for the first time in the context of a sexualized video game).

Based on the GAM, our hypotheses are: (1a) when exposed to a sexualized video game, participants will hold the victim (and not the perpetrator) partially or fully responsible for being raped (rape victim blame), especially under conditions of high cognitive load; (1b) dehumanization will mediate the relation between sexualization and rape victim blame; (2a) when exposed to a sexualized video game, rape perpetrator blame will diminish, especially under conditions of high cognitive load;

and (2b) dehumanization will mediate the relation between sexualization and rape perpetrator blame.

Method

Participants

Participants were 142 students (50% male) between 18 and 27 years old (M = 21.66, SD = 1.53) recruited from a Belgian university. The recruitment period lasted from November 2016 to June 2016. Among the 142 participants, 65 identified themselves as video game players. These 65 participants spent between 1 and 20 hours per week playing video games (M = 7.92, SD = 5.24).

Materials

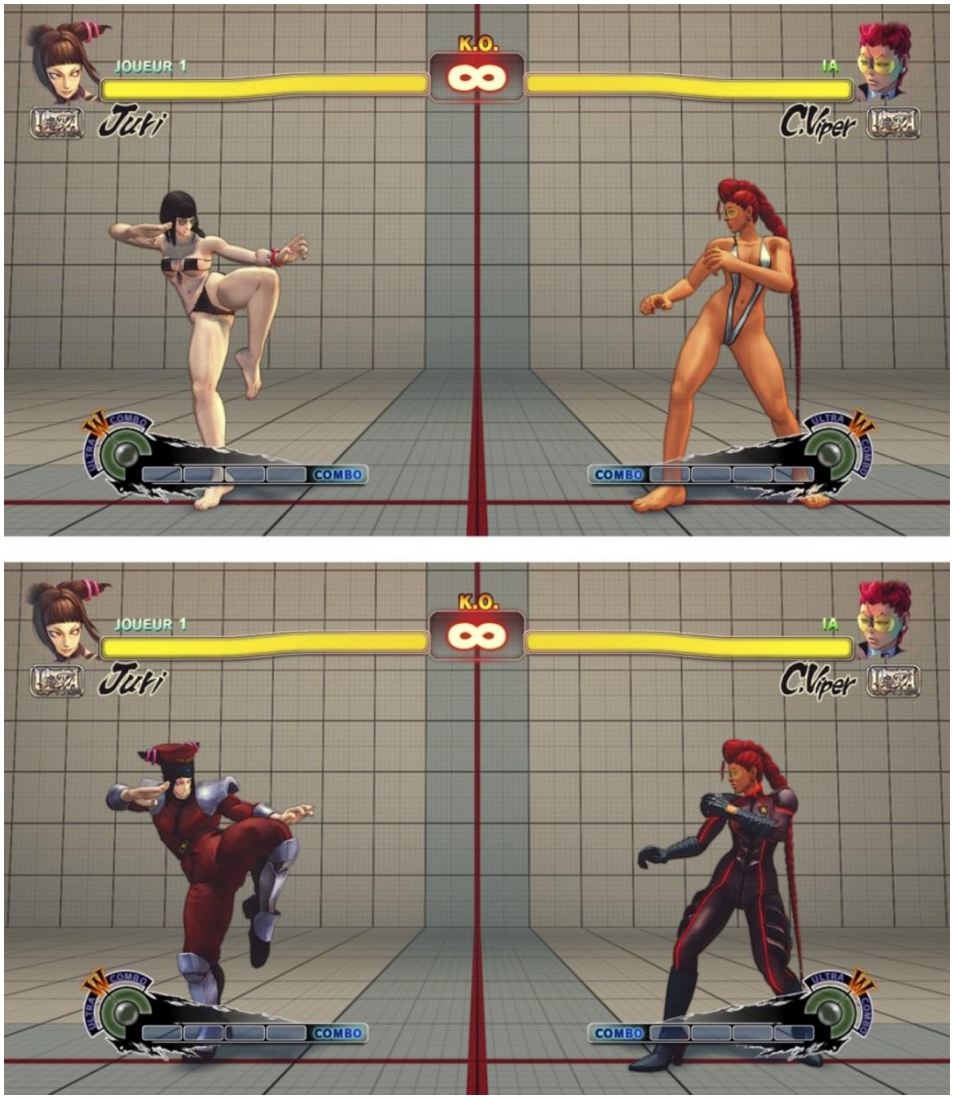
Video games. All participants played the same video game (Ultra Street Fighter IV). This video game was chosen because the clothing of the characters is easy to modify. Two variables were manipulated in this study: sexualization and cognitive load. Sexualization was manipulated by changing the outfit of the characters (Figure 2). In the highly sexualized condition, both characters wore a revealing swimsuit (top panel), whereas in the non-sexualized condition, both characters were fully clothed (bottom panel).

Cognitive load was manipulated by modifying the actions of the computerized opponent. In the low cognitive load condition the opponent was programmed to never fight back, whereas in the high cognitive load condition the opponent was programmed to fight back. In both conditions, participants were asked to learn the action evoked by each button and their combination.

Both cognitive load conditions were pre-tested using a dual-task methodology (Brünken et al., 2002; Marcus et al., 1996; Paas & Van Merrienboer, 1994). We used an objective and a subjective method to measure cognitive load: respectively an auditory 2-back task that the participant had to perform while playing the video game, and a mental effort scale presented after playing the video game. Participants were instructed to primarily focus on the video game but to still pay attention to the auditory 2-back task. In the auditory 2-back task, participants are presented with an audio recording of 300 numbers that were presented with a 1s interval. Participants had to use a verbal signal when the number heard (i.e., the target) was the same as the second to last one. In this N-back task, 20 % of the numbers were a target. Omissions and false alarms were recorded. The mental-effort scale consisted of a single item ranging from 1 (*very low mental effort*) to 9 (*very high mental effort*). When

answering each item, participants were asked to only consider the mental effort provoked by the video game and not to consider the mental effort provoked by the secondary task.

Figure 2. The top image is a screenshot of the sexualized video game condition, and the bottom image is a screenshot of the non-sexualized video game condition.



An independent group of 19 participants were randomly assigned to either the high cognitive load condition (n = 10) or the low cognitive load condition (n = 9). According to expectations, participants in the high cognitive load condition (compared to those in the low cognitive load condition) committed significantly more omissions during the verbal 2-back task ($t(17) = -2.48$; $p < .05$, $d = 1.13$) and rated the mental effort significantly higher ($t(7) = -2.20$; $p < .05$, $d = 1.01$).

Date rape judgment task. This task consisted of a scenario describing a college party[11]. At the party, a man and woman meet for the first time and start flirting together. At some point in the story, the man becomes more sexually insistent, whereas the woman pulls back. The story ends up with man having sex with the woman without her consent. The scenario involved several elements that evoke rape myths. Both characters were drunk, the woman was flirting with the man, she was described as provocatively-dressed, and the perpetrator showed a "moderate" level of aggression (e.g., grabbing, pushing, restraining). Originally that scenario was separated in two parts (Hull, Hull, & Sheplavy, 2016), one in which the story was told from the woman's perspective, and one from the man's perspective. We made two modifications to this scenario. First, we united the two perspectives by describing the thoughts of both characters. Second, we renamed the characters with more common Belgian names (i.e., Sophie and Arnaud). After reading that scenario, participants answered different questions concerning the responsibility of the female and the male characters.

Questionnaires

Victim and perpetrator blame. Victim and perpetrator blame were assessed using four items from a previous study (Bernard, Loughnan, Marchal, Godart, & Klein, 2015): (1) "How much do you think Sophie/Arnaud should blame herself/himself for what happened?", (2) "How much control do you think Sophie/Arnaud had over the situation?", (3) "Do you think this incident could have been avoided by Sophie/Arnaud?", and (4) "How much do you think that Sophie/Arnaud is responsible for the way things turned out?". Items were answered using a 7-point scale (1 = *Not at all* to 7 = *Completely or totally*). Internal consistencies were high for both victim and perpetrator blame (Cronbach α = .83 and .75, respectively).

Humanness scale. To assess humanness of the victim and of the perpetrator, participants were given a list of 20 traits that included five positive human uniqueness traits (e.g., broad-minded, thorough, polite), five negative human uniqueness traits (e.g., disorganized, ignorant, rude), five positive human nature traits (e.g., active, curious, friendly), and five negative human nature traits (e.g., impatient, impulsive jealous) (Bastian & Haslam, 2010; Haslam, Bain, Douge, Lee, & Bastian, 2005). Participants were asked if these traits could be attributed to the victim or the perpetrator using a 7-point scale (1 = *Strongly disagree* to 7 = *Strongly agree*).

[11] The scenario of the rape date story can be found in Annex 4.

Demographic information and video game consumption. Participants reported their gender and age. They also reported the average number of hours they spend playing video games each week, and their familiarity with the video game used in the present study (i.e., *Ultra Street Fighter IV*).

Rape myth acceptance. The Updated Illinois Rape Myth Acceptance Scale (McMahon & Farmer, 2011) was translated and back translated to create a French version for the purpose of this study. This scale contains 21-items (e.g., "If a girl is raped while she is drunk, she is at least somewhat responsible for letting things get out of hand."; Cronbach α = .89) that are scored using a 5-point scale (1 = *Strongly Agree* to 5 = *Strongly Disagree*).

Ambivalent sexism. Participants also completed a French version (Dardenne et al., 1996) of the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996), which contains an 11-item hostile sexism subscale (e.g., "Most women interpret innocent remarks as sexist; Cronbach α = .92), and an 11-item benevolent sexism subscale (e.g., "Women should be cherished and protected by men"; Cronbach α = .84). All items are scored using a 6-point scale (0 = *Totally disagree* to 5 = *Totally agree*).

Trait aggression. Finally, participants completed a French version (Genoud & Zimmermann, 2009) of the short Aggression Questionnaire (AQ; Bryant & Smith, 2001), which contains 12-items (e.g., "I have threatened people I know"; Cronbach α = .71) that are scored using a 6-point scale (1 = *Not at all like me* to 6 = *Completely like me*).

Procedure

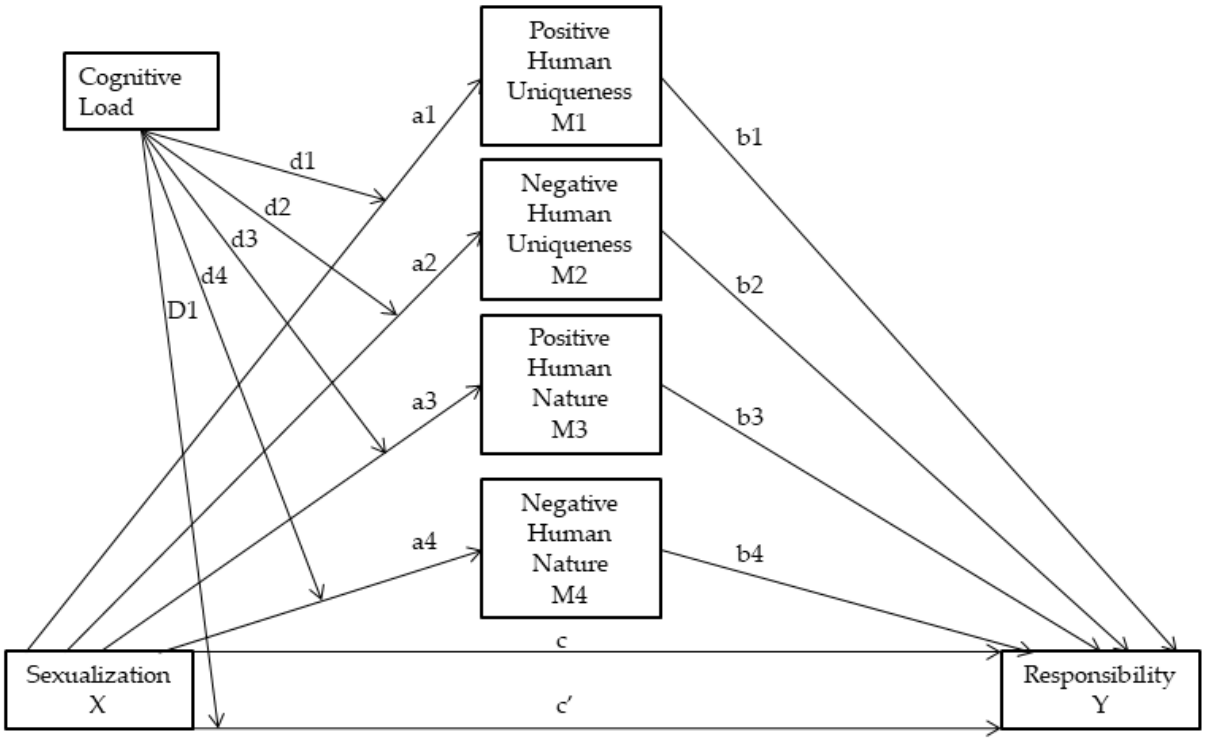
Upon arrival, participants gave their informed consent and were told that they will participate in a study about the impact of various media format on judgment of agency. First, they completed questions about demographics and video game consumption. Next, they were told that they could potentially play 10 video games, but that the experiment would be too long. Therefore, participants had to choose two numbers between 1 and 10. In reality, only two video games were available regardless of the number they chose. Immediately after, they were led in front of a computer with a 24" screen and randomly assigned to one of the two sexualization conditions (i.e., sexualized vs. non-sexualized) and one of the two cognitive load conditions (i.e., high cognitive load vs. low cognitive load). Participants played the video game for 15 minutes using an Xbox controller for computer. Next, they read the rape date story and answered the questions about victim and perpetrator blame, then about the victim and the perpetrator humanness. After that, participants

completed the Aggression Questionnaire, the Ambivalent Sexism Inventory and the Illinois Rape Myth Acceptance Scale, in that order. A debriefing followed. During the debriefing, the experimenter probed to determine whether the participant was suspicious.

Statistical Analyses

To test all our hypotheses, we used regression analyses. We computed two models (Figure 3). The first model used victim blame as a outcome variable, sexualization as the predictor variable, all four humanness of the victim evaluation as mediators, and cognitive load as a moderator variable. The second model is similar to the first one, except that the outcome variable is perpetrator blame, and the mediators are the four measures of humanness. In both models, sexualization was coded -1 for low sexualization and 1 for high sexualization. Similarly, cognitive load was coded -1 for low cognitive load and 1 for high cognitive load. Rape myth acceptance, gamer identification, benevolent sexism and general aggression were included as covariates for both models. All variables were standardized.

Figure 3. Proposed model, whereby the relation between Sexualization and Responsibility is mediated by degree of Humanness (Positive Human Uniqueness, Negative Human Uniqueness, Positive Human Nature and Negative Human Nature), and the relations between Sexualization and Responsibility and between Sexualization and degree of Humanness are moderated by Cognitive Load.



Results

In the first model, cognitive load was examined as a moderator of the relation between sexualization and victim blame, and as a moderator of the relation between sexualization and degree of humanness attributed to the victim (Table 1). The only statistically significant moderation was between sexualization and responsibility of the victim. The slope in the low cognitive load condition was not statistically significant, b = -.055, SE = .099, p = .578, whereas the slope in the high cognitive load condition was statistically significant, b = .272, SE = .100, p = .008. Further results showed that victim blame was significantly predicted by positive human uniqueness, rape myth acceptance, and gamer identification. Positive human uniqueness was predicted by gamer identification. Negative human uniqueness was predicted by gamer identification and rape myth acceptance. Positive human nature was predicted by rape myth acceptance and benevolent sexism. Negative human nature was predicted by game identification. Further, the first model proposed a relation between sexualization and victim blame that is mediated by the degree of humanness of the victim. None of the indirect paths were significant.

Table 1

Path coefficients, indirect effects and 95% bias-corrected Confidence Intervals for multiple mediation analysis (bootstrap of 20000 resamples) and moderation analysis. Effects of sexualization on victim blame through degree of humanness attributed to the victim (positive human uniqueness, negative human uniqueness trait, positive human nature, and negative human nature) and effect of cognitive load as a moderator between these variables

	R^2	F	p	Path					95% CI	
					b	SE	t	p	Lower	Upper
Victim blame (Y)	.392	7.63	<.001							
				Direct effect Sexualization (c′)	.108	.070	1.54	.125		
				Cognitive load (D)	.001	.070	0.02	.984		
				Interaction (c′ X D)	.164	.071	**2.31**	**.023**		
				PHU (b1)	-.173	.081	**-2.13**	**.035**		
				NHU (b2)	.119	.084	1.41	.160		
				PHN (b3)	.112	.081	1.39	.167		
				NHN (b4)	.062	.078	0.80	.427		
				RMA	-.487	.079	**-6.14**	**<.001**		
				GI	.151	.075	**2.01**	**.047**		
				GA	.031	.073	0.43	.667		
				BS	-.014	.080	-0.17	.863		

Table 1 (continued)

	R^2	F	p	Path	b	SE	t	p	95% CI Lower	95% CI Upper
PHU (M1)	.053	1.07	.386							
				Sexualization (a1)	.046	.086	0.54	.590		
				Cognitive load (d1)	-.023	.085	-0.27	.789		
				Interaction (a1 X d1)	-.053	.086	-0.62	.539		
				RMA	.018	.094	0.19	.851		
				GI	-.022	.089	-0.25	.802		
				GA	-.208	.087	**-2.38**	**.019**		
				BS	.011	.095	0.12	.906		
NHU (M2)	.161	3.67	.001							
				Sexualization (a2)	.062	.081	0.77	.443		
				Cognitive load (d2)	-.051	.080	-0.63	.527		
				Interaction (a2 X d2)	-.091	.081	-1.12	.264		
				RMA	-.201	.088	**-2.28**	**.024**		
				GI	-.258	.083	**-3.10**	**.002**		
				GA	.106	.082	1.29	.201		
				BS	.077	.089	0.86	.390		
PHN (M3)	.069	1.42	.201							
				Sexualization (a3)	.073	.085	0.86	.393		
				Cognitive load (d3)	.090	.085	1.07	.288		
				Interaction (a3 X d3)	.058	.085	0.68	.499		
				RMA	-.184	.093	**-1.98**	**.049**		
				GI	-.065	.088	-0.74	.459		
				GA	-.085	.086	-0.98	.328		
				BS	-.217	.094	**-2.31**	**.023**		
NHN (M4)	.048	.955	.467							
				Sexualization (a4)	.077	.084	0.89	.372		
				Cognitive load (d4)	-.112	.086	-1.31	.192		
				Interaction (a4 X d4)	-.007	.086	-0.08	.935		
				RMA	-.065	.086	-0.69	.490		
				GI	-.184	.094	**-2.07**	**.040**		
				GA	.014	.089	0.16	.874		
				BS	-.059	.095	-0.62	.535		
Indirect effects										
				a1b1	.034				-.028	.119
				a2b2	.028				-.114	.010
				a3b3	.026				-.016	.101
				a4b4	.017				-.050	.028

Note. Interaction = Interaction between Sexualization and Cognitive Load; PHU = Positive Human Uniqueness; NHU = Negative Human Uniqueness; PHN = Positive Human Nature; NHN = Negative Human Nature; RMA = Rape Myth Acceptance; GI = Gamer Identification; GA = General Aggression; BS = Benevolent Sexism.

In the second model, cognitive load was examined as a moderator of the relation between sexualization and perpetrator blame, and as a moderator of the relation between sexualization and degree of humanness attributed to the perpetrator (Table 2). The only statistically significant moderation effect was between sexualization and positive human nature. The slope in the low cognitive load condition was not statistically significant, *b* = -.179, *SE* = .117, 95% CI [-.411, .054], while the slope in the high cognitive load condition was statistically significant, *b* = .271, *SE* = .120, 95% CI [.034, .507]. Further results showed that perpetrator blame was significantly predicted by positive human uniqueness, negative human uniqueness, and rape myth acceptance. Positive human uniqueness attributed is predicted by rape myth acceptance. Negative human uniqueness is predicted by rape myth acceptance and gamer identification. Positive human nature is predicted by the interaction between sexualization and cognitive load, and rape myth acceptance. Negative human nature is predicted by cognitive load. Further, the second model proposed a relation between sexualization and perpetrator blame that is mediated by the degree of humanness attributed to the perpetrator. One of the indirect paths was significant. There is a significant indirect effect of sexualization on responsibility of the perpetrator through positive human nature. However, this indirect effect is moderated by cognitive load. The slope in the low cognitive load was not statistically significant, *b* = -.029, *SE* = .028, 95% CI [-.112, .006], while the slope in the high cognitive load was statistically significant, *b* = .043, *SE* = .029, 95% CI [.003, .125]. Although the indirect effect between of sexualization on perpetrator blame through negative human uniqueness was found to be non-significant, it was moderated by cognitive load. The slope in the low cognitive load was statistically significant, *b* = .056, *SE* = .033, 95% CI [.007, .144], while the slope in the high cognitive load was not statistically significant, *b* = -.008, *SE* = .029, 95% CI [.-.072, .046].

Table 2

Path coefficients, indirect effects and 95% bias-corrected Confidence Intervals for multiple mediation analysis (bootstrap of 20000 resamples) and moderation analysis. Effects of sexualization on perpetrator blame through degree of humanness attributed to the perpetrator (positive human uniqueness, negative human uniqueness trait, positive human nature, and negative human nature) and effect of cognitive load as a moderator between these variables

	R^2	F	p	Path					95% CI	
					b	SE	t	p	Lower	Upper
Perpetrator blame (Y)	.279	4.58	<.001							
				Direct effect Sexualization (c')	.034	.078	-2.47	.668		
				Cognitive load (D)	.046	.079	2.79	.561		
				Interaction (c' X D)	-.068	.081	1.78	.399		
				PHU (b1)	-.215	.087	**1.04**	**.015**		
				NHU (b2)	.238	.085	**0.43**	**.006**		
				PHN (b3)	.160	.090	0.58	.077		
				NHN (b4)	.088	.085	-0.85	.302		
				RMA	.251	.088	**2.86**	**.005**		
				GI	-.087	.080	-1.09	.276		
				GA	.093	.082	1.13	.259		
				BS	-.069	.085	-0.82	.416		
PHU (M1)	.078	1.63	.132							
				Sexualization (a1)	.076	.085	0.90	.368		
				Cognitive load (d1)	.124	.084	1.47	.143		
				Interaction (a1 X d1)	-.039	.085	-0.46	.646		
				RMA	-.244	.093	**-2.64**	**.009**		
				GI	-.052	.087	-0.59	.553		
				GA	-.114	.086	-1.32	.189		
				BS	-.021	.094	-0.22	.825		
NHU (M2)	.172	3.98	<.001							
				Sexualization (a2)	.102	.102	1.27	.206		
				Cognitive load (d2)	-.085	-.085	-1.06	.289		
				Interaction (a2 X d2)	-.136	-.136	-1.69	.094		
				RMA	.244	.244	**2.78**	**.006**		
				GI	-.083	.083	-1.00	.318		
				GA	.324	.082	**3.98**	**<.001**		
				BS	-.028	.089	-0.31	.754		

Table 2 (continued)

	R^2	F	p	Path	b	SE	t	p	95% CI Lower	95% CI Upper
PHN (M3)	.098	2.09	.049							
				Sexualization (a3)	.046	.084	0.55	.582		
				Cognitive load (d3)	.119	.083	1.42	.157		
				Interaction (a3 X d3)	.225	.084	**2.68**	**.008**		
				RMA	-.202	.092	**-2.20**	**.030**		
				GI	.058	.086	0.67	.501		
				GA	-.097	.085	-1.13	.259		
				BS	-.033	.093	-0.36	.720		
NHN (M4)	.122	2.65	.013							
				Sexualization (a4)	-.135	.083	-1.63	.105		
				Cognitive load (d4)	-.237	.082	**-2.89**	**.005**		
				Interaction (a4 X d4)	-.094	.083	-1.14	.257		
				RMA	.151	.091	1.67	.096		
				GI	-.123	.085	-1.44	.151		
				GA	.109	.084	1.29	.198		
				BS	-.145	.091	-1.58	.116		
Indirect effects										
				a1b1	.017	.041			-.055	.117
				a2b2	-.064	.045			-.176	.004
				a3b3	.072	.048			**.006**	**.198**
				a4b4	-.017	.024			-.098	.011

Note. Interaction = Interaction between Sexualization and Cognitive Load; PHU = Positive Human Uniqueness; NHU = Negative Human Uniqueness; PHN = Positive Human Nature; NHN = Negative Human Nature; RMA = Rape Myth Acceptance; GI = Gamer Identification; GA = General Aggression; BS = Benevolent Sexism.

Discussion

This study examined the impact of sexualized video games on rape victim and perpetrator blame. It is the first study to examine the mediating effect of humanness in the context of a video game, and only one other study has previously examined the moderating effect of cognitive load (Read et al., 2018). In other word, the present study is one of the first to try to manipulate the cognitive resources, which is supposed to influence the automatic appraisal of the situation by the player according to the GAM (Anderson & Bushman, 2002).

Consistent with the first hypothesis (1a), victim blame was significantly more likely to occur when the participant was exposed to a sexualized video game, but only under conditions of high cognitive load. The second hypothesis (1b) was not

supported. The impact of sexualization on victim blame was not mediated by dehumanization. Further, the third hypothesis (2a) was not supported. Results did not show a direct effect of sexualized content on perpetrator blame. Moreover, cognitive load did not moderate the relation between sexualized content and perpetrator blame. Finally, the fourth hypothesis (2b) was partially verified. Indeed, the relation between exposure to a video game with a sexualized content and perpetrator blame was mediated by positive human nature. Specifically, exposure to sexualized content indirectly increased perpetrator blame, through more attribution of positive human nature (i.e., positive traits that distinguish the perpetrator from objects, machines or automaton). A second significant mediation effect was found with negative human nature of the perpetrator, but only in the condition of low cognitive load. In that condition, sexualization increased negative human uniqueness, which itself increased perpetrator blame. These results showed that sexualization indirectly influenced perpetrator blame through two mediation effects, namely, positive human nature and negative human uniqueness. However, the relations did not go in the expected direction. Indeed, we predicted that, in the high sexualized condition, perpetrator blame would decrease.

Only one study has analyzed the potential moderating effect of cognitive load on rape myth acceptance (Read et al., 2018), and they observed opposite results compared to the results from the present study. Certain differences between these studies may explain this. First, a state RMA measure was used in the present study, whereas the other study used a trait measure – the Illinois Rape Myth Acceptance Scale (IRMA). By using the IRMA, it is unclear whether their results are caused by their manipulation or by a sample bias. Furthermore, results from that study are not entirely comparable to the results from the present study. Indeed, the state measure used in the present study separated the victim and perpetrator blame. In contrast, in their study only used the global score of the IRMA and not its sub-factors, which means that the IRMA evaluates victim and perpetrator blame together in addition to including several other factors (i.e., the women lied about her rape, she wanted to be raped, rape only happens to "bad" women). Therefore, there might be an effect of sexualized content on some sub-factors that are closer to the responsibility of the victim such as "she asked for it" (i.e., she is responsible for her rape).

Further, cognitive load seems to be an important variable to account for because it moderates the impact of sexualization on victim blame. Except for Read et al. (2018), none of the previous studies, that have tried to measure the impact of sexualized content from video games on RMA, has measured cognitive load. However,

cognitive load might be the key to understand the inconsistent results yielded by the other studies. Indeed, when a study used a manipulation that is susceptible to cause high cognitive load (e.g., by asking participant to actually play a video game; Driesmans et al., 2015), such study showed an impact of sexualized content from video games on RMA. In contrast, other studies (Beck et al., 2012; Dill et al., 2008) used conditions that are not susceptible to cause high cognitive load (e.g., showing images from video games or asking participant to watch another person play the video game), sexualized content from video game did not influenced RMA. The present study used both conditions (a low cognitive load condition and a high cognitive load condition) and showed results that are coherent with both type of studies (i.e., an effect of sexualization on RMA in the high cognitive load condition and an absence of effect in the low cognitive load condition).

In regards to the second hypothesis, dehumanization did not mediate the impact of sexualized content on victim blame. First, this result is not in line with previous studies about the dehumanization of sexualized women. In these studies (Blake et al., 2016; Loughnan et al., 2013; Puvia & Vaes, 2013; Vaes et al., 2011), when a woman is sexualized, she was also dehumanized. For example, one study (Blake et al., 2016) showed that participants exposed to a sexualized image of a woman tended to deny agency (i.e., a human nature trait) to that woman, when compared to being exposed to the image of the same woman albeit in a non-sexualized form. However, in these studies, participants had to judge the degree of humanness of only one woman that was either sexualized or non-sexualized, whereas in the present study, participants were exposed to sexualized or non-sexualized video game characters and had to judge the degree of humanness attributed to a rape victim. In other words, in previous studies, degree of humanness was attributed to the sexualized prime, while in the present study, degree of humanness was attributed to a woman that was distinct from the sexualized prime. Further, in the present study, even if exposure to a sexualized content did not influence the degree of humanness of a rape victim, victim blame was influenced by dehumanization. Indeed, a direct effect was found between positive human uniqueness attributed to the victim and victim blame, which is coherent with previous studies (Blake et al., 2016; Rudman & Mescher, 2012). In other terms, when a victim is animalistically dehumanized (i.e., denied the positive characteristics that distinguish her from animals), the victim was considered as more responsible for her rape.

Further, the present study is the first to analyze the impact of sexualized video game content on perpetrator blame. The results did not confirm our third hypothesis.

Indeed, neither a direct impact of sexualization nor a moderated effect by cognitive load was found on perpetrator blame. To the best of our knowledge, only one study analyzed the impact of sexual objectification on rapist blame (Bernard, Loughnan, et al., 2015). That study showed that exposure to sexual objectification (using a picture) decreases the responsibility of the perpetrator in a stranger rape context. The difference of result between that study and the present study might be due to the context of the rape. In that study, the perpetrator is a stranger – he was not personalized. No descriptions were provided about his attitude during the situation and his perception of the situation. The present study used a rape date story that gives information about the perpetrator (i.e., information about the perpetrator's personality, his attitude, his perception of the situation). In the context of the rape date story used in the present study, the perpetrator was personalized. In a different study (Bernard, Legrand, & Klein, 2016), more personalized details were provided about a perpetrator of sexual harassment. That study did not showed any effect of sexualization on perpetrator blame. Therefore, giving details about a perpetrator might cause more identification to the perpetrator or the development of empathy. Indeed, according to a study about the degree of humanness attributed to sex offenders (Viki, Fullerton, Raggett, Tait, & Wiltshire, 2012), the quality of contact developed by a person with a sex offenders is related to less dehumanization and more support for rehabilitation. In future study, it might be important to evaluate these variables as potential moderator of the relation between sexualization and perpetrator blame.

The last hypothesis concerned the mediation by humanness of the relation between sexualization and perpetrator blame. This hypothesis was partially verified. Two sub-factors of degree of humanness (i.e., positive human nature and negative human uniqueness) mediated the relation between sexualization and perpetrator blame, but not in the expected direction. First, when participants were exposed to a sexualized content, they would tend to attribute positive human nature traits to the perpetrator. That increase of positive human nature causes an increase of perpetrator blame. Further, this indirect effect seemed to be present only when cognitive load is high. Similarly, another indirect effect was found, but only when cognitive load is low. Indeed, when exposed to sexualized content, participant would tend to attribute less negative human uniqueness trait to the perpetrator. However, negative human uniqueness is positively related to perpetrator blame. In other word, these two mediations mean that sexualization negatively influenced negative human nature and positively influenced positive human nature. Through these influences,

sexualization increased indirectly perpetrator blame (which was not expected). However, effect sizes of these mediations are very small (b = .043 and .056) and a replication of this study should be done before interpreting these results.

In contrast, a direct effect of human uniqueness (positive and negative) was found on perpetrator blame. Perpetrator blame seems to decrease when the perpetrator is attributed more positive human uniqueness traits and, in contrast, seems to increase when he is attributed more negative human uniqueness traits. In other word, animalistic dehumanization influenced perpetrator blame. These results are coherent with one study that had examined the degree of humanness attributed to sex offender (Viki et al., 2012). In that study, they showed that higher animalistic dehumanization of a sex offender is related to less support of their rehabilitation and recommendation of higher sentences.

Further, our manipulation had an influence on some sub-factor of dehumanization of the perpertrator. Indeed, the positive human nature attributed to the perpetrator was the highest when both sexualized content and cognitive load were high. Further, negative human nature attributed to the perpetrator was the lowest in high cognitive load condition. In other word, sexualization and cognitive load diminish the mechanistic dehumanization of the perpetrator.

In general, the results are consistent with the General Aggression Model (GAM, Anderson & Bushman, 2018; Bushman, 2017). First, sexualized content in video game acts like a situational variable – as expected – and increases aggressive attitude toward women. Further, cognitive load moderates the impact of sexualization, which means that the cognitive resources consumed by a video game interact with the appraisal decision processes leading to a more impulsive judgment of a rape victim. However, the exact temporality of this relation remains unclear. Indeed, in this study, the video game directly caused cognitive load. Whether cognitive load influence directly the appraisal of the victim responsibility, or it impacts only the decision to express that opinion is unclear. Future studies should try to decompose that temporality (e.g., by creating cognitive load after exposure to sexualized content).

One main contribution of these results is that it confirms the particular role of video games compared to other media. Indeed, in this study, cognitive load was directly caused by features from the video game (i.e., degree of difficulty of the video game). However, which exact characteristics of video game can cause cognitive load remains unclear. Future studies should try to identify clear features such as

interactivity (e.g., the number of button needed to play the game), reactivity (e.g., the number of actions asked by the video game) or the immersion in the video game (e.g., by using virtual reality). Further, it would be pertinent to manipulate some of these characteristics in other media (e.g., film and television) to check if the impact is similar than with video games. Also, the degree of experience of the player with video games should also be considered to determine if the effect will still be present with experienced players.

Some limitations are present in this study. First, the video game chosen allowed manipulating sexualization by modifying outfits. However, Ultra Street Fighter IV is a fighting video game, the female character possessed features that are stereotype-inconsistent with the usual submissive role of female character in video game. Indeed, this video game presents fighting female characters and, compared to our non-sexualized condition, muscularity was more apparent for the sexualized character. Such stereotype-inconsistent information might act as confounding variable and prime other concept such as agentivity, which is known to mediate the relation between sexualization and risk of sexual aggression (Blake et al., 2016). This agentivity of the female sexualized characters might also explain why our manipulation did not prime dehumanization. Future studies should try to avoid such stereotyped-inconsistent information or try to determine their specific impact by using a different genre of video game. Finally, male sexualization should be included in future studies to evaluate its impact on perpetrator blame.

In conclusion, these results are of importance to better understand the impact of sexualized video game characters on rape victim blame. Our results show that playing a video game that contains sexualized female characters increases rape victim blame. Further, results from this study promote the idea that video games might have a stronger impact on attitude because of its interactive nature. Negative attitudes toward women in general and, more specifically, rape myth acceptance are an important problem in our society and one of its underlying causes might be sexualized video game.

Effects of Violent and Nonviolent Sexualized Media on Aggression-Related Thoughts, Feelings, Attitudes, and Behaviors: A Meta-Analytic Review

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Abstract

Women are often depicted as sex objects rather than as human beings in the media. Theoretically, the depiction of women as sex objects could lead to negative attitudes and even aggressive behavior toward women in the real world. Using the General Aggression Model (GAM, Anderson & Bushman, 2002) as a theoretical framework, this meta-analysis tests the effects of violent and nonviolent sexualized media content on aggressive thoughts, angry feelings, negative attitudes, and aggression. This meta-analysis included 97 independent studies involving 49,553 participants. Results showed a "small" to "moderate" sized average correlation between exposure to sexualized media and aggressive thoughts, negative attitudes, and aggressive behavior. Significant correlations were found in experimental, cross-sectional, and longitudinal studies, indicating a triangulation of evidence. Effects were similar for college students and non-students. Effects were stable over time. Effects were stronger for violent sexualized media than for nonviolent sexualized media, although the effects of nonviolent sexualized media were still significant and non-trivial in size. Moreover, the effects of violent sexual media are greater than the effects of violent media on aggression obtained in previous meta-analyses. These findings suggest that violent and sex are a "double whammy" when it comes to negative outcomes for females. Effects were stronger for male participants. These results have practical implications and showed that exposure to sexualized content and, especially, the combination of violence and sexualized content has negative effects on women, and especially on what males think about females and how aggressively they treat them.

Introduction

Women are often sexualized in the media, and this sexualization might influence how women are perceived and treated in the real world. For decades, researchers have studied these effects in television studies (Paik & Comstock, 1994), pornography studies (Oddone-Paolucci, Genuis, & Violato, 2000; Wright, Tokunaga, & Kraus, 2016) and, recently, video game studies (Dill et al., 2008; Driesmans et al., 2015; Fox & Potocki, 2016; Yao et al., 2010). The present meta-analysis combines the results from scientific studies to test whether exposure to violent and nonviolent sexualized media is related to aggression and violence. We also look at factors that might moderate and mediate this relationship. Possible moderators include media format, amount of clothing worn by the model, sex of the target of violence… Possible mediators include aggressive thoughts, angry feelings, and hostile attitudes toward women.

Nonviolent and Violent Sex in the Mass Media

The "pornography industry" was described by Covenanteyes as an $8 billion industry in the United States in 2012 (Spencer, 2012). The revenue of the pornography industry has declined since then, principally because of the abundance of free pornography on the Internet. Regardless of whether people pay for it, pornography is highly used worldwide. In 2017, Pornhub, the most popular pornographic website, has an average of 81 million visits every day (Pornhub, 2017). For comparison, the quantity of data transferred by Pornhub every 5 minutes is equivalent to the entire contents of the New York Public Library's 50 million books. In 2017 alone, it represents a total of 3,772 petabytes of data, which is enough data to fill the memory of every iPhone currently used around the world.

Consumers of pornography are mostly male. For example, one study reported that males are 6 to 42 times more likely than females to consume pornography (Carroll, Busby, Willoughby, & Brown, 2016).

Women are often sexualized in the mass media. In pornographic movies, for example, women are more likely than men to be treated as sex objects (Brosius, Weaver III, & Staab, 1993; Cowan, Lee, Levy, & Snyder, 1988; Jensen & Dines, 1998). A recent report from the Women Media Center (WWC) found that about 33% of female characters are sexualized (i.e., scantily clad or nude) on screens (i.e., film, television; WMC, 2017). Further, 13-20 years old females are just as likely as 21-39 years old female to be sexualized in the media. In 2005, the Kaiser Family Foundation (KFF, 2005) analyzed the sexual content of 959 programs distributed on the top 10

television channels in the United States (US). Out of the 959 programs, 68% contained sex talks and 35% contained sexual behavior. Sex in the mass media appears to be waxing rather than waning. For example, the 2004 programs contained significantly more sexual behavior (35%) compared to the 1998 programs (23%). Often sex and violence occur together in the mass media. Content analyses show that violence is a common theme in "adult" books, movies, magazines, and Internet sites (e.g., Barron & Kimmel, 2010; Malamuth & Briere, 1986). In addition, the music industry often associates sex and violence. For example, a recent study found that 103 out of 279 (37%) popular songs contained references to sexual activity, and 65% of those contained references to degrading sexual acts (Primack, Gold, Schwarz, & Dalton, 2008). Finally, video games are a typical example of the association between sexualized content and violence. Recent content analyses show that women are portrayed as sexualized and passive while male's characters are portrayed as hyper muscular and aggressive (Downs & Smith, 2010; Lynch et al., 2016; Summers & Miller, 2014).

In the present review, we use meta-analytic procedures to integrate the empirical literature on the effects of violent and nonviolent sexual and sexualized media on aggression-related thoughts, feelings, and behaviors.

Definitions

In this section, we define the key terms used in this review. Both conceptual and operational definitions are given.

Sexualized Media. Sexualization occurs when "a person is held to a standard that equates physical attractiveness (narrowly defined) with being sexy" (R. L. Collins et al., 2010, p. 1). Sexualized media portray characters as physically attractive, ranging from advertisements picturing scantily clad women to hardcore pornography.

In all of the studies included in this review, participants were exposed to at least one of the three types of media. The following comparisons were analyzed: (a) sexualized and violent media versus violent media, (b) sexualized and violent media versus neutral media, and (c) sexualized media versus neutral media. Other meta-analytic reviews have analyzed the violent versus control media comparison (e.g., Bushman, 2016; Bushman & Anderson, 2001; Hogben, 1998; Paik & Comstock, 1994; Wood, Wong, & Chachere, 1991). Each study was coded as to whether the different types of media were matched in terms of excitement content and physiological

arousal, the sexualized and non-sexualized violent media were matched in terms of violent content.

We also coded several characteristics of the sexualized media, although some of these characteristics could not be analyzed because there were too few studies. Researchers have used different media formats, including films, slides, photographs, and video games. Films have varied in length from a few minutes to several hours. Researchers have manipulated several characteristics associated with the sexual classification of the media, including the amount of clothing worn by models, the gender of models, whether both models gave their consent for the sexual interaction, and whether demeaning acts were depicted in the media (e.g., calling the person a bitch, using abusive language or ejaculating in a person's face).

Violent Media. Violent media are those that depict intentional attempts by individuals to inflict harm on others (Anderson & Bushman, 2001, p. 354). We also coded several characteristics of the violent media, including the gender of the aggressor and the victim, whether the aggressor and victim were acquaintances or strangers, and whether the victim was depicted as enjoying the violence.

Aggression and Violence. We used the same definitions of aggression and violence that Anderson and Bushman (2001) used in their meta-analysis of violent video game effects. Aggression is behavior intended to harm another individual who is motivated to avoid that harm. It is not an emotional response or an aggressive thought, plan, or wish. This definition excludes accidental acts that lead to harm, such as losing control of an automobile and accidentally killing a pedestrian, but includes behaviors intended to harm even if the attempt failed, such as when a bullet fired from a gun misses its human target. Violence refers to aggressive behavior intended to cause extreme physical harm, such as injury or death. All violent acts are aggression, but only extreme acts of physical aggression are violent.

Types of Research Designs

The present review integrates the results from both experimental and cross-sectional correlational studies. In an experimental study, participants are randomly assigned to view either sexual or nonsexual media and are later assessed for aggression. This work establishes a causal link between exposure to sexually explicit media and subsequent aggression. In a cross-sectional correlational study, consumption of sexually explicit media and violent behavior are assessed at one point in time. This work establishes a link between sexually explicit media and real

world aggression and violence. For ethical and practical reasons, experimental studies generally measure aggressive behavior, whereas correlational studies generally measure violent behavior.

In the experimental studies included in this review, researchers used both physical and verbal measures of aggression. The aggression machine paradigm (Buss, 1961), has been the primary laboratory procedure used to measure physical aggression, although a few alternative procedures have been used (e.g., Galdi et al., 2014; Galdi, Maass, & Cadinu, 2017; McKenzie-Mohr & Zanna, 1990; Sprankle, End, & Bretz, 2012). In the aggression machine paradigm, a participant and an accomplice (pretending to be another participant) are told that the study is concerned with the effects of punishment on learning. Using a rigged lottery, the real participant is selected to be the teacher and the accomplice is selected to be the learner. The participant presents stimulus materials to the accomplice who attempts to learn them. In some studies, the accomplice provokes the participant before the learning task begins. When the accomplice makes an incorrect response on a learning trial, the participant punishes them by means of electric shock. By using different buttons, the participant controls the intensity and duration of shock given to the accomplice. Some researchers have used noxious stimuli other than electric shocks, such as noise blasts delivered through a pair of headphones (Zillmann, Bryant, Comisky, & Medoff, 1981) or excessive pressure from a blood pressure apparatus (Zillmann, Bryant, & Carveth, 1981; Zillmann, Bryant, Comisky, et al., 1981).

In experimental studies that use verbal aggression measures, an accomplice or experimenter first angers the participant. Later, the participant is given a chance to retaliate against the provocateur by evaluating them in a negative manner. The participant is led to believe that a negative evaluation will harm the provocateur in some way. In one study (Ramirez, Bryant, & Zillmann, 1982), for example, male participants were angered by an obnoxious male graduate student experimenter who unfairly accused them of being uncooperative. After the experiment was over, the participant was told that in accord with a new university requirement, he would be asked to complete a form for the "Committee for Research Subjects." The experimenter's name was printed on the form. The experimenter told the participant that his responses were completely anonymous and that they should be placed in a sealed envelope and dropped in a ballot-type, padlocked box. Several of the questions on the form were supposedly going to be used to aid the departments in determining stipends for research assistantships. For example, one item on the form was: "In your opinion, should this student be reappointed as a research assistant?"

The participant could therefore harm the experimenter's chances for funding by evaluating him in a negative manner.

Most of the correlational studies included in this review used the FBI definition of violent crime (i.e., murder, rape, aggravated assault, robbery). We also include studies that measured violent acts even if the person was not actually arrested or convicted for committing the acts. For example, one study correlated pornography use with harassment behaviors such as making unwanted sexual advances (Mikorski & Szymanski, 2017).

Aggressive Attitudes. An attitude is a global evaluation, such as being in favor or opposed to some issue (e.g., Petty & Cacioppo, 1986, p. 4). Although the link between attitudes and behavior is not perfect, it can be strong if both the attitude and the behavior are measured at a specific level (e.g., Ajzen & Fishbein, 1977). For example, attitudes about violence against women should relate to aggression and violence against women. In studies on sexual media, the three most evaluated attitudes are sexism, rape myth acceptance, and Violence beliefs. Usually, a distinction is made between hostile and benevolent sexism (Glick & Fiske, 1996). Sexism has usually been evaluated using the Attitude Toward Women Scale (ATWS; Spence & Helmreich, 1972). Hostile sexism is exemplified by what feminists labeled as "male chauvinist pigs" who view women in a derogatory manner. Some sample items from the ATWS used to measure hostile sexism are "Once a woman gets a man to commit to her, she usually tries to put him on a tight leash" and "Women are too easily offended." Benevolent sexism is exemplified by chivalrous men who open doors for women and insist on paying for dinner. Benevolent sexism seems to paint a favorable view of women, but it is also grounded in gender stereotypes. Some sample items from the ATWS used to measure benevolent sexism are "A good woman should be set on a pedestal by her man" and "Many women have a quality of purity that few men possess." The two forms of sexism tend to be correlated. Most of the studies confound these two kinds of sexism, therefore only sexism will be coded in this meta-analysis.

Rape myth acceptance can be defined as false beliefs about rape, rape victims, and rapists that create a climate hostile to rape victims, and is most commonly measured using the Rape Myth Acceptance Scale (Burt, 1980). Sample items from this scale include "Women who get raped while hitchhiking get what they deserve" and "Many women have an unconscious wish to be raped, and may then unconsciously set up a situation in which they are likely to be attacked." Researchers have also

measured negative attitudes toward rape victims by presenting participants with real or hypothetical rape cases and having them indicate how responsible the victim was for the rape and how serious the penalty should be for the rapist (e.g., Loughnan et al., 2013).

Violence beliefs have typically been measured using self-reported questionnaire such as the Attitude Supportive of Violence against Women (ASI; Burt, 1980), which includes items such as "Being roughed up is sexually stimulating to many women" or "A wife should move out of the house if her husband hits her (reverse coded)". Other common measures include subscales from the Conformity to Masculine Norms Inventory (CMNI; Parent & Moradi, 2011) and the Male Role Norm Inventory-Revised (MNRI-R; Levant & Richmond, 2007).

Two other attitudes have been more recently conceptualized and measured: (1) objectification, and (2) dehumanization. Objectification occurs when person's body parts or functions are separated from the person, reduced to the status of instruments, or regarded as capable of representing the entire person (Gervais et al., 2013). Objectification is usually measured using self-reports scales that include items such as ''Sexually active girls are more attractive partners'' and ''There is nothing wrong with boys being interested in a women only if she is pretty'' (Peter & Valkenburg, 2007). Researchers have also used a Lexical Decision Task to measure objectification, by measuring how quickly participants can distinguish real words that are either objectifying of women (e.g., *slut*, *whore*, *bitch*) or more neutral (e.g., *sister*, *nurturer*, *niece*) from scrambled non-words (Yao et al., 2010). Dehumanization is described as a process in which a person is denied humanness (e.g., treated like animals, objects, treated as not completely human; Bernard, Gervais, Allen, Delmée, & Klein, 2015). Dehumanization has been measured by asking participants if a character (in a story or in pictures) or a partner possess some typically human qualities or capacities such as various intellectual competences (i.e., wishing, panning, reasoning, abstract thinking, etc.), culture, value, tradition, etc. (Jansma, Linz, Mulac, & Imrich, 2016; Loughnan et al., 2013; Vaes et al., 2011).

Aggressive Cognition. Aggressive cognition is a term that refers to thoughts, memories, and ideas that are associated with aggression and violence. Violent media can prime or activate aggressive thoughts in memory (e.g., Berkowitz, 1984), which can also increase the likelihood of aggressive behavior (e.g., Anderson & Bushman, 2002). In the studies included in this meta-analysis, aggressive cognition was mostly evaluated by researchers using self-report tendency to act in an aggressive or

sexually aggressive manner. In one experimental study (Galdi et al., 2014), for example, male participants were exposed to TV clips that portrayed women as sexual object, in professional roles, or a neutral material (i.e., a nature documentary). After watching the clip, participants were then asked to fill the Likelihood of Sexual Harassment scale (LSH; Pryor, 1987), which assesses men's intention to engage in sexual harassment. This scale describes several hypothetical scenarios in which a male character acts in a sexual harassing manner with a female character. Male participants imagine themselves as the male character in the scenario, and indicate the likelihood that they would act similarly to the male character if they were assured that no negative consequences would result from their actions. In another study (Foubert, Brosi, & Bannon, 2011), male participants were asked to report their consumption of mainstream pornography (i.e., graphic sex acts shown or describes in video, movies, magazines, books or online), sado-masochistic pornography (i.e., bondage, whipping and spanking but without an explicit lack of consent portrayed in video, movies, magazines, books or online) and rape porn (i.e., sexually explicit rape depictions in which force is used with explicit lack of consent). This consumption was correlated with self-reported likelihood of raping or sex assaulting women using the Attraction to Sexual Aggression Scale (Malamuth, 1981). Some researchers have used cognitive stimuli other than self-reported likelihood of engaging in different behavior, such as cognitive sexism or coding thought fantasies for aggressive content (Fisher & Grenier, 1994; McKenzie-Mohr & Zanna, 1990).

Aggressive Affect. The term aggressive affect refers to a feeling state consisting of anger or hostility. Like aggressive cognition, aggressive affect plays a mediating or intervening role in some theories of aggression (e.g., Anderson & Bushman, 2002; Berkowitz, 1993). Aggressive affect usually is measured by a self-report mood scale, such as the Hostility scale of the Multiple Affect Adjective Checklist (Zuckerman & Lubin, 1965), which contains adjectives such as annoyed, enraged, furious, hostile, and irritated. Participants are instructed to check those adjectives that describe how they feel at the present moment. Sometimes, a single item is used to measure aggressive affect. In one study (Peterson & Pfost, 1989), for example, participants watched a rock video with content that was sexual and violent, sexual but not violent, violent but not sexual, or neutral. After viewing the video, participants rated how angry they felt.

Why Do Sexualized and Violent Sexualized Media Increase Aggression?

Why does exposure to violent sexualized media increase aggression and violence? The General Aggression Model (Anderson & Bushman, 2002) provides a useful

framework for understanding media effects (Anderson & Bushman, 2018). In the model, behavior is largely based on the learning, activation, and application of related knowledge structures such as scripts stored in memory. These knowledge structures can be learned by direct experience or by observing others (e.g., parents, siblings, peers, mass media characters). For example, exposure to sexualized media can lead to the world view that women are objects for the sexual gratification of men. Once a script has been stored in memory, it may be retrieved at some later time and used as a guide for behavior. The media contain many examples of how men should treat a sexualized woman. For example, the television show "How I met your Mother" presents a character named Barney that often treats women like sexual objects. Barney often lies to women to sleep with them, interpret rejection by a woman as a challenge, is insistent and never calls them back after having sex with them. Such television programs might create the learning of a script about how to treat women in order to obtain sexual favors. As these knowledge structures are rehearsed, they become more complex, differentiated, and resistant to change. Through repeated exposure to violent and/or sexualized media, the person can become more habitually aggressive.

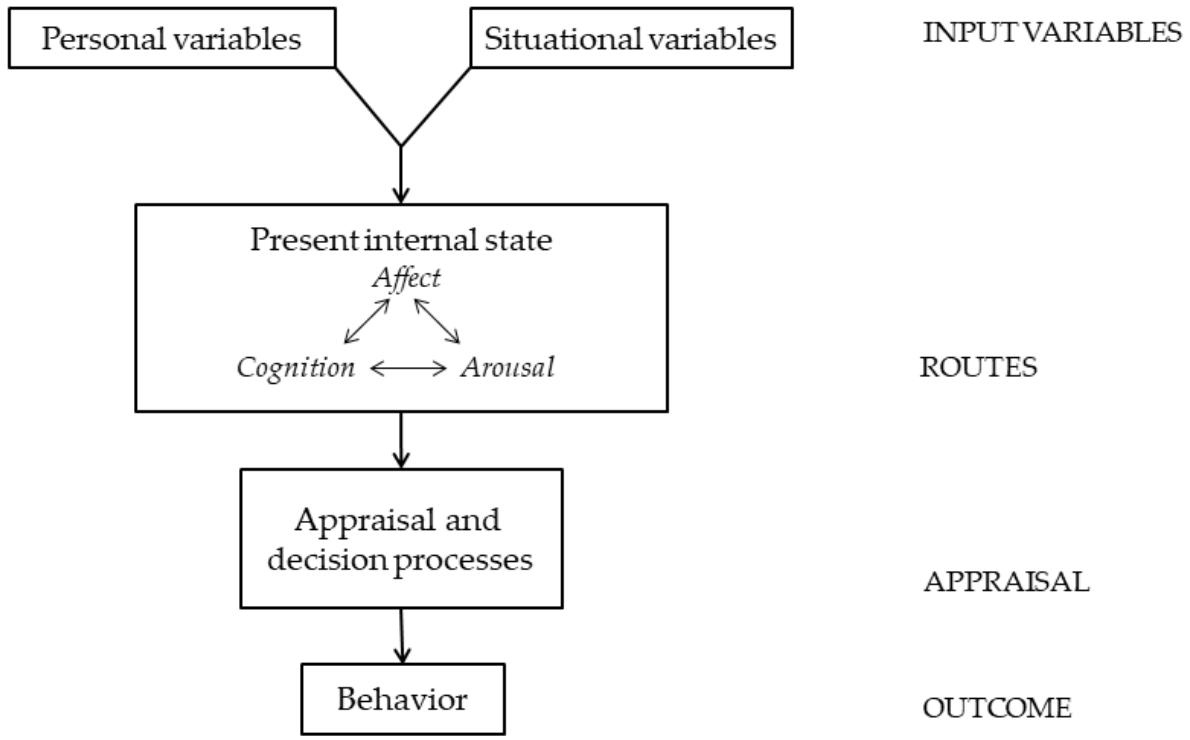
The General Aggression Model focuses on the "person in the situation," called an episode, consisting of one cycle of an ongoing social interaction (see Figure 1). The four main foci of the model are: (a) person and situation inputs, (b) cognitive, affective, and arousal routes though which these input variables have their impact, (c) appraisal processes, and (d) behavioral outcomes.

Inputs. Factors that facilitate aggression can be categorized as features of the situation or as features of the person in the situation. Situational factors include any important features of the situation, such as presence of a sexual or an aggressive cue (e.g., violent sexually explicit media). Person factors include all the specific things that a person brings to the situation, such as personality traits, attitudes, and genetic predispositions. This meta-analysis focuses on one situational variable (i.e., exposure to sexual media with or without violence) and one personal variable (i.e., participant gender).

Routes. Personal and situational input variables influence aggressive behavior through their impact on the person's present internal state, represented by cognitive, affective, and arousal variables. For example, violent sexualized media increase aggression in the short term by teaching individuals how to aggress, by priming aggressive or sexual thoughts, by increasing feelings of anger and hostility (in

general or toward females in particular), and by increasing arousal levels. Attitudes fall within the affective category. This meta-analysis focuses on aggressive cognition and hostile attitudes toward women.

Figure 1. The General Aggression Model. *Source.* Anderson and Bushman (2002), Krahé (2013).



Appraisals. Modifications of the internal state will cause the person to appraise the situation and act according to this appraisal (e.g., when being pushed by someone in the street, one might interpret the ambiguous action as a provocation and respond aggressively).

Outcomes. The final outcomes are aggressive or nonaggressive responding. The outcome selected depends, in part, on the person's present internal state. A person who is angry, is thinking aggressive thoughts, and is physiologically aroused is predisposed to respond with aggression in the situation. Hostile appraisals can also increase the likelihood of aggression. This meta-analysis focuses on aggressive and violent behavior as outcome variables.

Previous Reviews

There are two general approaches to conducting a literature review: the narrative (or qualitative) approach and the meta-analytic (or quantitative) approach. In the traditional narrative review, the reviewer uses "mental algebra" to integrate the

findings from a collection of studies, and summarizes the results in a narrative manner. In the meta-analytic review, the reviewer uses statistical procedures to integrate the findings from a collection of studies, and summarizes the results using numerical effect size estimates. Traditional narrative reviews are more likely than meta-analytic reviews to depend on the subjective judgments, preferences, and biases of the reviewer (e.g., Bushman & Wells, 2001; Cooper & Rosenthal, 1980). The present article uses a meta-analytic approach.

This is not the first meta-analysis to examine the effects of sexually explicit media on aggressive attitudes and behaviors (see M. Allen, Emmers, Gebhardt, & Giery, 1995; Oddone-Paolucci et al., 2000; Paik & Comstock, 1994; Wright et al., 2016). For example, in their meta-analysis of violent media and aggression, Paik and Comstock (1994) showed that the television program that combine violence and erotica had the biggest effect on real-life aggression compared to violent media and other media. Another meta-analytic review (M. Allen, D'Alessio, & Brezgel, 1995) found that both nonviolent and violent sexually explicit media increased aggression, but the effects were larger for violent sexually explicit media. Allen and his colleague found similar effects for rape myth beliefs (M. Allen, Emmers, et al., 1995). More recently, a meta-analytic review by Oddone-Paolucci et al. (2000) found that exposure to pornography was related to sexual deviancy, sexual perpetration, and sexually aggressive attitudes. Collectively, these previous reviews show that exposure to sexually explicit media have a substantial impact on aggressive attitudes and behaviors. Finally, the most recent meta-analysis showed that both violent and non-violent pornography were related to actual act of sexual aggression (Wright et al., 2016).

Present Review

The present meta-analytic review uses the General Aggression Model as a theoretical framework for understanding violent and nonviolent sexualized media effects. It is hypothesized that both types of media increase aggression-related thoughts, feelings, attitudes, and behaviors. Effects are expected to greater for violent than for nonviolent sexualized media. We also examine potential mediators of sexualized media effects.

With one exception (Wright et al., 2016), all previous meta-analyses examined studies that were conducted more than 20 years ago (i.e., the oldest studies were from 1995). A lot of new studies have been published since then, and a new meta-analysis is clearly needed. The present meta-analysis also has a broader focus than previous meta-analyses. It examines the effects of sexual media on aggressive

cognition, aggressive attitudes (i.e., rape myth acceptance, sexism, objectification, dehumanization, violence beliefs), and on actual aggressive behavior.

Method

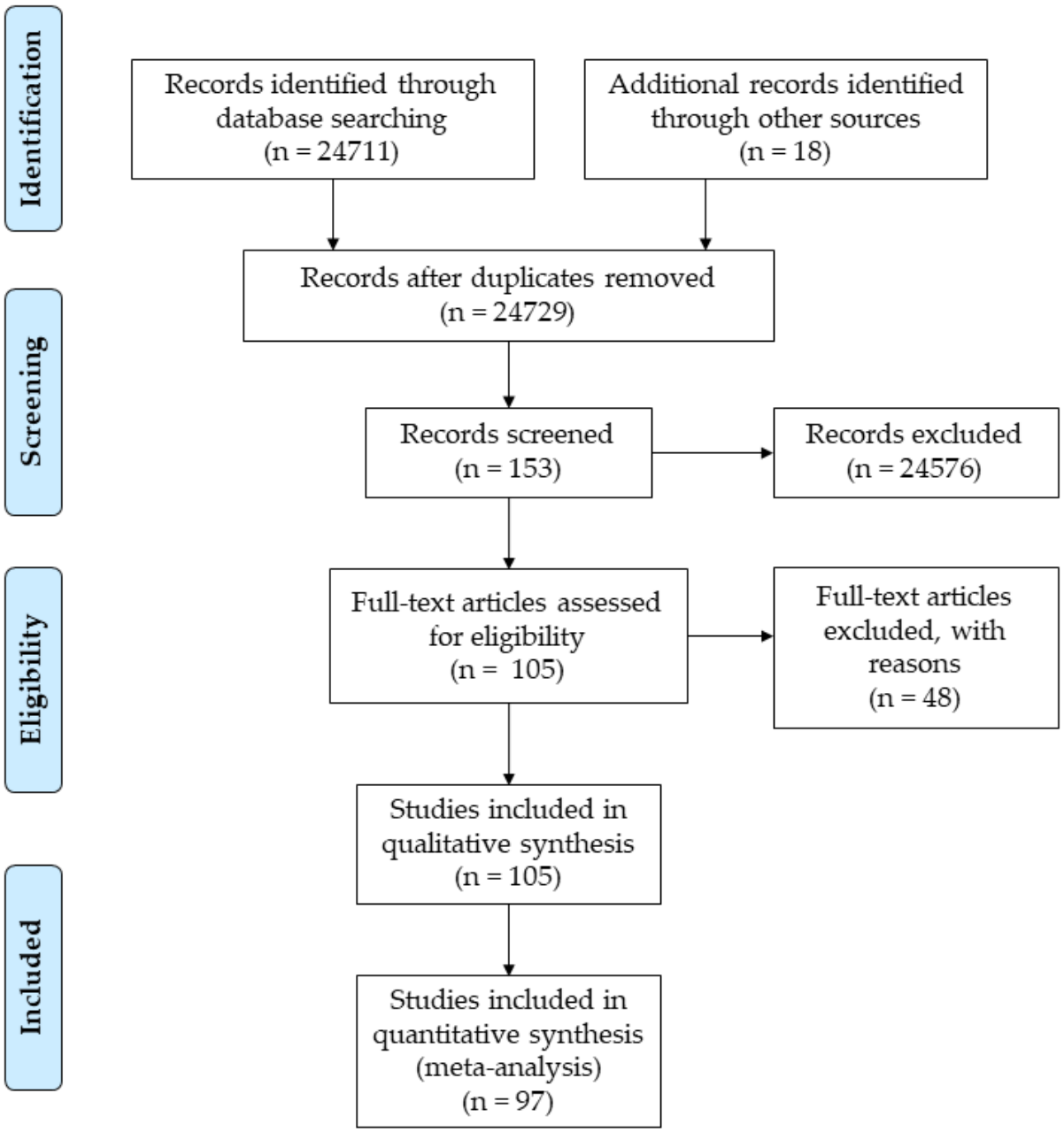
Literature Search Procedures

Both published and unpublished studies were included in the review to reduce publication bias (e.g., Begg & Mazumdar, 1994). Formal and informal channels were used to search the literature. Formally, the PsycINFO computer data base was searched (1806-2017) using the following terms in titles: *erotic** or *obscen** or *sex** or *explicit** or *porn** or *objectif**; and the following terms in abstract: *media** or *film** or *show** or *book** or *TV* or *televis** or *Internet* or *website** or *novel** or *anime** or *comic** or *magazine** or *photo** or *picture** or *cartoon** or *video** or *game** or *videogame** or *clip** or *advertis** or *movie** or *music** or *webpage** or "*deep web*." The asterisk option retrieves words containing the letter string with all possible endings (e.g., the term *porn** retrieves studies that used the terms *porn*, *pornography*, or *pornographic*). The search was restricted to peer-reviewed, empirical studies involving human participants. The search retrieved 24711 research reports. Reference sections of reviews and books on the effects of violent and nonviolent sexualized media also were combed (M. Allen, D'Alessio, et al., 1995; M. Allen, Emmers, et al., 1995; Donnerstein & Linz, 1986; Linz, Donnerstein, & Penrod, 1987; Malamuth & Briere, 1986; Malamuth & Donnerstein, 1982, 1984; Malamuth & Impett, 2001; Malamuth et al., 1995; Masterson, 1984; Oddone-Paolucci et al., 2000; Paik & Comstock, 1994; Wright et al., 2016). The reference sections of all retrieved studies and review articles also were searched. Unpublished datasets were obtained by contacting authors who had published a research report on the topic. Eleven research reports were retrieved by those means. Of the 24729 research reports, 97 were included in the final sample (see PRISMA diagram in Figure 2).

Inclusion Criteria

For a study to be included in the review, it needed to include a manipulation or measure of exposure to sexually explicit media and it needed to include a measure of aggression-related thoughts, feelings, attitudes, or behaviors. We excluded studies that focused on physiological and sexual arousal (see Murnen & Stockton, 1997), for a meta-analytic review of this literature).

Figure 2. PRISMA Flow Diagram (Moher, Tetzlaff, Altman, & The PRISMA Group, 2009).



Moderator Variables Coded

We coded several moderators that were specific to sexual media, specific to violent media and specific to the methodology. Moderators that appeared in too few studies (k<5) are not presented in the results.

Moderators specific to sexual media.

Media format. We coded the type of media participants were exposed to (i.e.,

print, film, video game, combination of different types of media). Active forms of media (e.g., video games) consume more cognitive resources than passive ones (e.g., print and film, Lin, 2013). Based on the GAM (Anderson & Bushman, 2002), lower availability of cognitive resources might lead to more impulsive behavior, including aggressive behavior.

Amount of clothing. We also coded the amount of clothing worn by the model in the sexualized media (i.e., scantily clothed, nude with genitalia not visible, nude with genitalia visible). Most of previous meta-analysis have focus only on the impact of pornography involving nude models with genitalia visible (M. Allen, D'Alessio, et al., 1995; Oddone-Paolucci et al., 2000; Wright et al., 2016). Based on the GAM (Anderson & Bushman, 2002), we have hypothesized that sexualized content in general might impact aggression. This moderator will serve to test if the degree of sexualized content influenced the outcome.

Consent for the sexual interaction. We coded whether every character had given their full consent for the sexual acts. Sex was coded as nonconsensual when at least one of the characters has not given consent. This moderator was coded because nonconsensual sex is a violent crime (i.e., rape) and has been shown to be a predictor of aggression (Willan & Pollard, 2003).

Presence of demeaning action. We coded whether the media depicted any demeaning action (e.g., calling the person abusive names or ejaculating in a person's face). Such content has been showed to be frequent in modern pornography (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010; Sun, Bridges, Wosnitzer, Scharrer, & Liberman, 2008), and some authors have suggested that it could impact acceptance of violence against women and objectification of women (Wright & Tokunaga, 2016).

Moderators specific to violent media.

Gender of the aggressor. We coded the gender of the perpetrator of aggression. Most perpetrators of sexual violence are males (CDC, 2010; Stop Street Harassment, 2018). Therefore, being exposed to a male or a female perpetrator might modify the outcomes.

Gender of the victim. We coded the gender of the victim of aggression. Most victims of sexual violence are females (CDC, 2010; Stop Street Harassment, 2018). Therefore, being exposed to a male or a female victim might modify the outcomes.

Relationship between the aggressor and victim. We coded whether the models were acquaintances or strangers. This moderator is important because in most case of sexual aggression, the victims know the perpetrators (CDC, 2010; Stop Street Harassment, 2018).

Enjoyment of the violence by the victim. We coded whether the victim was depicted as enjoying the sexual relation. This moderator is important because it is a common rape myth belief that women find being roughed up sexually stimulating (Burt, 1980).

Methodological moderators.

Year of publication. We coded the year the data were collected (or the year the report was published if the report did not specify when the data were collected). We coded this variable to see if effects were stable over time.

Publication Outlet. We coded whether the study was published in a peer-reviewed journal article. This moderator was coded to test for potential publication bias.

Population sampled. We coded whether participants were college students. This moderator was coded because concerns have been raised about the generalization of results in psychological research involving college student samples (Hanel & Vione, 2016).

Age of the sample. We coded the average age of participants. This moderator was coded to test for potential age differences.

History of sexual violence. We coded whether participants had a known history of sexual violence (e.g., convicted pedophiles). We predicted stronger effects for participants with a known history of sexual violence (Mancini, Reckdenwald, Beauregard, & Levenson, 2014).

Type of design. We coded the type of design researchers used (i.e., experimental, cross-sectional, longitudinal). We coded this variable to test whether there is a triangulation of evidence across different methods (Bushman & Anderson, 2015).

Intercoder Reliability

All of the studies were coded by both raters. To assess intercoder reliability, the intraclass coefficient was used for continuous characteristics and the kappa

coefficient was used for categorical characteristics (Orwin & Vevea, 2009). The reliability coefficients ranged from .90 to 1.00, with a median of .97. Disagreement among the coders was resolved by discussion.

Meta-Analytic Procedures

Conceptually, both exposure to sexual media and aggression are continuous variables. Thus, we used the correlation coefficient as the effect-size index. Because the distribution of the correlation coefficient is not normally distributed unless the population correlation coefficient equals zero, Fisher's z transformation was applied to each correlation coefficient before pooling them. Each z-score was weighted by the inverse of its variance (i.e., *N*-3). Thus, larger studies get more weight when effect-size estimates are pooled.

We used random-effects meta-analytic procedures for all analyses. Random-effects models assume that effect sizes differ from population means by both subject-level sampling error and also study-level variability (Borenstein, Hedges, Higgins, & Rothstein, 2009). In contrast, fixed-effects models assume only subject-level sampling error. Although random-effects models produce wider confidence intervals than fixed effects models, they require fewer statistical assumptions and allow for generalizations to a broader set of studies than only the ones included in the meta-analysis (Borenstein et al., 2009). One problem that arises in estimating average effect sizes is deciding what constitutes an independent hypothesis test. The present review used a shifting unit of analysis (Cooper, 2017). Each statistical test was coded as if it were an independent event. For example, suppose that in one study male participants gave accomplices electric shocks after viewing either a sexually explicit or a neutral videotape. Also suppose that the researcher manipulated the gender of the accomplice and whether the accomplice angered participants. In this example, a total of four effect-size estimates would be coded (i.e., angered participants - female accomplice, angered participants - male accomplice, nonangered participants - female accomplice, nonangered participants - male accomplice). For the estimate of the effect of sexually explicit media on aggression, the four effect-size estimates would be averaged so that the study would contribute only one effect-size estimate. For an analysis in which the effects of sexually explicit media on aggression are compared for angered versus nonangered participants, the study would contribute two effect-size estimates. Two effect-size estimates would also be contributed to an analysis that compared the effects of sexually explicit media on aggression against male and female targets. Thus, the shifting unit of analysis retains as much data as possible without violating two greatly the independence assumption that underlies

the validity of meta-analytic procedures.

Results

Global Effect of Violent and Nonviolent Media on Aggression

Table 1 presents all results of the main analyses on all outcome variables combined, aggressive cognition, aggressive attitudes, and aggressive behavior. Table 2 presents all results of the main analyses on specific attitudes (i.e., objectification, violence beliefs, dehumanization, rape myth acceptance, sexism). Both tables present results from all studies, and from best practice studies. Best practice studies varied sexualization, but held other variables constant. We have the most confidence in the results from best practice studies because they are not confounded by other variables. All average correlations were significant (i.e., all confidence intervals excluded zero).

All outcomes combined. The average correlation for all studies (k = 176) is .18, with a 95% confidence interval ranging from .15 to .20,.The average correlation for best practice studies (k = 154) was .16 with a 95% confidence interval ranging from .13 to .19.

Aggressive cognitions. For aggressive cognition outcomes, all studies were best practice studies. The average correlation for the 16 effect sizes was .19, 95% CI: .14 to .23.

Hostile attitudes. The average correlation for all studies (k = 91) was .13, 95% CI: .09 to .16. The average correlation for best practice studies (k = 79) was also .13, 95% CI .09 to .17.

Objectification. For objectification outcomes, all studies were best practice studies. The average correlation for the 11 effect sizes was .20, 95% CI: .11 to .29.

Violence beliefs. For violence beliefs outcomes, all studies were best practice studies. The average correlation for the 19 effect sizes was .12, 95% CI: .07 to .16.

Dehumanization. For dehumanization outcomes, all studies were best practice studies. The average correlation for the 10 effect sizes was .09, 95% CI .00 to .17.

Rape myth acceptance. The average correlation for all studies (k = 50) was .12, 95% CI: .07 to .17.The average correlation for best practice studies (k = 41) was also .12, 95% CI: .07 to .17.

Sexism. The average correlation for all studies (*k* = 40) was .10, 95% CI: .05 to .14. The average correlation for best practice studies (*k* = 35) was .11, 95% CI: .07 to .16.

Aggressive behavior. The average correlation for all studies (*k* = 63) was .23, 95% CI: .19 to .28. The average correlation for best practice studies (*k* = 52) was .16, 95% CI: .13 to .19.

Outliers

When identified outliers are removed from the distributions, the average correlation for cognition and behavior for best practice studies were slightly higher (respectively .19 and .20), whereas the average correlation for hostile attitudes was slightly lower (.10) but the confidence interval still excluded zero (see Table 1). Concerning the various types of hostile attitudes toward women, the average correlation was similar for objectification and slightly lower for violence beliefs, rape myth acceptance, and sexism. For lower values, the confidence intervals still excluded the value zero (see Table 2). No outliers were identified for dehumanization. In summary, outliers had minimal effects on the obtained results.

Moderators

Participant gender. Whether the sample was exclusively composed of male participants or female participants seemed to influence the results. The confidence intervals for all distributions excluded the value zero, except for aggressive behavior, which excluded zero for male participants (.19) and included zero for female participants in best practice studies (.14; see Table 3). However, effect sizes were fairly similar. Only nine effects were included for female participant. Therefore, the non-significant effect for female participant is more probably due to a lack of statistical power. No conclusion can be drawn about gender differences in aggressive cognition because the female sample distribution was too small to analyze (*k* = 3). Further, participant gender did not seem to influence the impact of sexual media on the various measures of hostile attitudes. Indeed, the confidence interval for general hostile attitudes excluded the value zero for both male (.10) and female (.08). However, when examined more closely, for violence beliefs, rape myth acceptance, and sexism, the confidence interval excluded the value zero for male participants and included zero for female participants (see Table 4). Concerning effect sizes, the impact of sexualized content on male participants' violence beliefs (.12) was higher than for female participants (.06). Concerning rape myth acceptance, the effect sizes for male participants (.13) was higher than for female participants (.05). The effect sizes for sexism were similar for male (.10) and female (.08) participants. No

conclusion can be drawn about gender differences in objectification and dehumanization because the female sample distribution was too small to analyze (k = 3 for both).

Amount of clothing. When comparing the amount of clothing worn by models, several distributions were too small to analyze (k < 5). Therefore, all outcomes were combined together. The degree of nudity did not seem to influence the results. The confidence intervals for all distributions excluded the value zero, except when the model was nude but with hidden genitalia (see Table 5). However, one study was identified as an outlier and, when removed, the confidence interval excluded the value zero (.15, 95% CI: .05 to .24). Effect sizes were similar when the model was scantily clothed (.15), nude with genitalia visible (.16) and nude without genitalia visible when the outlier is removed (.15).

Media format. When comparing the results for media format (i.e., print and/or film, video game), several distributions were too small to analyze (k < 5). Therefore, all outcomes were analyzed together. Media format did not seem to influence the results. The confidence intervals for all distributions excluded the value zero (see Table 6). Effect sizes were the highest for video game (.21) and for film (.20), but slightly lower for print (.13).

Population sampled. When comparing the results for the general population verses college students, several distributions were too small to analyze (k < 5). Therefore, all outcomes were analyzed together. The population sampled did not seem to influence the results. The confidence intervals for all distribution excluded the value zero (see Table 7). In best practice studies, effect sizes were similar for college student (.15) and non-student (.18) samples. When focusing on the studies that compared both sexualized and violent media to control media, the average correlation was significantly higher for non-student (.46) than for student (.20) samples.

Type of design. When comparing the results for cross-sectional, experimental, and longitudinal designs, several distribution were too small to analyze (k < 5). Therefore, all outcomes were analyzed together. The type of design did not seem to influence the results. The confidence intervals for all distributions excluded the value zero (see Table 8). Effect sizes were similar for cross-sectional studies (.17) and experimental studies (.18), and slightly smaller for longitudinal studies (.10).

Publication outlet. When comparing the results for the published and

unpublished data, several distribution were too small to analyze ($k < 5$). Therefore, all outcomes were analyzed together. The publication outlet did seem to influence the results. In the best practice studies, the confidence intervals excluded the value zero for published studies and included zero for unpublished studies (see Table 9). However, six studies were identified as outliers and, when removed, the confidence interval for unpublished data excluded the value zero. Effect sizes were similar for published (.16) and unpublished (.18) studies, suggesting the absence of publication bias on the results. However, we also used more formal procedures to identify publication bias (see next section).

Year of publication. There was no significant relation between publication year and the magnitude of the effect in the best practice study, b = .0003 (-.0029, .0022), z = -0.26, p = .793. The confidence interval included zero. Thus, the effects were stable over time.

Age of participant. There was no significant relation between participant age and the magnitude of the effect in the best practice study, b = -.0034 (-.0099, .0030), z = -1.05, p = .295. The confidence interval included zero.

Publication Bias Analyses

Publication bias was formally tested using trim and fill analyses (Duval & Tweedie, 2000). First, smaller studies causing funnel plot asymmetry are removed from the funnel plot. Next, the trimmed funnel plot is used to estimate the true center of the funnel, after which the removed studies are added back to the funnel plot along with their symmetrical counterparts, which are often called "missing" studies. Finally, there is a calculation of an estimated adjusted meta-analytic effect including the "missing" studies. Therefore, trim and fill analyses estimate how many studies are missing and what the meta-analytic effect would be if those missing studies actually existed in the data set (Higgins & Green, 2011). For nearly every distribution, trim and fill analyses found potentially missing studies. However, when these potentially missing studies are added into the distribution, the results change for only five distributions (i.e., the confidence intervals included the value zero). The distribution were the impact of sex and violence media, among male participants, on attitudes (for both random and fixed effect Trim and Fill; see Table 3), the impact of best practice studies, among male participants, on violence beliefs (for both random and fixed effect Trim and Fill) and sexism (for random effect Trim and Fill; see Table 4), the impact of sex media in which the models are scantily clothed (for fixed effect Trim and Fill; see Table 5), and the impact of sex and violence media in experimental

studies (for fixed effect Trim and Fill).

Discussion

Although previous meta-analyses have already shown that sexually explicit media can influence aggression (M. Allen, Emmers, et al., 1995; Oddone-Paolucci et al., 2000; Paik & Comstock, 1994; Wright & Tokunaga, 2015), the present meta-analysis adopted a much broader focus by also examining other theoretically important outcome variables. This meta-analysis examined the effect of sexually explicit media on aggressive thoughts, hostile attitudes toward women, and aggressive behavior. Moreover, this meta-analysis was more firmly grounded in theory than previous meta-analyses. Indeed, we used the General Aggression Model (Anderson & Bushman, 2002) as a theoretical framework. Based on the GAM, we predicted sexualized content to act as a situational variable and to influence aggressive cognition, aggressive affect, hostile attitudes, and aggressive behavior.

Main Findings

Four main findings are particularly important from this meta-analysis. First, the General Aggression Model is efficient for predicting the overall results. As expected, exposure to sexualized media was positively associated with aggressive cognition, hostile attitudes, and aggressive behavior. Further, when hostile attitudes are subdivided into separate categories (i.e., sexism, objectification, rape myth acceptance, dehumanization, violence beliefs), each one is positively associated with exposure to sexualized media.

Second, when violence is not controlled for, the sexualized media has a bigger impact on aggressive behavior than when violence is controlled for. This finding is consistent with previous meta-analyses that found a stronger association between sexualized media consumption and aggressive behavior when the sexual media also contained violence (Paik & Comstock, 1994; Wright & Tokunaga, 2016).

Third, sexualized media on aggression can potentially impact a large section of the population. It affected both male and female participants of all ages, which contradicts the common belief that only men are likely to behave aggressively after consuming sexual media. This result is also consistent with previous meta-analyses that focused on the impact of pornography (M. Allen, D'Alessio, et al., 1995; Oddone-Paolucci et al., 2000; Wright et al., 2016). However, more studies are needed with female participants before firm conclusions can be drawn. In this meta-analysis, only 45 studies included female samples, and 17 of these did not include male samples.

Most studies (k = 52, 54%) focused only on male participants for three reasons: (1) male are primary consumers of pornography (Carroll et al., 2016), (2) males are the primary perpetrators of sexual aggression and aggression against females (CDC, 2010; FRA, 2014; Stop Street Harassment, 2018), and (3) male sexual aggression is the focus of theoretical models such as the confluence model of sexual aggression (Malamuth, 2003; Malamuth et al., 1995; Vega & Malamuth, 2007).

Because most research in psychology is conducted using college student participants, concerns have been raised about the generalization of results (Hanel & Vione, 2016). However, sexual media increased aggression in both college student and non-student participants.

Fourth, there was a significant relation between exposure to sexual media and aggression in all three types of designs (i.e., cross-sectional, longitudinal, experimental). Therefore, it can be concluded that exposure to sexual media has a causal relation with aggression, is correlated with serious forms of aggression, and can have long-term cumulative effects on aggression. This convergence of evidence across different methods is called triangulation. The term *triangulation* comes from surveying techniques that determine the location of a single point with the convergence of measurements taken from two different points (Rothbauer, 2008). The idea behind triangulation is that one can get a more accurate view of relationship between two conceptual variables (e.g., exposure to sexual media and aggression) from the results of multiple studies that use different research methods, conducted by different research teams, with different types of participants, using different ways of measuring and analyzing the same conceptual variables.

Magnitude of Average Effect Sizes

The average effect sizes found in the present meta-analysis are small to medium (Cohen, 1988). The correlations found in the present meta-analysis were about the same magnitude as correlations found in other meta-analysis of sexualized and sexual media effect (M. Allen, D'Alessio, et al., 1995; Oddone-Paolucci et al., 2000; Wright et al., 2016). In terms of the U_3 value (Cohen, 1988), participants exposed to sexualized content had 59% chance of having more aggressive thoughts, a 57% chance of having more hostile attitudes, and 61% chance of acting more aggressively, than participants not exposed to sexualized content. Further, being exposed to both sexualized content and violence provoke an important increase of risk of acting aggressively (75%) compared to not being exposed to such content.

It appears that the magnitude of relationship between exposure to sexual media and aggression is similar in size to the relationship between exposure to violent media and aggression (Anderson et al., 2010; Bushman, 2016; Paik & Comstock, 1994; Wood et al., 1991). The relationship is much stronger when sexual and violent content occur together (r = .43). This increase of magnitude might be due to the fact that violent media are more arousing when it contains sexualization than when it does not. Further, because of the presence of sexualization, violent media might prime aggression but also concepts of victim's vulnerability and lack of agency (Blake et al., 2016). This highlights the importance of the impact of sexualized content on aggression.

Limitations and Future Research

One advantage of conducting a meta-analysis is that it allows one to identify gaps in the literature. In the present meta-analysis, we could not examine the effect of sexually explicit media on angry feelings, and hostile appraisals because too few studies included these outcomes. Future research should attempt to fill these gaps. Similarly, more studies should examine the impact of sexualized media content on objectification, dehumanization, and violence beliefs. Finally, future studies should include female participants as well as male participants. The minimal number of effect sizes is k = 10, especially if one want to trust publication assessment methods (Kepes, Banks, McDaniel, & Whetzel, 2012; Sterne et al., 2011). Therefore, more studies are needed to better trust the results for the following distributions: aggressive behavior among female participants, dehumanization among male and female participants, violence beliefs among female participants, and rape myth acceptance among female participants.

One main limitation to the results of this meta-analysis is that the impact of publication bias and outliers cannot be fully ruled out. The confidence interval for unpublished results included the value zero. However, the average correlation for unpublished studies is similar to the average correlation for published studies when outliers are removed and the confidence interval excludes the value zero. Further, the trim and fill analyses only suggested a change of result for five distributions.

Several distributions had to be combined to analyze the impact of several moderators, which mean that future research should include those moderators. Specifically, more research is needed on the impact of sexualized video game content. More longitudinal designs should be conducted. Future studies should also use non-student populations.

Finally, several moderators were not evaluated because too few effect sizes were available. For example, more studies are needed on the impact of sexualized male media content on aggression. Most studies focused on females as the victims and neglected to examine the impact on male victims. When a relationship between two models or sexuality was involved, almost all studies have focused on heterosexual relations. In several studies, the description of the sexualized content was too vague to classify (e.g., consent for the sexual interaction, enjoyment of the violence by the victim, presence of demeaning action). Future research should provide more detailed descriptions of the media participants were exposed to.

Conclusions

The present findings show that the General Aggression Model is a relevant theoretical framework to explain the impact of sexualized content on aggression. The results showed that sexualized content increase aggressive behavior, aggressive thoughts and hostile attitudes. Sexualized content had a causal impact on aggression in experimental studies, was related to serious forms of aggression in cross-sectional studies, and had a cumulative effect in longitudinal studies. Further, this meta-analysis extends the result from previous meta-analysis about the impact of pornography (M. Allen, Emmers, et al., 1995; Oddone-Paolucci et al., 2000; Wright et al., 2016) to all type of sexualized media content. By consequent, the potential impact of sexualized content should not be taken lightly.

Further, the combination of sex and violent media content appears to be a "double whammy" when it comes to aggression. This finding has particular importance because sex and violence are often paired together in the mass media (e.g., pornography or video games; Bridges et al., 2010; Burgess, Stermer, & Burgess, 2007; Downs & Smith, 2010; Lynch, Tompkins, van Driel, & Fritz, 2016; Sun et al., 2008). Thus, it is especially important to protect children and adolescents from this kind of content.

Table 1

Meta-analytic and sensitivity analyses results for all outcomes and specific outcomes

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All outcomes	176	55596	.18	.15, .20	-.09, .42	1645.35	89.36	.17	.17, .18; .18
- Sex media	152	41146	.16	.13, .19	-.06, .37	869.05	82.62	.13	.16, .16; .16
- Sex and violence media	24	14450	.27	.20, .35	-.02, .52	389.23	94.09	.18	.25, .30; .28
Specific outcomes									
- Cognitions	16	2354	.16	.09, .23	-.03, .34	40.40	62.87	.11	.14, .19; .16
- Sex media	16	2354	.16	.09, .23	-.03, .34	40.40	62.87	.11	.14, .19; .16
- Sex and violence media	0								
- Attitudes	91	20925	.13	.09, .16	-.10, .34	464.75	80.63	.14	.12, .13; .13
- Sex media	79	19196	.13	.09, .17	-.09, .34	402.48	80.62	.13	.12, .13; .13
- Sex and violence media	12	1729	.10	-.02, .22	-.20, .39	54.85	79.94	.18	.06, .14; .10
- Behaviors	63	31786	.23	.19, .28	-.03, .46	806.16	92.31	.16	.22, .24; .23
- Sex media	52	19137	.19	.14, .23	-.02, .37	314.82	83.80	.12	.18, .20; .19
- Sex and violence media	11	12649	.43	.35, .50	.23, .59	172.19	94.19	.13	.38, .45; .43
Distributions without outliers									
All outcomes	168	53942	.17	.14, .19	-.06, .38	1149.43	85.47	.14	.17, .17; .17
- Sex media	148	40917	.15	.13, .18	-.05, .34	734.50	79.99	.12	.15, .16; .15
- Sex and violence media	21	13054	.25	.19, .32	.04, .44	183.09	89.08	.13	.24, .27; .25
Specific outcomes									
- Cognitions	15	2167	.19	.13, .24	.07, .29	21.19	33.94	.06	.17, .20; .19
- Sex media	15	2167	.19	.13, .24	.07, .29	21.19	33.94	.06	.17, .20; .19
- Sex and violence media	0								
- Attitudes	88	15703	.11	.08, .13	-.02, .24	180.54	51.81	.08	.10, .11; .11
- Sex media	75	13854	.10	.08, .13	.01, .20	117.10	36.81	.06	.10, .10; .10
- Sex and violence media	10	1659	.11	.04, .18	-.02, .23	15.54	42.07	.07	.09, .12; .10
- Behaviors	58	30311	.24	.20, .28	.05, .42	461.23	87.64	.12	.23, .25; .24
- Sex media	48	18260	.20	.17, .24	.06, .34	181.90	74.16	.09	.20, .21; .20
- Sex and violence media	1	*Distribution was not analyzed (too small).*							

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	55	.27	.25, .30	R	34	.23	.21, .26	.31	.14	n/a	.29
R	27	.21	.18, .23	R	19	.19	.17, .22	.29	.13	n/a	.23
R	6	.38	.31, .45			.27	.20, .35	.47	.22	n/a	.41
L	3	.13	.05, .20	L	5	.09	.01, .17	.10	.13	n/a	.17
L	3	.13	.05, .20	L	5	.09	.01, .17	.10	.13	n/a	.17
R	20	.18	.15, .21	L	16	.08	.04, .12	.20	.10	n/a	.20
R	20	.19	.15, .22			.13	.09, .17	.20	.10	n/a	.20
L	2	.05	-.08, .17	L	3	.02	-.10, .15	.10	.05	n/a	.12
R	13	.30	.26, .34	R	8	.28	.23, .32	.30	.18	n/a	.33
R	6	.22	.18, .27			.19	.14, .23	.26	.13	n/a	.24
L	2	.38	.29, .46			.43	.35, .50	.47	.43	.42	.42
Distributions without outliers											
R	57	.26	.24, .29	R	11	.18	.16, .21	.31	.14	n/a	.26
R	29	.20	.17, .22	R	7	.17	.14, .19	.29	.13	n/a	.21
R	5	.34	.28, .40			.25	.19, .32	.33	.23	.19	.36
		.19	.13, .24			.19	.13, .24	.18	.17	.16	.20
		.19	.13, .24			.19	.13, .24	.18	.17	.16	.20
L	16	.07	.05, .10	L	17	.07	.04, .10	.09	.09	.06	.08
L	.14	.07	.05, .10	L	14	.07	.05, .10	.09	.08	.06	.07
L	2	.08	.02, .15	L	2	.08	.01, .15	.10	.09	.05	.09
R	10	.28	.24, .31			.24	.20, .28	.30	.23	.21	.30
R	3	.21	.18, .24			.20	.17, .24	.22	.19	.18	.23

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate).

Table 2

Meta-analytic and sensitivity analyses results for all sub-attitudes

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
Sub-attitudes	130	28533	.12	.09, .15	-.10, .33	612.54	78.94	.13	.11, .12; .12
-Objectification	11	3859	.20	.11, .29	.00, .39	49.09	79.63	.12	.18, .23; .20
-Sex media	11	3859	.20	.11, .29	.00, .39	49.09	79.63	.12	.18, .23; .20
-Sex and violence media	0								
-Violence beliefs	19	2482	.12	.07, .16	.02, .21	24.46	26.40	.05	.10, .13; .12
-Sex media	19	2482	.12	.07, .16	.02, .21	24.46	26.40	.05	.10, .13; .12
-Sex and violence media	0								
-Dehumanization	10	614	.09	.00, .17	.02, .15	7.46	.00	.00	.06, .10; .09
-Sex media	10	614	.09	.00, .17	.02, .15	7.46	.00	.00	.06, .10; .09
-Sex and violence media	0								
-Rape myth acceptance	50	13186	.12	.07, .17	-.12, .34	295.10	83.40	.14	.10, .13; .12
-Sex media	41	11722	.12	.07, .17	-.11, .35	249.01	83.94	.14	.09, .13; .12
-Sex and violence media	9	1464	.11	-.03, .24	-.20, .40	43.84	81.75	.18	.06, .16; .11
- Sexism	40	8393	.10	.05, .14	-.09, .27	133.03	70.68	.11	.09, .10; .10
-Sex media	35	7540	.11	.07, .16	-.06, .28	111.22	69.43	.11	.10, .12; .11
-Sex and violence media	5	853	-.02	-.13, .08	-.18, .14	8.18	51.11	.08	-.06, .01; -.01
Distributions without outliers									
Sub-attitudes	125	23128	.10	.08, .12	-.03, .22	261.72	52.62	.08	.09, .10; .10
-Objectification	7	532	.20	.11, .28	.13, .27	2.07	.00	.00	.19, .21; .20
-Sex media	7	532	.20	.11, .28	.13, .27	2.07	.00	.00	.19, .21; .20
-Sex and violence media	0								
-Violence beliefs	18	2380	.10	.06, .14	.05, .15	18.01	5.58	.02	.09, .11; .10
-Sex media	18	2380	.10	.06, .14	.05, .15	18.01	5.58	.02	.09, .11; .10
-Sex and violence media	0								
-Dehumanization	*No outliers were identified (see original distribution for results).*								
-Sex media	*No outliers were identified (see original distribution for results).*								
-Sex and violence media	0								
-Rape myth acceptance	49	10405	.10	.07, .13	-.04, .24	114.48	58.07	.08	.09, .11; .10
-Sex media	40	8941	.09	.06, .13	-.01, .20	69.69	44.04	.06	.09, .10; .09
-Sex and violence media	6	905	.10	.03, .16	.04, .15	2.92	.00	.00	.09, .11, .09
-Sexism	38	8211	.08	.03, .12	-.08, .22	98.75	62.53	.09	.07, .08; .08
-Sex media	33	7358	.09	.05, .13	-.05, .23	78.94	59.47	.08	.08, .10; .09
-Sex and violence media	*No outliers were identified (see original distribution for results).*								

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; Q = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	17	.15	.12, .18	L	21	.08	.04, .11	.19	.09	n/a	.17
R	6	.32	.23, .39			.20	.11, .29	.20	.19	.17	.30
R	6	.32	.23, .39			.20	.11, .29	.20	.19	.17	.30
L	6	.06	.00, .12			.12	.07, .16	.07	.10	n/a	.08
L	6	.06	.00, .12			.12	.07, .16	.07	.10	n/a	.08
		.09	.00, .17			.09	.00, .17	.11	.06	n/a	.32
		.09	.00, .17			.09	.00, .17	.11	.06	n/a	.32
R	5	.15	.10, .20			.12	.07, .17	.14	.09	n/a	.17
R	4	.15	.09, .19			.12	.07, .17	.14	.09	n/a	.17
L	2	.05	-.10, .19	L	3	.01	-.14, .15	.11	.05	n/a	.14
L	5	.06	.02, .11	L	6	.06	.01, .11	.11	.07	n/a	.06
L	5	.08	.03, .13	L	5	.08	.02, .13	.11	.08	n/a	.07
		-.02	-.13, .08			-.02	-.13, .08	-.02	-.05	-.07	-.19
Distributions without outliers											
L	18	.07	.05, .09	L	21	.07	.04, .09	.11	.08	.04	.07
		.20	.11, .28			.20	.11, .28	.21	.18	.17	.24
		.20	.11, .28			.20	.11, .28	.21	.18	.17	.24
L	5	.06	.01, .11	L	5	.06	.01, .11	.07	.08	.06	.07
L	5	.06	.01, .11	L	5	.06	.01, .11	.07	.08	.06	.07
L	9	.07	.03, .11	L	10	.06	.03, .10	.08	.08	.06	.03
L	8	.07	.03, .10	L	8	.07	.03, .10	.08	.08	.06	.02
L	2	.08	.02, .14	L	2	.08	.02, .14	.09	.08	.07	.01
L	3	.06	.02, .10	L	4	.06	.02, .10	.11	.05	n/a	.06
L	3	.08	.03, .12	L	3	.08	.03, .12	.11	.07	n/a	.07
	18	.07	.05, .09	L	21	.07	.04, .09	.11	.08	.04	.07

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate)

Table 3

Meta-analytic and sensitivity analyses results for all outcomes and specific outcomes with gender sample as moderator

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All outcomes	163	44582	.17	.14, .20	-.12, .43	1452.52	88.85	.17	.16, .17; .17
-Sex media	136	30535	.15	.12, .18	-.08, .36	695.74	80.60	.14	.14, .15; .15
-Male samples	103	24862	.16	.13, .19	-.06, .36	498.64	79.54	.13	.15, .16; .16
-Female samples	33	5673	.13	.05, .19	-.17, .40	191.79	83.32	.18	.11, .14; .12
-Sex and violence media	27	14047	.26	.18, .33	-.05, .52	427.95	93.92	.19	.23, .28; .26
-Male samples	24	8888	.25	.16, .33	-.10, .54	325.69	92.94	.21	.22, .28; .25
-Female samples	3	*Distribution was not analyzed (too small).*							
Specific outcomes									
–Cognitions	20	3749	.17	.11, .23	.00, .34	54.19	64.94	.10	.16, .20; .17
- Sex media	16	2354	.16	.09, .23	-.03, .34	40.40	62.87	.11	.14, .19; .16
-Male samples	13	2029	.18	.12, .24	.05, .30	20.49	41.44	.07	.16, .19; .18
-Female samples	3	*Distribution was not analyzed (too small).*							
- Sex and violence media	4	*Distribution was not analyzed (too small).*							
-Male samples	4	*Distribution was not analyzed (too small).*							
-Female samples	0								
–Attitudes	80	14812	.11	.07, .15	-.11, .32	328.98	75.99	.13	.10, .12; .11
- Sex media	68	13080	.11	.07, .15	-.10, .32	269.51	75.14	.13	.09, .11; .11
-Male samples	47	10146	.12	.07, .17	-.12, .35	229.22	79.93	.14	.10, .13; .12
-Female samples	21	2934	.09	.04, .13	.02, .15	23.46	14.74	.04	.07, .09; .09
- Sex and violence media	12	1732	.10	-.02, .22	-.20, .39	55.07	80.02	.18	.06, .14; .10
-Male samples	11	1654	.13	.01, .24	-.17, .40	49.35	79.74	.17	.08, .16; .12
-Female samples	1	*Distribution was not analyzed (too small).*							
–Behaviors	58	25632	.23	.18, .28	-.04, .48	725.30	92.14	.17	.22, .24; .23
- Sex media	48	14784	.18	.14, .23	-.03, .38	266.48	82.36	.13	.17, .20; .18
-Male samples	40	12439	.19	.14, .23	.00, .36	178.46	78.15	.11	.18, .20; .19
-Female samples	8	2345	.14	-.03, .30	-.23, .48	85.14	91.78	.21	.09, .24; .13
- Sex and violence media	10	10848	.44	.35, .52	.21, .62	164.63	94.53	.14	.39, .47; .44
-Male samples	8	5767	.43	.29, .55	.08, .68	138.95	94.96	.21	.35, .47; .44
-Female samples	2	*Distribution was not analyzed (too small).*							
Distributions without outliers									
All outcomes	155	42928	.16	.13, .19	-.07, .37	957.00	83.91	.14	.16, .16; .16
-Sex media	129	26744	.14	.11, .16	-.02, .29	358.18	64.26	.10	.13, .14; .14
-Male samples	100	24702	.15	.12, .18	-.03, .33	391.11	74.69	.11	.15, .15; .15
-Female samples	28	4178	.10	.07, .14	.02, .19	35.71	24.38	.05	.10, .11; .10
-Sex and violence media	25	13369	.26	.19, .32	.01, .47	259.29	90.74	.15	.24, .27; .26
-Male samples	22	8210	.24	.18, .30	.02, .44	128.59	83.67	.13	.23, .25; .24
-Female samples	0								

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	pr_5 $\bar{r}_o$	sm_m $\bar{r}_o$	sm_s $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	52	.27	.25, .30	R	33	.23	.20, .26	.31	.13	n/a	.30
R	29	.21	.18, .24	R	20	.19	.16, .22	.26	.11	n/a	.23
R	21	.21	.18, .24			.16	.13, .19	.21	.13	n/a	.23
R	6	.18	.11, .25	R	6	.18	.11, .25	.17	.07	n/a	.21
R	7	.36	.29, .43	R	3	.31	.23, .38	.44	.21	n/a	.41
R	5	.33	.25, .41			.25	.16, .33	.35	.20	n/a	.38
R	3	.20	.14, .27			.17	.11, .23	.22	.15	n/a	.21
L	3	.13	.05, .20	L	5	.09	.01, .17	.10	.13	n/a	.17
R	1	.18	.12, .24	R	1	.18	.12, .24	.18	.17	.15	.20
R	21	.17	.14, .21	L	14	.07	.02, .11	.16	.08	n/a	.19
R	23	.19	.16, .23	L	2	.10	.06, .14	.16	.08	n/a	.19
R	17	.21	.17, .26			.12	.07, .17	.15	.09	n/a	.21
L	2	.07	.03, .12	L	2	.07	.03, .12	.08	.07	.05	.08
L	2	.05	-.08, .17	L	3	.02	-.10, .14	.10	.05	n/a	.12
L	3	.06	-.06, .18	L	3	.04	-.08, .17	.10	.08	n/a	.09
R	13	.31	.26, .36	R	8	.28	.23, .33	.32	.17	n/a	.34
R	5	.23	.18, .27			.18	.14, .23	.23	.12	n/a	.24
R	3	.22	.17, .27			.19	.14, .23	.18	.14	n/a	.24
R	2	.25	.08, .41			.14	-.03, .30	.25	.03	n/a	.26
L	2	.39	.29, .48			.44	.35, .52	.47	.44	.43	.43
L	3	.33	.16, .47			.43	.29, .55	.39	.42	.41	.42
Distributions without outliers											
R	54	.26	.23, .29	R	11	.18	.15, .20	.31	.13	n/a	.27
R	12	.16	.13, .18			.14	.11, .16	.19	.12	n/a	.17
R	23	.21	.18, .23	R	3	.16	.13, .19	.21	.13	.08	.21
L	2	.10	.06, .14	L	2	.10	.06, .14	.10	.09	.06	.10
R	6	.34	.28, .40			.26	.19, .32	.34	.23	.19	.37
R	3	.28	.21, .34			.24	.18, .30	.26	.22	.20	.31

Table 3 (continued)

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Specific outcomes									
–Cognitions	19	3562	.20	.15, .24	.08, .31	32.15	44.02	.07	.18, .21; .20
- Sex media	15	2167	.19	.13, .24	.07, .29	21.19	33.94	.06	.17, .20; .19
-Male samples	*No outliers were identified (see original distribution for results).*								
-Female samples	2	*Distribution was not analyzed (too small).*							
- Sex and violence media	1	*Distribution was not analyzed (too small).*							
-Male samples	1	*Distribution was not analyzed (too small).*							
-Female samples	0								
–Attitudes	79	12031	.10	.07, .13	-.04, .23	152.35	48.80	.08	.09, .10; .10
- Sex media	67	10299	.09	.07, .12	.00, .19	97.22	32.11	.06	.09, .10; .10
-Male samples	46	7365	.10	.07, .13	-.01, .21	73.58	38.84	.06	.09, .10; .10
-Female samples	19	1908	.08	.03, .13	.02, .15	19.70	8.64	.03	.07, .09; .08
- Sex and violence media	*No outliers were identified (see original distribution for results).*								
-Male samples	*No outliers were identified (see original distribution for results).*								
-Female samples	*No outliers were identified (see original distribution for results).*								
–Behaviors	53	24157	.24	.20, .28	.04, .43	386.19	86.53	.12	.23, .25; .24
- Sex media	44	13907	.20	.17, .24	.06, .34	133.08	67.69	.09	.20, .21; .20
-Male samples	39	12731	.20	.16, .24	.03, .35	145.61	73.90	.10	19, .21; .20
-Female samples	1	*Distribution was not analyzed (too small).*							
- Sex and violence media	1	*Distribution was not analyzed (too small).*							
-Male samples	7	5135	.35	.27, .43	.19, .50	24.36	75.37	.10	.32, .37; .36
-Female samples	*No outliers were identified (see original distribution for results).*								

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
R	2	.20	.16, .25	R	2	.20	.16, .25	.22	.19	.17	.22
		.19	.13, .24			.19	.13, .24	.18	.17	.16	.20
L	11	.07	.04, .10	L	13	.07	.04, .10	.09	.08	.05	.07
L	9	.08	.05, .10	L	10	.07	.04, .10	.09	.08	.05	.08
L	8	.07	.04, .11	L	8	.07	.04, .11	.09	.08	.05	.05
L	2	.07	.01, .12	L	2	.07	.01, .12	.05	.07	.05	.06
R	10	.28	.24, .32			.24	.20, .28	.32	.23	.20	.31
R	1	.21	.17, .24			.20	.17, .24	.18	.19	.18	.23
R	2	.22	.17, .26			.20	.16, .24	.18	.18	.11	.24
L	2	.31	.22, .40	L	2	.30	.21, .39	.33	.35	.35	.34

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate).

Table 4

Meta-analytic and sensitivity analyses results for all sub-attitudes with gender sample as moderator.

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
- Sub-Attitudes	118	21739	.10	.07, .13	-.11, .30	440.92	73.46	.13	.09, .10; .10
- Objectification	8	1356	.15	.09, .20	.10, .19	7.12	1.64	.01	.13, .16; .14
- Sex media	8	1356	.15	.09, .20	.10, .19	7.12	1.64	.01	.13, .16; .14
- Male Sample	5	1096	.16	.10, .22	.11, .21	2.40	.00	.00	.16, .20; .16
- Female Sample	3	*Distribution not analyzed (too small).*							
- Sex and violence media	0								
- Male Sample	0								
- Female Sample	0								
- Violence beliefs	21	3042	.11	.07, .15	.04, .18	23.55	15.06	.04	.10, .12; .11
- Sex media	18	2339	.10	.06, .15	.03, .17	19.76	13.99	.04	.09, .11; .10
- Male Sample	13	1855	.12	.06, .18	.01, .22	17.00	29.41	.06	.09, .13; .12
- Female Sample	5	484	.06	-.03, .15	-.02, .13	1.81	.00	.00	.04, .08; .06
- Sex and violence media	3	*Distribution not analyzed (too small).*							
- Male Sample	3	*Distribution not analyzed (too small).*							
- Female Sample	0								
- Dehumanization	9	554	.06	-.02, .15	-.01, .14	5.01	.00	.00	.04, .08; .07
- Sex media	9	554	.06	-.02, .15	-.01, .14	5.01	.00	.00	.04, .08; .07
- Male Sample	6	386	.07	-.03, .17	-.01, .16	3.58	.00	.00	.04, .09; .08
- Female Sample	3	*Distribution not analyzed (too small).*							
- Sex and violence media	0								
- Male Sample	0								
- Female Sample	0								
- Rape myth acceptance	44	10139	.11	.06, .17	-.15, .36	273.16	84.26	.16	.09, .13; .12
- Sex media	35	8675	.12	.05, .18	-.15, .37	224.66	84.87	.16	.09, .12; .12
- Male Sample	26	7088	.13	.06, .21	-.15, .40	188.38	86.73	.17	.10, .14; .14
- Female Sample	9	1587	.05	.00, .11	-.01, .12	8.96	10.75	.03	.04, .06; .06
- Sex and violence media	9	1464	.11	-.03, .24	-.20, .40	43.84	81.75	.18	.06, .16; .11
- Male Sample	9	1464	.11	-.03, .24	-.20, .40	43.84	81.75	.18	.06, .16; .11
- Female Sample	0								
- Sexism	36	6650	.08	.03, .12	-.09, .24	98.01	64.29	.10	.07, .08; .08
- Sex media	31	5794	.09	.05, .14	-.07, .25	77.27	61.17	.09	.08, .10; .09
- Male Sample	21	4116	.10	.04, .16	-.07, .26	56.00	64.29	.10	.08, .11; .10
- Female Sample	10	1678	.08	.00, .17	-.09, .25	21.13	57.42	.10	.06, .11; .08
- Sex and violence media	5	856	-.02	-.13, .08	-.18, .14	8.23	51.42	.08	-.06, .01; -.01
- Male Sample	4	*Distribution not analyzed (too small).*							
- Female Sample	1	*Distribution not analyzed (too small).*							
Distribution without outliers									
- Sub-Attitudes	117	18958	.09	.07, .12	-.05, .23	243.48	52.36	.08	.09, .09; .09
- Objectification	6	470	.19	.10, .28	.12, .26	1.91	.00	.00	.18, .21; .19

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	pr_5 $\bar{r}_o$	sm_m $\bar{r}_o$	sm_s $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	20	.14	.12, .17	L	18	.06	.03, .10	.18	.07	n/a	.15
L	1	.14	.08, .19	L	1	.14	.08, .19	.14	.14	.13	.14
L	1	.14	.08, .19	L	1	.14	.08, .19	.14	.14	.13	.14
L	1	.16	.10, .21	L	1	.16	.10, .21	.16	.16	.15	.14
L	4	.08	.03, .12			.11	.07, .15	.07	.09	.07	.08
L	5	.06	.00, .11	L	5	.06	.00, .11	.07	.08	.06	.06
L	5	.06	-.01, .13	L	5	.06	-.01, .13	.10	.10	.07	.03
		.06	-.03, .15			.06	-.03, .15	.06	.04	.01	.06
R	1	.08	-.01, .16	R	1	.08	-.01, .16	.07	.04	.00	.27
R	1	.08	-.01, .08	R	1	.08	-.01, .16	.07	.04	.00	.27
R	1	.09	-.01, .19	R	1	.09	-.01, .19	.09	.05	.02	.26
R	10	.18	.13, .23			.11	.06, .17	.12	.08	n/a	.20
R	14	.25	.18, .31			.12	.05, .18	.12	.08	n/a	.21
R	10	.27	.19, .34			.13	.06, .21	.12	.10	n/a	.26
		.05	.00, .11			.05	.00, .11	.03	.04	.03	.00
L	2	.05	-.10, .19	L	3	.01	-.14, .15	.11	.05	n/a	.14
L	2	.05	-.10, .19	L	3	.01	-.14, .15	.11	.05	n/a	.14
L	3	.06	.02, .11	L	4	.06	.01, .10	.11	.05	n/a	.07
L	2	.08	.03, .13	L	3	.08	.03, .12	.11	.07	n/a	.09
L	3	.07	.01, .13	L	5	.05	-.01, .11	.06	.07	n/a	.09
		.08	.00, .17			.08	.00, .17	.08	.06	n/a	.09
		-.02	-.13, .08			-.02	-.13, .08	-.02	-.05	-.07	-.20
Distribution without outliers											
L	13	.07	.05, .10	L	19	.06	.04, .09	.11	.07	.03	.08
		.19	.10, .28			.19	.10, .28	.21	.18	.16	.24

Table 4 (continued)

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
- Sex media	6	470	.19	.10, .28	.12, .26	1.91	.00	.00	.18, .21; .19
- Male Sample	4	*Distribution not analyzed (too small)*							
- Female Sample	2	*Distribution not analyzed (too small)*							
- Sex and violence media	0								
- Male Sample	0								
- Female Sample	0								
- Violence Beliefs	*No outliers were identified (see original distribution for results).*								
- Sex media	*No outliers were identified (see original distribution for results).*								
- Male Sample	8	724	.17	.10, .24	.11, .23	2.21	.00	.00	.16, .18; .17
- Female Sample	*No outliers were identified (see original distribution for results).*								
- Sex and violence media	1	*Distribution not analyzed (too small).*							
- Male Sample	1	*Distribution not analyzed (too small).*							
- Female Sample	0								
- Dehumanization	*No outliers were identified (see original distribution for results).*								
- Sex media	*No outliers were identified (see original distribution for results).*								
- Male Sample	*No outliers were identified (see original distribution for results).*								
- Female Sample	*No outliers were identified (see original distribution for results).*								
- Sex and violence media	0								
- Male Sample	0								
- Female Sample	0								
- Rape Myth Acceptance	43	7358	.09	.05, .13	-.06, .25	102.23	58.92	.09	.09, .10; .10
- Sex media	34	5894	.09	.05, .12	-.03, .20	56.95	42.06	.07	.08, .09; .09
- Male Sample	25	4307	.10	.05, .15	-.03, .23	46.88	48.81	.08	.09, .11; .10
- Female Sample	*No outliers were identified (see original distribution for results).*								
- Sex and violence media	6	905	.10	.03, .16	.04, .15	2.92	.00	.00	.09, .11; .09
- Male Sample	6	905	.10	.03, .16	.04, .15	2.92	.00	.00	.09, .11; .09
- Female Sample	0								
- Sexism	*No outliers were identified (see original distribution for results).*								
- Sex media	*No outliers were identified (see original distribution for results).*								
- Male Sample	*No outliers were identified (see original distribution for results).*								
- Female Sample	*No outliers were identified (see original distribution for results).*								
- Sex and violence media	4	*Distribution not analyzed (too small).*							
- Male Sample	0								
- Female Sample	*No outliers were identified (see original distribution for results).*								

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
		.19	.10, .28			.19	.10, .28	.21	.18	.16	.24
R	1	.18	.11, .25	R	1	.18	.11, .25	.19	.16	.14	.21
L	8	.05	.01, .10	L	10	.05	.00, .09	.08	.08	.05	.02
L	8	.05	.00, .09	L	8	.05	.00, .09	.06	.07	.05	-.01
L	7	.05	.00, .11	L	7	.05	.00, .11	.06	.08	.06	.00
L	2	.08	.02, .14	L	2	.08	.02, .14	.09	.08	.07	.01
L	2	.08	.02, .14	L	2	.08	.02, .14	.09	.08	.07	.01

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate).

Table 5

Meta-analytic and sensitivity analyses results with amount of clothing as moderator

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All data	158	50249	.18	.15, .21	-.10, .43	1502.51	89.55	.17	.17, .18; .18
- Sex media	133	35756	.15	.13, .18	-.08, .37	806.09	83.62	.14	.15, .16; .15
- Scantily clothed	42	5042	.15	.07, .22	-.22, .48	264.04	84.47	.23	.13, .16; .15
- Nude and genitalia not visible	19	1689	.10	-.02, .21	-.26, .43	74.27	75.76	.21	.07, .15; .09
- Nude and genitalia visible	72	29025	.16	.13, .20	-.02, .34	428.60	83.43	.11	.16, .17; .16
- Sex and violent media	25	14493	.30	.23, .36	.05, .52	306.51	92.17	.16	.28, .32; .30
- Scantily clothed	3	*Distribution was not analyzed (too small).*							
- Nude and genitalia not visible	7	581	.31	.11, .48	-.13, .65	35.41	83.06	.25	.24, .38; .32
- Nude and genitalia visible	15	13739	.34	.27, .41	.11, .54	238.27	94.12	.14	.31, .36; .34
Distributions without outliers									
All data	150	48630	.17	.14, .20	-.06, .38	1032.83	85.57	.14	.17, .17; .17
- Sex media	129	35539	.15	.13, .18	-.06, .35	677.98	81.12	.13	.15, .16; .15
- Scantily clothed	37	4824	.12	.07, .17	-.07, .31	93.51	61.50	.12	.11, .13; .12
- Nude and genitalia not visible	18	1638	.15	.05, .24	-.13, .40	47.63	64.31	.16	.12, .17; .14
- Nude and genitalia visible	*No outliers were identified (see original distribution for results).*								
- Sex and violent media	23	13143	.26	.20, .32	.07, .43	152.16	85.54	.11	.25, .28; .26
- Scantily clothed	2	*Distribution was not analyzed (too small).*							
- Nude and genitalia not visible	4	*Distribution was not analyzed (too small).*							
- Nude and genitalia visible	13	12389	.29	.23, .34	.13, .43	91.34	86.86	.09	.27, .30; .28

Note. *k* = number of correlation coefficients; $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	47	.28	.25, .30	R	30	.24	.21, .27	.31	.13	n/a	.31
R	26	.21	.18, .24	R	15	.19	.16, .22	.29	.11	n/a	.24
L	9	.04	-.05, .13			.15	.07, .22	.06	.06	n/a	.28
R	6	.24	.11, .36	R	1	.12	.00, .24	.24	.02	n/a	.26
R	17	.21	.18, .24			.16	.13, .20	.29	.15	.11	.24
R	6	.38	.32, .44	R	2	.33	.26, .39	.47	.26	.16	.42
		.31	.11, .48			.31	.11, .48	.32	.27	.16	n/a
R	3	.40	.33, .46			.34	.27, .41	.47	.31	.28	.41
Distributions without outliers											
R	50	.27	.24, .29	R	10	.19	.16, .21	.31	.14	n/a	.28
R	27	.21	.18, .23			.15	.13, .18	.29	.13	n/a	.23
L	8	.06	.01, .12			.12	.07, .17	.06	.09	n/a	.06
R	5	.24	.13, .34	R	5	.23	.13, .34	.24	.09	n/a	.28
R	6	.34	.28, .40			.26	.20, .32	.33	.23	.17	.37
R	4	.37	.30, .42			.29	.23, .34	.33	.27	.25	.37

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr* $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; pp $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (e.g., due to an inflated variance estimate).

Table 6

Meta-analytic and sensitivity analyses results with media format as moderator

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All data	159	52795	.18	.15, .21	-.09, .43	1537.48	89.72	.17	.18, .19; .18
- Sex media	136	38792	.16	.14, .19	-.06, .37	822.51	83.59	.14	.16, .17; .16
- Print	43	9510	.13	.08, .19	-.12, .37	231.56	81.86	.15	.13, .15; .13
- Film	44	13974	.20	.16, .24	.02, .36	182.96	76.50	.11	.19, .20; .20
- Print and film	32	14161	.13	.08, .18	-.07, .32	218.53	85.81	.12	.12, .14; .13
- Video game	17	1147	.21	.01, .39	-.43, .71	173.95	90.80	.40	.15, .27, .21
- Sex and violence media	23	14003	.30	.23, .37	.03, .53	317.57	93.07	.16	.27, .32; .30
- Print	0								
- Film	17	11189	.28	.22, .35	.10, .45	106.41	84.96	.11	.27, .32; .29
- Print and film	6	2814	.34	.11, .53	-.18, .71	204.62	97.56	.30	.25, .39; .36
- Video game	0								
Distributions without outliers									
All data	152	51187	.17	.14, .20	-.06, .38	1084.97	86.08	.14	.17, .17; .17
- Sex media	133	38587	.16	.13, .18	-.05, .35	717.31	81.60	.13	.15, .16; .16
- Print	41	8845	.16	.11, .21	-.04, .34	143.93	72.21	.12	.15, .17; .16
- Film	*No outliers were identified (see original distribution for results).*								
- Print and film	32	14161	.13	.08, .18	-.07, .32	218.53	85.81	.12	.12, .14;.13
- Video game	*No outliers were identified (see original distribution for results).*								
- Sex and violence media	20	12594	.28	.22, .33	.10, .44	129.55	85.33	.11	.26, .29; .28
- Print	0								
- Film	15	11052	.34	.30, .39	.24, .44	45.97	69.54	.07	.33, .35; .34
- Print and film	1	*Distribution was not analyzed (too small).*							
- Video game	0								

Note. *k* = number of correlation coefficients; $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	47	.27	.25, .30	R	29	.24	.21, .27	.31	.14	n/a	.30
R	26	.22	.19, .24	R	17	.20	.17, .23	.29	.13	n/a	.23
R	19	.26	.20, .32	R	5	.16	.11, .22	.19	.10	n/a	.25
		.20	.16, .24	L	7	.18	.13, .22	.20	.18	.16	.22
R	11	.19	.14, .23	R	9	.17	.13, .22	.23	.11	n/a	.21
R	3	.34	.14, .51	R	4	.37	.17, .54	.15	.08	n/a	.69
R	5	.39	.32, .45	R	2	.34	.27, .41	.47	.26	n/a	.42
R	3	.36	.29, .43			.28	.22, .35	.36	.24	n/a	.38
R	1	.40	.19, .57			.34	.11, .53	.39	.30	.25	.62
Distributions without outliers											
R	50	.26	.24, .29	R	10	.19	.16, .21	.31	.15	n/a	.27
R	28	.21	.18, .24	R	6	.17	.14, .20	.29	.14	n/a	.23
R	18	.26	.22, .31	R	9	.20	.15, .24	.26	.14	.08	.28
R	11	.19	.14, .23	R	9	.17	.13, .22	.23	.11	n/a	.21
R	5	.35	.29, .41			.28	.22, .33	.33	.26	.23	.37
R	2	.36	.31, .41			.34	.30,.39	.36	.33	.33	.38

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr* $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; pp $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (e.g., due to an inflated variance estimate).

Table 7

Meta-analytic and sensitivity analyses results with population sampled as moderator

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All data	151	49553	.18	.15, .21	-.09, .43	1468.14	89.78	.17	.18, .19; .18
- Sex media	127	35358	.16	.13, .19	-.06, .37	764.91	83.53	.14	.16, .17; .16
- College students	87	13687	.15	.11, .20	-.13, .42	467.24	81.59	.17	.14, .16; .15
- Other	40	21671	.18	.14, .22	-.01, .35	292.84	86.68	.11	.17, .18; .18
- Sex and violence media	24	14195	.29	.22, .36	.02, .52	337.35	93.18	.17	.26, .31; .29
- College students	18	2546	.20	.11, .29	-.09, .46	81.96	79.26	.17	.18, .23; .20
- Other	6	11649	.46	.37, .54	.26, .62	135.16	96.30	.13	.41, .48; .47
Distributions without outliers									
All data	144	47945	.17	.14, .20	-.06, .38	1020.58	85.99	.14	.17, .17; .17
- Sex media	122	35100	.16	.13, .18	-.04, .34	603.32	79.94	.12	.15, .16; .16
- College students	81	10648	.14	.10, .17	-.03, .29	176.26	54.61	.10	.13, .14; .14
- Other	*No outliers were identified (see original distribution for results).*								
- Sex and violence media	22	12845	.24	.18, .31	.03, .44	179.92	88.33	.13	.23, .26; .24
- College students	*No outliers were identified (see original distribution for results).*								
- Other	3 *Distribution was not analyzed (too small).*								

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	47	.28	.25, .31	R	29	.24	.21, .27	.31	.14	n/a	.30
R	25	.22	.19, .24	R	16	.20	.17, .23	.29	.13	n/a	.24
R	13	.21	.16, .25			.15	.11, .20	.15	.10	n/a	.26
R	14	.25	.21, .29	R	5	.20	.16, .23	.23	.16	.14	.23
R	5	.37	.30, .44			.29	.22, .36	.47	.24	n/a	.42
L	2	.16	.06, .26			.20	.11, .29	.18	.16	n/a	.23
L	1	.40	.29, .50			.46	.37, .54	.47	.46	.45	.42
Distributions without outliers											
R	49	.27	.24, .29	R	8	.19	.16, .21	.31	.14	n/a	.27
R	32	.22	.19, .25			.16	.13, .18	.29	.13	n/a	.22
L	6	.12	.09, .15	L	6	.12	.09, .15	.13	.11	n/a	.13
R	6	.35	.29, .41			.24	.18, .31	.33	.21	.13	.37

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate).

Table 8

Meta-analytic and sensitivity analyses results with type of design as moderator

	Meta-analysis								
Distribution	*K*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All data	166	59182	.18	.16, .21	-.08, .43	1674.36	90.15	.16	.18, .19; .18
- Sex media	142	44987	.17	.14, .19	-.05, .37	909.92	84.50	.13	.16, .17; .17
- Cross-sectional	51	31024	.17	.14, .21	-.02, .35	454.14	88.99	.12	.17, .18; .17
- Experimental	73	5760	.18	.13, .24	-.15, .48	289.00	75.09	.20	.17, .19; .18
- Longitudinal	18	8203	.10	.04, .16	-.08, .27	96.45	82.37	.10	.08, .11; .10
- Sex and violence media	24	14195	.29	.22, .36	.02, .52	337.35	93.18	.17	.26, .31; .29
- Cross-sectional	11	13318	.33	.24, .41	.08, .54	250.30	96.00	.15	.29, .36; .33
- Experimental	13	877	.25	.09, .39	-.19, .61	63.11	80.99	.26	.21, .29; .25
- Longitudinal	0								
Distributions without outliers									
All data	160	57642	.17	.14, .19	-.06, .38	1241.70	87.19	.14	.17, .17; .17
- Sex media	139	44826	.15	.13, .18	-.05, .35	806.08	82.88	.12	.15, .16; .15
- Cross-sectional	*No outliers were identified (see original distribution for results).*								
- Experimental	68	5542	.17	.13, .20	-.01, .33	126.74	47.13	.11	16, .17; .17
- Longitudinal	16	5706	.08	.05, .11	.03, .12	17.51	14.33	.02	.07, .09; .08
- Sex and violence media	22	12845	.24	.18, .31	.03, .44	179.92	88.33	.13	.23, .26; .24
- Cross-sectional	*No outliers were identified (see original distribution for results).*								
- Experimental	1	*Distribution was not analyzed (too small).*							
- Longitudinal	0								

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	48	.27	.24, .30	R	30	.23	.21, .26	.35	.15	n/a	.28
R	19	.20	.17, .22	R	15	.19	.17, .22	.29	.14	n/a	.22
R	18	.25	.21, .28	R	4	.19	.15, .22	.29	.16	.13	.24
L	13	.11	.04, .17			.18	.13, .24	.06	.13	n/a	.33
R	4	.12	.07, .17	R	4	.12	.07, .17	.13	.08	n/a	.13
R	5	.37	.30, .44			.29	.22, .36	.47	.24	n/a	.42
R	3	.40	.32, .48			.33	.24, .41	.47	.30	.27	.44
L	4	.11	-.06, .28			.25	.09, .39	.23	.19	n/a	.72
Distributions without outliers											
R	52	.26	.23, .28	R	10	.18	.16, .21	.35	.14	n/a	.25
R	22	.19	.17, .22			.15	.13, .18	.29	.13	n/a	.21
L	13	.12	.07, .16	L	10	.13	.09, .17	.06	.14	n/a	.12
		.08	.05, .11			.08	.05, .11	.08	.07	.06	.08
R	6	.35	.29, .41			.24	.18, .31	.33	.21	.13	.37

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate).

Table 9

Meta-analytic and sensitivity analyses results with publication outlet as moderator

	Meta-analysis								
Distribution	*k*	*N*	$\bar{r}_o$	95% CI	90% PI	*Q*	I^2	τ	osr $\bar{r}_o$
Original distributions									
All data	152	50163	.18	.15, .21	-.09, .43	1497.91	89.92	.17	.18, .19; .18
- Sex media	128	35955	.16	.13, .19	-.07, .37	777.61	83.67	.14	.15, .16; .16
- Published data	113	34377	.16	.13, .19	-.04, .35	596.98	81.24	.12	.15, .16; .16
- Unpublished data	15	1579	.18	-.01, .36	-.41, .66	174.90	92.00	.36	.11, .24; .19
- Sex and violence media	24	14208	.29	.21, .36	.01, .52	345.93	93.35	.17	.26, .31; .29
- Published data	24	14208	.29	.21, .36	.01, .52	345.93	93.35	.17	.26, .31; .29
- Unpublished data	0								
Distributions without outliers									
All data	145	48555	.17	.14, .20	-.06, .38	1047.07	86.25	.14	.17, .17; .17
- Sex media	123	35697	.15	.13, .18	-.04, .34	615.79	80.19	.12	.15, .16; .15
- Published data	111	33557	.16	.13, .19	-.03, .33	515.73	78.67	.11	.16, .16; .16
- Unpublished data	9	763	.08	.01, .15	.02, .14	4.46	.00	.00	.07, .10; .08
- Sex and violence media	21	12799	.26	.20, .32	.07, .44	153.65	86.98	.12	.25, .28; .26
- Published data	21	12799	.26	.20, .32	.07, .44	153.65	86.98	.12	.25, .28; .26
- Unpublished data	0								

Note. *k* = number of correlation coefficients. $\bar{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; *Q* = weighted sum of squared deviations from the mean; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation; osr = one-sample removed, including the minimum and maximum effect size and the median weighted mean observed correlation; Trim and fill = trim and fill analysis.

Publication bias analyses											
Trim and fill								CMA	Selection models		PET-PEESE
FE trim and fill				RE trim and fill							
FPS	*ik*	t&f$_{FE}$ $\bar{r}_o$	t&f$_{FE}$ 95% CI	FPS	*ik*	t&f$_{RE}$ $\bar{r}_o$	t&f$_{RE}$ 95% CI	*pr*$_5$ $\bar{r}_o$	sm$_m$ $\bar{r}_o$	sm$_s$ $\bar{r}_o$	*pp* $\bar{r}_o$
Original distributions											
R	46	.28	.25, .31	R	29	.24	.21, .27	.31	.14	n/a	.30
R	24	.21	.18, .24	R	16	.20	.17, .23	.29	.13	n/a	.23
R	28	.22	.19, .25			.16	.13, .19	.29	.13	n/a	.22
		.18	-.01, .36	R	3	.34	.13, .51	.07	.04	n/a	.46
R	5	.37	.30, .44			.29	.21, .36	.47	.24	n/a	.42
R	5	.37	.30, .44			.29	.21, .36	.47	.24	n/a	.42
Distributions without outliers											
R	50	.27	.24, .29			.17	.14, .20	.31	.14	n/a	.27
R	26	.20	.18, .23			.15	.13, .18	.29	.13	n/a	.22
R	20	.20	.17, .23			.16	.13, .19	.29	.14	.09	.22
L	2	.06	.00, .13	L	3	.06	.00, .13	.07	.06	.04	-.04
R	5	.35	.29, .40			.26	.20, .32	.33	.24	.21	.37
R	5	.35	.29, .40			.26	.20, .32	.33	.24	.21	.37

Note. FPS = funnel plot side (i.e., side of the funnel plot where samples were imputed; L = left, R = right); *ik* = number of trim and fill samples imputed; t&f$_{FE}$ $\bar{r}_o$ = fixed-effects trim and fill adjusted observed mean; t&f$_{FE}$ 95% CI = fixed-effects trim and fill adjusted 95% confidence interval; t&f$_{RE}$ $\bar{r}_o$ = random-effects trim and fill adjusted observed mean; t&f$_{RE}$ 95% CI = random-effects trim and fill adjusted 95% confidence interval; sm$_m$ $\bar{r}_o$ = one-tailed moderate selection model's adjusted observed mean; sm$_s$ $\bar{r}_o$ = one-tailed severe selection model's adjusted observed mean; CMA = cumulative meta-analysis; *pr*$_5$ $\bar{r}_o$ = meta-analytic mean estimate of the five most precise effects; PET-PEESE = precision-effect test-precision effect estimate with standard error; *pp* $\bar{r}_o$ = PET-PEESE adjusted observed mean; n/a = not applicable (because sm$_s$ $\bar{r}_o$ presented nonsensical results due to an inflated variance estimate).

Discussion

The general objective of the present thesis was to examine the impact that female sexualized content from video games might have on aggressive behavior and negative attitudes toward women. Indeed, women are more frequently victims than men of aggressive and violent acts (e.g., sexual harassment, violence by intimate partner, rape; FRA, 2014; Pew Research Center, 2014; UNODC, 2016; WHO, 2013), and negative attitudes (e.g., sexism, rape myths, dehumanization, objectification; Burt, 1980; Gervais et al., 2013; Haslam, 2006; Lonsway & Fitzgerald, 1995). Among the multiple causes of aggression against women, exposure to the sexualized content of video games has recently been suggested as a risk factor. Indeed, it has been shown by previous content analyses (Lynch et al., 2016; Martins et al., 2011; M. K. Miller & Summers, 2011; Stermer & Burkley, 2012; Summers & Miller, 2014) that female sexualization, female stereotyped roles, and dominating males are common types of content in video games. Further, female players have been found to be the targets of aggressive behaviors and attitudes while playing video games (Brehm, 2013). In other words, video games are a hostile environment for women.

It is unclear whether video game content, and more specifically sexualization, might lead to aggressive behaviors and negative attitudes toward women. In the present thesis, we have used the confluence model integrated into the GAM (Anderson & Anderson, 2008) as a theoretical framework to examine the potential impact of sexualized content of video games. Based on this integrated theory, sexualized content might provoke modification of the player's present internal state (i.e., cognition, affect, and arousal), which might influence their appraisals and decisions, ultimately resulting in a behavior that might be aggressive. However, only a handful of studies have examined this issue, and these few studies have had major limitations (e.g., lack of ecological validity, presence of confounding variables, use of a trait measure in experimental conditions).

The present thesis had three main goals. First, we wanted to develop an instrument that evaluates the degree of sexualized content and attitudes in video games (Study 1). An accurate, precise, and objective instrument of evaluation of female and male sexualized content and stereotyped roles is currently lacking. This instrument of evaluation is expected to be sufficiently objective to be used by researchers regardless of their degree of video game experience. Second, the present thesis aimed at examining the impact of female sexualized content on aggressive behavior and negative attitudes toward women (Studies 2, 3, and 4). There is a need for more experimental studies that address the limitations of previous studies. The final goal of the thesis was to integrate the literature on the impact of sexualized

content on aggressive behavior, cognition, affect and attitude – by the means of a meta-analysis (Study 5).

An Objective Instrument of Evaluation of Sexualized and Attitude Content of Video Game

The present thesis based most of its hypotheses on the premise that video games contain stereotyped representations of female and male characters. Previous content analyses have already shown that female characters are globally underrepresented, sexualized, and often play stereotyped roles such as damsels in distress, sex objects, and a combination of sexy, strong and secondary (Burgess et al., 2007; Ivory, 2006; Lynch et al., 2016; M. K. Miller & Summers, 2007; Near, 2013; Summers & Miller, 2014). Male characters are often represented as muscular and hypermasculine and often play stereotyped roles such as heroes (Burgess et al., 2007; Downs & Smith, 2010; Ivory, 2006; M. K. Miller & Summers, 2007; Scharrer, 2004). However, these content analyses that have helped reach these conclusions are often inaccurate, subjective, have a limited focus, and an inadequate sampling method. To address this limitation, the present thesis aimed at developing a classification system to examine sexualization and stereotyped roles of female and male characters in video games. As a reminder, our objective for this instrument of evaluation was to be precise, objective, and free from any cultural interpretation. The second objective was for the instrument of evaluation to provide a score of physical representation and stereotyped roles that would be useful for direct comparisons between video games and for relating physical representations and stereotyped roles to other variables such as aggressive behavior and negative attitudes toward women. We also intended to use an appropriate sampling method that included both male and female characters.

The initial instrument of evaluation consisted of two parts: physical representation and stereotyped roles. We will first focus on the physical representation part that was successfully developed (Study 1), and thereafter will address why the stereotyped role part did not reach our expectation and was finally abandoned.

The physical representation part of the instrument of evaluation was called the "Video Game Sexualization Protocol" (VGSP). The VGSP appears to meet all our objectives. First, it is precise, objective, and free from cultural interpretation. Indeed, we used two different measurement methods. The first type of measurement used proportions (e.g., breast size was measured by dividing the largest point of the bust width by the smallest point of the waist width). The second type of measurement

attributed points based on the presence of an element (e.g., an uncovered body part was measured by attributing points for each naked body area). Both measurement methods had excellent inter-coder reliability. The gender of the coders and their degree of expertise in video games did not influence the results.

Second, the measurement method has sufficient reliability to provide various types of scores. Indeed, the measurement method can provide a raw score (e.g., breast size, V-shape, nudity), a factor score (e.g., muscularity, sexualized body), and a composite score (e.g., quantity of exposure to female sexualized clothing). These various scores will allow direct comparisons between content analyzes, types of video games (e.g., action vs. RPG), and even video game characters (e.g., comparing the different female characters in the same fighting game).

Third, although the sampling method was efficient, there were some limitations. In order to create the instrument of evaluation, our sampling method focused on analyzing the main protagonist and antagonist of the video games. Yet, this sampling method does not provide a clear picture of the sexualized content in each game for three reasons: (1) Video games usually possess more than four characters in total. Typically, a fighting game usually includes a large panel of playable characters. (2) Video games often offer choices that modify the appearance of the main character. Role Play Games (RPG) and more particularly MMORPG[12] allow character customizations that will influence the body proportions of the playable character and of the other players' characters (e.g., choosing between a male or a female protagonist, choosing the race of the protagonist, the type of body for the protagonist, etc.). (3) The outfit of the playable character might change across the duration of the game. For example, in RPG, the player will often find new pieces of armor that can change the appearance of their character. For these reasons, the perfect sampling method does not exist.

The VGSP provides an efficient and flexible measurement of the physical representation of female and male video game characters. Future research should try to improve the sampling method so that it provides an even more complete picture of the sexualized content of game characters. The future sampling method should be adapted for the video games with large numbers of characters and should consider the variability of appearance of the characters. Ideally, establishing collaborations between researchers and video game publishers would help to reach this objective. Indeed, by including video game publishers, one could obtain video game images of

[12] Massively Multiplayer Online Role-Playing Games

high quality or the 3D models of every character and information about the various designs of the same characters. One could furthermore imagine a classification system similar to the Pan European Game Information (PEGI, 2018), which directly asks publishers to provide specific information about the content of the game. Such a system allows one to obtain complete certainty concerning the content of the game.

The second part of our classification system aimed at evaluating the stereotyped roles of male and female characters in video games. To develop this part, we proceeded in three steps; (1) operationalizing the stereotyped roles into observable concepts, (2) choosing an effective sampling method, (3) testing our instrument with two independent coders. In total, we carried out three rounds to improve our instrument.

First, we operationalized our concepts based on the roles identified in previous content analyses (Burgess et al., 2007; Downs & Smith, 2010; Lynch et al., 2016; M. K. Miller & Summers, 2011; Scharrer, 2004; Summers & Miller, 2014). As a reminder, we had identified that female characters usually adopted three main roles in video games that were: (i) a damsel in distress, (ii) a sex object, and (iii) sexy strong and secondary. Male characters had two main roles that were: (i) heroes and (ii) hypermasculinity. We then deconstructed each role into several sub-roles (e.g., the "sex object" role was decomposed into adopting a seductive or sexual behavior, being a reward, and the presence of sexual exploitation). Then, we decomposed each sub-role into observable concepts that were behaviors or elements of the video game [e.g., adopting a seductive or sexual behavior was decomposed into five behaviors: (1) having sexual intercourse, having an intimate relationship, (2) stripping, performing a pole dance, or a dance with sensual or erotic movements, (3) being verbally seductive, (4) revealing a sexualized part of the body in front of another character or in front of the camera, (5) using seductive or sexually suggestive gestures such as winking, blowing a kiss, etc.]. The objective of each round was to improve the classification system and to find a good balance between on the one hand, accuracy and objectivity, and, on the other hand, feasibility.

The second step was to define a sampling method that would be efficient to observe the character's behaviors or the elements of the video game. In order to efficiently analyze the role adopted by male and female characters, videos seemed to be the best material to use. Previous content analyses have sometimes used videos such as gameplay footage of varying durations and screen captures at various moments of the game (Beasley & Collins Standley, 2002; Lynch et al., 2016; Martins et al., 2011; Williams et al., 2009) or an introductory film (Jansz & Martis, 2007). These

sampling methods all had the same limitation – there is always a certain risk that the sequence that is being analyzed is not representative of the game characteristics. To avoid this limitation, we used a sampling method that included three videos per video game: (1) the introductory film that was supposed to provide a clear idea of the main objective of the video game, (2) the story trailer that was supposed to give information on the different characters involved, and (3) the gameplay trailer to examine the actual gameplay part of the video game. The trailers of video games are used as a selling argument for video game players, therefore, we made the assumption that trailers would provide clear information about what producers found important in their video game. The objective of each round was to improve face validity. In round one, only the story trailer was included. Round two added the gameplay trailer, and round three added the introductory film.

The third step for each round was to test the inter-coder reliability of our instrument with two independent coders. One male and one female undergraduate student coded the video games during the first round. One male and one female graduate student coded the video games during the second round. The third round was coded by one male and one female researcher. Coders were first trained by the experimenter, and then they coded each video game separately. Then we calculated their degree of agreement using a Cohen's Kappa and differences were discussed in order to improve the classification system. None of our versions of the classification system reached a sufficient degree of inter-coder reliability. For example, in the last version of the classification system, Cohen's Kappa ranged between 0 and 1.00 with a median of 0.58 for our 35 observable concepts. Only 16 of our observable concepts reached at least a moderate agreement ($\kappa>.40$) and the 19 other observable concepts had a weak degree of agreement ($\kappa<.40$).

Based on these results, we concluded that the stereotyped role part of our classification system met none of our objectives. Indeed, after round three, the measurement method we used remained inaccurate, subjective, and dependent on the coders' interpretation. Considering our objective, it was not possible to reach a sufficient balance between accuracy and objectivity on the one hand, and feasibility on the other hand. In order to reduce subjectivity, each role had to be more detailed and deconstructed into more specific behaviors. In other words, the more precise the measurement was, the more cognitively demanding it became for the coder, resulting in more coding mistakes. Second, the choice of the sampling method raised a similar difficulty that was to choose a sampling method with a good balance between exhaustiveness and feasibility. The sampling method we chose never reached a

sufficient degree of face validity about the stereotyped role of male and female video game characters (e.g., in *God of War III*, introductory films and trailers never revealed that women were treated as a sex object).

In conclusion, evaluating the stereotyped role of male and female characters in video games in an exhaustive, precise, and objective way appears to be an unrealistic task in the context of a Ph.D. thesis. Indeed, such a degree of precision and exhaustiveness would require a large team of coders that would focus on different roles. Further, the only ideal sampling method would require using footage of all the cut scenes from the video game combined with the gameplay footage, which would mean hours of videos to analyze. Therefore, developing the precise and objective instrument of stereotyped roles in video games would require a lot of resources and time, and might not even be possible.

Impact of Sexualized Content in Video Games on Aggressive Behavior and Attitudes against Women

The present thesis hypothesized that being exposed to female sexualized content in video games could increase aggressive behavior and negative attitudes toward women. In total, four studies were conducted to meet this objective. Study 1 is a cross-sectional study that examined the relation between sexualized content, rape myth acceptance and ambivalent sexism. The other three studies are experimental studies that examined the impact of sexualized female video game content on sexual harassment behavior (Study 2), implicit attitudes toward women (Study 3), and dehumanization and rape myth acceptance (Study 4). All four studies used the GAM as a theoretical framework (Anderson & Bushman, 2018).

Concretely, in Study 1, participants were asked to list the three video games they played the most the past year as well as the time spent playing those video games. Using the VGSP, we measured three scores of physical representations: “sexualized body”, “sexualized outfit” and “muscularity”. These scores were measured for both male and female characters for each video game. Based on these three scores and the time spent playing each video game, we created six composite scores of exposure to physical representations. Participants also answered questionnaires about rape myth acceptance, hostile sexism and benevolent sexism. Results showed that benevolent sexism was positively predicted by exposure to female characters in sexualized outfits, but negatively predicted by exposure to female characters with sexualized bodies. Hostile sexism was negatively predicted by exposure to muscular female characters in sexualized outfits and was positively predicted by exposure to

muscular male characters. Rape myth acceptance was positively predicted by exposure to muscular male characters in sexualized outfits. Results from this first study are not as straightforward as expected. Based on the GAM (Anderson & Bushman, 2018), female sexualized content should have been positively related to rape myth acceptance, hostile sexism, and benevolent sexism. No clear conclusion about the impact of sexualized content on negative attitudes toward women can be drawn from the results, but some observations can be provided. First, physical representation of male characters seems to be one of the best predictors of negative attitudes toward women; exposure to muscular and sexualized male characters predicted hostile sexism and rape myth acceptance. Second, female sexualized content seems to be a poor predictor of negative attitudes toward women; only benevolent sexism was positively predicted by exposure to female characters in sexualized outfits. Third, sexualization appears to be a multi-dimensional construct. Indeed, our results showed several interactions between the different types of sexualized content exposure. This last observation is particularly important because all our experimental studies (Studies 1, 2 and 3) only manipulated one type of sexualized content, that is, a sexualized outfit.

In Study 2, we experimentally tried to elicit online sexual harassment by exposing participants to female sexualized video game content. Indeed, based on the confluence model integrated into the GAM (Anderson & Anderson, 2008), the ultimate consequence of sexualized content from video games could be aggressive behavior. However, no study so far had tried to analyze the impact of sexualized video game content on aggressive behavior. Participants were randomly assigned to two groups: one group played a sexualized video game (i.e., a fighting video game in which characters wore revealing swimsuits) and the second group played a non-sexualized video game (i.e., the same characters wore a fully covering outfit). After gameplay, participants were given the opportunity to sexually harass a male or a female partner via a chat window (sexual harassment task; Tang, 2016). As expected, results showed that playing a sexualized video game increased online sexual harassment against women. This result is consistent with studies that have found a relation between tolerance toward sexual harassment and sexualized content from video games (Dill et al., 2008; Driesmans et al., 2015; Yao et al., 2010). We also had two surprising results that were independent of the type of video game exposure: (1) male partners received significantly more sexist jokes than female partners, and (2) female players sent more sexist jokes than male players. We explained the first unexpected result by the fact that males are usually not the target of sexual harassment and, consequently, might be more tolerant of sexual harassment (Pina &

Gannon, 2006). The second unexpected result might be explained by the fact that sexual harassment has received a lot of media coverage during the period of data collection (i.e., the #MeToo movement, the #BalanceTonPorc[13] movement, and the numerous sexual harassment accusations toward celebrities). Therefore, our male participants might have been more aware of sexual harassment problematics at the time of the testing. Indeed, it has been shown that increased awareness about the consequences of sexual harassment might have a protective effect on its occurrence (Diehl et al., 2014). Results from Study 2 are particularly important because they showed that sexualized content in video games can increase sexual harassment.

Results from Study 2 showed that the main prediction of the confluence model integrated into the GAM is valid, and that exposure to a sexualized content leads to increased aggressive behavior against women. We wanted to extend these findings by analyzing the impact of sexualized content on the present internal state of the player as well as the role of the appraisal and decision processes. For that, we conducted two studies in parallel to analyze the impact of sexualized content on feelings (Study 3) and cognitions (Study 4). We will first describe the results and implications of study 3, then of study 4.

Study 3 is the first study to analyze the impact of sexualized content on general negative attitudes toward women using a task that involved affective reactions. Specifically, we used a similar methodology as in Study 2 except that we also manipulated one supplemental variable, namely, cognitive load. Therefore, we exposed participants to a sexualized or a non-sexualized video game. In the video game, we also manipulated cognitive load by setting the difficulty of the game to a low or a high level of difficulty. Based on the GAM, we expected the video game with higher difficulty (higher cognitive load) to consume more cognitive resources. With less cognitive resources available, we expected the reappraisal process to be prevented and the participant to give more automatic answers for an implicit attitudes task. To evaluate (implicit) attitudes toward women, we asked participants to complete the Affect Misattribution Procedure (AMP, B. K. Payne et al., 2007). In the AMP, participants were first primed with a fully-clothed or a partially-clothed female target, and then were asked to give a positive or a negative evaluation of a Chinese pictograph (that is supposed to be affectively neutral). The AMP postulates that the participants should misattribute the affective reaction caused by the prime to the neutral stimulus (i.e., the Chinese pictograph). Results from Study 3 showed no effect of sexualized content and cognitive load on the general depreciation of women.

[13] #BalanceTonPorc is the French equivalent of the #MeToo movement

An interaction between AMP and participant gender was found with women perceiving partially-clothed women more negatively than fully-clothed women. This last result is explained by the fact that male participants that hold more negative attitudes toward women (i.e., benevolent sexism, hostile sexism, and rape myth acceptance) tend to have a higher relative preference for partially-clothed women. Theoretically, these results are not in line with the confluence model integrated into the GAM that would predict that sexualized content should have caused more negative affect toward women.

Using a similar methodology as in Study 3, the aim of Study 4 was to analyze the impact of sexualized content on the occurrence of rape myth acceptance thoughts and dehumanization of a rape victim and a rape perpetrator. After exposure to video game play, we asked participants to read a rape date story and to judge the degree of blame of the victim and the perpetrator as well as their degree of dehumanization. Results from this study showed that the victim is blamed more for her rape when the participant had played a sexualized video game, which is consistent with the findings from previous studies (Dill et al., 2008; Driesmans et al., 2015). However, contrary to our expectation, no effect was found on the dehumanization of the victim. Concerning the impact of sexualized content on blame of the perpetrator, the results are less clear. First, no direct effect of sexualized condition was found, but there was a mediating effect of dehumanization between sexualized content and blame of the perpetrator. More precisely, under the high cognitive load condition, sexualized content increased positive human nature[14], which is positively related to perpetrator blame. Under the low cognitive load condition, sexualized content increased negative human uniqueness[15], which was positively related to perpetrator blame. Finally, the positive human nature of the perpetrator was the highest when both sexualized content and cognitive load were high. The objective of this fourth study was met, and showed that sexualized content from video games has an influence on the cognitive path of the present internal state. However, contrary to our

[14] As a reminder, human nature corresponds to all the features of humanity that are fundamental and shared by all humans, such as emotionality, agency, warmth, and cognitive flexibility (Haslam, 2006). Positive human nature regroups traits such as active, curious, friendly, helpful, and fun-loving. (Bastian & Haslam, 2010; Haslam et al., 2005).

[15] As a reminder, human uniqueness corresponds to attributes that are seen as those that distinguish humans from other animals and reflects social learning and refinement flexibility (Haslam, 2006). Negative human uniqueness regroups traits such as disorganized, hard-hearted, ignorant, rude, and stingy (Bastian & Haslam, 2010; Haslam et al., 2005).

expectation, sexualization increases the responsibility attributed to both the victim and the perpetrator. Although there is a relatively strong and direct impact of sexualized content on victim blame, the influence of sexualized content is weak and indirect on perpetrator blame. Therefore, the negative impact of sexualized content appears to mostly concern the way women are viewed and treated. Further, we expected video games to influence the appraisal and decision process of the GAM. Indeed, cognitive load moderated all the previously identified relations. In summary, these results showed that, on the one hand, participants exposed to sexualized content still consider rape as wrong and punishable, but, on the other hand, consider that the victim possess a certain degree of responsibility.

When integrated together, the results from these four studies are somewhat coherent and have important theoretical implications. First, results from study 2 and study 4 are in line with the GAM prediction. Sexualized content in video games can be considered as a situational variable that influences at least one path of the present internal state (i.e., the cognitive path) and leads to aggressive behavior against women. Based on the results from these two studies, it might be hypothesized that the impact of sexualized content on aggressive behavior is mediated by cognitive variables. Future studies should try to experimentally test this relation.

Study 1 and Study 4 found diverging results. Study 1 found no effect of sexualized content on rape myth acceptance, whereas Study 4 found that sexualized content increased victim blame. However, Study 4 did not find a main effect of sexualized content, but an interaction between sexualized content and cognitive load. In Study 1, no distinctions were made between high cognitively demanding video games and low cognitively demanding video games. These diverging results highlight the importance of the appraisal and decision process of the GAM. Future cross-sectional studies about the impact of sexualized video games could try to find a way to analyze the cognitive demand of a video game. Finally, results from Studies 1, 3 and 4 showed that the sexualized content in a video game does not seem to influence the devaluation of women in general. Indeed, sexualized content has no effect on the general negative attitudes toward women (Study 4), or specific attitudes (i.e., hostile sexism in Study 1 and dehumanization in Study 3).

Further our studies addressed the limitations of previous studies. The first limitation only concerned one study (Dill et al., 2008) and was that exposure to sexualized content in a video game needed to be ecologically valid, such that participants actually play video games rather than simply seeing screen shots of video game characters (Dill et al., 2008). Second, instead of using trait measures like

most previous experimental studies (Behm-morawitz & Mastro, 2009; Driesmans et al., 2015; Fox & Potocki, 2016; Read et al., 2018), our experimental studies used behavioral (Study 2), affective (Study 3) and cognitive (Study 4) measures. Third, some of the previous studies had too broad a focus. Specifically, one cross-sectional study (Fox & Potocki, 2016) and one longitudinal study (Breuer et al., 2015) used time spent playing video games as a measure of sexist exposure. In Study 1, we addressed that limitation by using the VGSP. Thanks to the VGSP, Study 1 was the first study to precisely analyze the degree of exposure to male and female sexualized content in a video game. The last limitation was that some of the previous studies confounded sexualization with other variables such as sexual content or sexism (Yao et al., 2010). In our studies, we manipulated sexualized content by changing the outfit of the characters. However, Study 1 identified three different types of physical representations that can influence attitudes (i.e., sexualized outfit, sexualized body, muscularity). Some physical representations have an antagonistic effect such as female sexualized outfits that positively predicted benevolent sexism and a female sexualized body that negatively predicted the same variable. Physical representations might also interact together. For example, a female sexualized outfit interacted with muscularity to predict hostile sexism. In Studies 2-4, we only manipulated a sexualized outfit. However, when we compared our sexualized condition to our non-sexualized condition, we realized that the female characters we used might be perceived as more muscular and as having a more sexualized body in the sexualized condition. We recommend that future studies only manipulate one type of sexualized content or at least try to hold some of the other sexualized content constant.

A Systematic Review about the Impact of Sexualized Content on Aggression

Based on our four studies, the GAM seemed to be a model that is at least partially relevant to explain the impact of sexualized content on aggression against women. However, none of our studies are immune to selection bias. Therefore, the impact of sexualized content on aggression can only be confirmed by a meta-analysis. Indeed, meta-analyses compared to narrative reviews have the advantage of using a systematic procedure to ensure the inclusion of all relevant research in the synthesis, of containing measures that assess the reliability of the descriptions of the included research, of giving information about the magnitude of the effect, of protecting against over-interpretation of differences across studies, and of being able to handle large number of studies (Cooper, 2017).

A meta-analysis (Study 5) was conducted in order to determine the global impact of sexualized content on aggression using the GAM as a theoretical framework. The present meta-analysis had a broader focus. First, sexualized content was often confounded with other variables such as the presence of sexuality, objectification of the models, or presence of demeaning actions (e.g., presence of insults, abusive language, ejaculating in a person's face). Indeed, a substantial number of studies have evaluated the impact of pornography or erotica on aggression and did not detail their content. For similar reasons, we did not distinguish between sexualization of male and female models as several studies examined media forms that contained both type of models. Also, the present meta-analysis initially tried to distinguish between male and female targets of aggression. However, too few studies have examined aggression against male victims (N = 5, 5%) and several studies have not made the distinction between male and female victims (N = 29, 30%). Therefore, all conclusions coming from the meta-analysis must be interpreted with those limitations in mind.

Study 5 yields results that have important theoretical implications. Sexualized content has a positive significant influence on aggressive cognition, attitudes and behavior. Further, the effects remain significant when aggressive attitudes are subdivided into sexism, objectification, rape myth acceptance, dehumanization, and violence beliefs. These results confirm the predictions of the GAM (Anderson & Bushman, 2018) about the impact of sexualized content on aggressive behavior, aggressive thoughts and hostile attitudes. However, it was not possible to determine the impact of sexualized content on aggressive affect because only four studies examined this variable. The low number of studies that have examined the impact of sexualized content on aggressive affect might be because few researchers have previously proposed the GAM as a theoretical framework. By consequence, aggressive affect might not have been perceived as a research priority.

Several results from Study 5 are particularly relevant in the context of this thesis. First, results from our other studies have comparable effect sizes to those found in the meta-analysis. In the meta-analysis, the mean correlations were .23 for aggressive behavior, .19 for aggressive cognition, .09 for dehumanization, and .12 for rape myth acceptance. Study 2 showed that the effect size of sexualized content on online sexual harassment against women is .23. In Study 4, the direct impact of sexualized content on victim's blame (evaluated with a cognitive measure) had a correlation of .16 which is close to both the effect size of aggressive cognition (.16) and rape myth acceptance (.12). However, in the same study, the effect size for each subscale of

humanness (ranging from -.10 and -.13) goes in the opposite direction as the meta-analysis. Finally, results from Study 1 showed that exposure to a male and female sexualized outfit have a stronger impact on rape myth acceptance, hostile sexism, and benevolent sexism. In summary, except for dehumanization in Study 4, all results from our studies are in line with the results from Study 5. A second important result in the context of the present thesis is that sexualized content in video games has a similar impact on aggression as the sexualized impact from other types of visual media (i.e., film and print). The third important result is that the consequences of sexualized content on aggressive behavior appear to be significantly more important when combined with violent content. This last result is particularly important in the context of video games because content analyses have shown that sexualized content is often paired with violence (Burgess et al., 2007; Downs & Smith, 2010; Lynch et al., 2016).

Study 5 has important implications for future research. First, it confirms the impact of sexualized content on aggression and highlights the need for future studies on this topic. Second, it provides a clear reference to determine the magnitude of the effect for future studies. Based on its results, studies that examine the impact of sexualization on aggression should expect a small effect size. Third, it offers information about the missing area of research. For example, too few studies have examined the impact of sexualization on affect. Similarly, aggression against men had rarely been examined in studies about the impact of sexualized content. There is also a need for more studies that examine the impact of sexualized content in video games on aggression.

General Discussion

Theoretical Implications

Based on the results from our five studies, we can draw some theoretical conclusions. First, sexualization appears to be a multi-dimensional construct that easily interacts with various kinds of variables (e.g., other physical representation and violent content). Second, the confluence model integrated into the GAM is a relevant theoretical framework to explain the impact of sexualized content on aggressive behavior and negative attitudes toward women. However, this model might lack sufficient specificity to clearly examine this issue.

Sexualization appears more to be a multi-dimensional construct, rather than a unified one. Results from Study 1 showed that sexualization can at least be separated into two dimensions for each gender that are a sexualized body and a sexualized

outfit. Recall that these two constructs predicted our outcome variables differently. For example, benevolent sexism was predicted in opposite directions by a female sexualized body and a female sexualized outfit. Another example is that only female sexualized clothing influenced hostile sexism. Such results are particularly important for future studies because they help defining the concept of sexualization. Indeed, when we tried to operationalize the concept of sexualization when developing the VGSP, and to carry our experimental studies as well as the meta-analysis, we realized that sexualization is rarely defined in studies. For example, none of the content analyzes we cited in Chapter 3 defined sexualization. Such a lack of a clear definition causes sexualization to become a sort of "catch-all" concept. Therefore, our results contradict a unified definition of sexualization such as "sexualization occurs when a person is held to a standard that equates physical attractiveness (narrowly defined) with being sexy" (R. L. Collins et al., 2010, p. 1) and rather acknowledges definitions of sexualization as a multi-dimensional construct, for example "a number of complex, interacting factors, such as the extent of nudity and revealing clothing and poses that are suggestive of sexual activity or availability" (Pacilli et al., 2017). Future studies should try to better understand through empirical studies what can be considered as "sexualization," and try to determine which concepts should be included or excluded from its definition. Based on the results from Study 1, we suggest that sexualization should at least include two independent constructs: (1) a sexualized body, and (2) a sexualized outfit. Other authors have suggested that elements such as a suggestive pose, movements that draw the attention to the body (e.g., undulation or jiggling), or the presence of sex-talk as also being forms of sexualization (Downs & Smith, 2010; Lynch et al., 2016; Near, 2013).

The second theoretical implication of this thesis concerns the relevance of the confluence model integrated into the GAM (Anderson & Bushman, 2018) to explain the impact of sexualized content in video games on aggressive behaviors and attitudes against women. Results from our experimental studies provided proof that sexualized content in video games has an influence on online sexual harassment against women (Study 2) and on the judgment of a rape victim's responsibility (Study 4). Further, Study 4 also showed that the effect of sexualized content on the victim blame was only present when the video game is highly cognitively demanding. However, no proof was found about the impact of video game sexualized content on the general negative evaluation of women (Study 3). In other words, our experimental studies partially confirmed the prediction of the confluence model integrated into the GAM. The sexualized content in video games acted like a situational variable that influenced the cognitive part of the present internal state and

caused aggressive behavior. Further, the relevance of the confluence model integrated into the GAM is corroborated by the results of Study 5. The results found that sexualized content from any type of visual media is associated with aggressive behavior, cognition and attitudes (i.e., sexism, rape myth acceptance, dehumanization, objectification, and violent beliefs). However, too few studies have examined sexualized content on aggressive affect to draw conclusions. Therefore, the confluence model integrated into the GAM appears to be a relevant model, but before embracing this model as a reference to predict the impact of sexualized content, we believe that more empirical evidence should be provided and that some theoretical adjustment might be necessary.

First, we need more empirical evidence concerning the impact of sexualized content on several parts of the confluence model integrated into the GAM. Indeed, we already showed that no proof exists for now about the influence of sexualized content on aggressive affect. Some studies have shown that exposure to sexual violence in movies increased hostility and anxiety (Linz, Donnerstein, & Adams, 1989; Weisz & Earls, 2016). Others have shown that the presence of sexualized content in rock videos act as a protective factor and decrease anger, anxiety and frustration (Peterson & Pfost, 1989). Finally, another study found no effect of exposure to pornography on anger (Malamuth & Ceniti, 1986). However, these studies are old and often confound sexualized content and violence. Further, our studies only provided proof that sexualized content influences elements of the confluence model integrated into the GAM individually (i.e., Study 2 focused on behavior only and Study 4 focused on cognition). The confluence model integrated into the GAM predicts interactions between its different components which need to be tested in the context of sexualization exposure. For example, one study could try to determine if sexually objectifying thoughts can mediate the impact of sexualized content in video games on sexual harassment. Such a study would use a method similar to Study 2, but would add a lexical decision task about sexually objectifying thoughts (see Yao et al., 2010). Especially in the context of video games, more attention should also be given to the appraisal and decision processes. Indeed, we have postulated that the interactive nature of video games might interfere with the reappraisal process and lead to a more automatic behavior. Yet, future studies should add more subtlety in the evaluation of the appraisal and decision processes. First, the appraisal and decision process involved two important elements: the availability of cognitive resources and the importance of the outcome. Our studies and others (e.g., Read et al., 2018) have focused on the availability of cognitive resources while neglecting the importance that the participant gave to the outcome. Whether or not

the participant is in a high or a low cognitive load condition, if the outcome is of little importance, they might not reappraise the situation. Moreover, the confluence model integrated into the GAM predicted that participants with few available cognitive resources would have a more automatic behavior. However, the automatic behavior might not be aggression.

Second, the confluence model integrated into the GAM might need some theoretical adjustment to be entirely relevant to determine the impact of sexualized media on negative behaviors against women. Indeed, the GAM is based on the definition of aggression. Recall from chapter 1 that aggression is defined as any behavior intended to harm another person who does not want to be harmed (Baron & Richardson, 1994). Based on this definition, a person has to intend to hurt another person for their behavior to be qualified as aggression. With this definition in mind, some of the behavior we have qualified as aggression might not be considered as so. For example, in Study 2, we examined the impact of sexualized content on online sexual harassment. We based our hypothesis on the confluence model integrated into the GAM and therefore qualified the online sexual harassment as an aggressive behavior. However, in our study, we have no proof about the intention of the participants. Further, such a definition of aggression also excluded several negative behaviors that have been shown to target women players during gameplay. For example, one study (Brehm, 2013) showed that female players during MMORPG were the target of exclusion, stereotyped based accusations, and benevolent sexist behavior (e.g., helping a female player to get better gear because she is considered as less competent than a male player). In summary, by using such a definition of aggression, we risk excluding several negative behaviors perpetrated against women with or without the intention to hurt, but that are nevertheless harmful for women and that they are motivated to avoid.

Further, the confluence model integrated into the GAM might lack specificity in the context of sexualized content exposure. For example, the GAM predicts that situational variables and personal variables influence aggressive thought, aggressive feelings, and physiological arousal (Bushman, 2017). However, in the context of sexualized content, the modification of the internal state might not automatically be in the direction of aggressiveness. For example, studies have found an impact of sexually explicit media on the occurrence of sexual thoughts (Yao et al., 2010), an impact of sexualized media on self-efficacy among women (Behm-morawitz & Mastro, 2009), and relations between media ideals and drive for muscularity (Cramblitt & Pritchard, 2013; Daniel & Bridges, 2010; Smolak & Stein, 2006). Another

study has shown that the relation between exposure to sexualized avatars and rape myth acceptance among women is mediated by their self-objectification (Fox et al., 2015). Another study found that the relation between sexualization of women and sexually aggressive intentions are mediated by assumptions of sexual openness and perceptions of the woman's agency which are not aggressive-related variables. Consequently, the GAM might not be entirely relevant to predict the impact of sexualized content on negative behavior perpetrated against women.

However, as we have already stated, the confluence model integrated into the GAM has shown to be at least partially relevant to predict the impact of sexualized content on aggressive cognition and aggressive behavior against women. However, in the context of sexualized content, the confluence model integrated into the GAM might lack some specificity. We believe that the confluence model integrated into the GAM could serve as a basis in which to integrate other theories of interest regarding the influence of media on gender stereotypes and beliefs and regarding the manifestation of behaviors related to such stereotypes and beliefs. Several theories have been used in previous studies that have examined the impact of sexualized content and might serve as a first basis to develop a new model.

Three theories have mostly been used to explain how video games might influence the learning of gender stereotypes and beliefs that are the Social Cognitive Theory of Gender Development and Differentiation (Bussey & Bandura, 1999), the cultivation theory (Gerbner & Gross, 1976; Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002), and the objectification theory. The Social Cognitive Theory of Gender Development and Differentiation (Bussey & Bandura, 1999) would offer a useful theoretical framework to better understand how exposure to media messages influence the learning of gender-based attitudes and behavior. This theory has already been used in the past to explain how video game characters might communicate lessons about gender and influence the player's attitudes and beliefs about gender and their own gender-related self-concepts (Behm-morawitz & Mastro, 2009). Similarly, the cultivation theory (Gerbner & Gross, 1976; Gerbner et al., 2002) was originally designed to explain how habitual exposure to television shapes people's beliefs about social reality. According to this theory, heavy media consumers, compared to light or moderate consumers, are more likely to develop beliefs that the media content is accurate. Cultivation theory has been used to determine the global impact of video games on negative attitudes toward women (Fox & Potocki, 2016). Objectification theory (Fredrickson & Roberts, 1997) states that "the cultural milieu of sexual objectification functions to socialize girls and women

to, at some level, treat themselves as objects to be looked at and evaluated". This theory would be useful to better explain the internalization of objectified self-concepts among female players and has already been proven useful in the context of sexualized video game consequences (Fox et al., 2015).

Further, two theories appear to be useful to understand how gender stereotypes and beliefs can influence the cognitions and behaviors of players: (1) Expectation State Theory (Berger et al., 1972), and (2) Ambivalent Sexism Theory (Glick & Fiske, 1996). Expectation State Theory (Berger et al., 1972) argues that cultural norms dictate how men and women are supposed to act. According to this theory, a person will anticipate the behavior of others based on these cultural norms and therefore expect women to be weak and submissive and men to be dominant and aggressive. Further, based on this theory, if a woman does not act according to the learned stereotype, she might be socially punished. Using this theory, one study showed that the more men adhere to masculine stereotypes, the more likely they are to report sexist attitudes in games. The last theory we suggest as potentially useful – the Ambivalent Sexism Theory (Glick & Fiske, 1996) – has never been used in the context of video games. However, we believe that this theory would be useful because it helps to understand the ambivalent reaction of men toward women. Ambivalent sexist theory posits that sexist men have both positive feelings toward women and hostile attitudes. This ambivalence has been found to be present in the context of video games. For example, male video game players tend to try to help female video game players while still considering that they are trespassing in a male territory (Brehm, 2013).

Integrating all these theories would probably improve the predictive power of the confluence model integrated into the GAM on aggression against women. Further, this new integrated model would also help to predict negative behavior that does not meet the definition of aggression.

Directions for Future Studies

Based on the results from our five studies, we were able to identify several future research directions. Mostly, we recommend future studies to focus on the potential interactive impact of sexualized content, to fill the gap in the current literature, and to examine the potential impact of male physical representation.

In the present thesis, we tried to avoid the presence of confounding variables that we had identified in previous studies. However, our results showed that sexualized content interacted with other constructs. Specifically, Study 1 showed that sexualization interacted with muscularity, and Study 5 showed that sexualization

interacted with violence. In all our experimental studies, we used female characters from a fighting game. Therefore, all conditions contained violence. Further, the female characters might be judged as muscular, and their muscularity was more apparent when they were in the sexualized condition than in the non-sexualized condition. From this limitation and these particular results, we can propose two types of studies for future research. The first type of study should try to isolate the impact of sexualized content alone and be even more specific by trying to focus on one type of sexualized content. For example, one study could try to experimentally replicate the opposite predictions of Study 1 (i.e., exposure to a female sexualized body negatively predicted benevolent sexism, whereas exposure to a female sexualized outfit positively predicted it). Such a study could expose participants to a video game in which the morphology and the outfit of the female characters are manipulated. Such a study should have five video game conditions with a female character wearing: 1) revealing clothes with a sexualized morphology, 2) skin-tight clothes with a sexualized morphology, 3) revealing clothes with a non-sexualized morphology, 4) skin-tight clothes with a non-sexualized morphology, and 5) loose clothes. After gameplay, the participants should be given the opportunity to act as a "white knight" and help a female experimenter in need. The second type of study should try to better understand the consequences of the interactions between sexualized content and other variables starting with other physical representations (e.g., muscularity), stereotyped roles (e.g., damsel in distress), or objectification. For example, one study could try to replicate our findings from Study 1 on the impact of sexualized content on online sexual harassment, but use a non-violent video game and manipulate both sexualized clothes and muscularity.

Based on Study 5, we were able to identify several gaps in the current literature about the impact of sexualized content on aggressive behavior and attitudes toward women. Notably there is a need for more studies about the impact of sexualized media on angry feelings, objectification, dehumanization, and violent beliefs. The present thesis added more studies that would be useful to fill these gaps. In the present thesis, Study 3 provided more information about negative attitudes toward women using an affect-based measure, and Study 4 provided more information on dehumanization of a rape victim. However, we believe that other variables might be more relevant to examine both angry feelings and dehumanization. First, the AMP (B. K. Payne et al., 2007) might have been too general to really evaluate negative affects toward women. In future studies, we recommend using a more direct measure of emotions such as a self-report measure of state hostility, state anger, and feelings of revenge. Such a self-report questionnaire has been shown to be useful in

violent video games studies (Anderson et al., 2010). Second, in Study 4, dehumanization was measured to serve as a mediator. Future studies could evaluate dehumanization in a different way. For example, one could use a Single-Category Implicit Association Test (SC-IAT, Karpinski & Steinman, 2006). In the SC-IAT, participants are exposed to images related to a single category of concept (e.g., a woman) and words from an evaluative dimension (e.g., good or bad). The SC-IAT is usually a two-step procedure. First, participants have to press the key when they see images of the woman and words related to "good", and a different key for words related to "bad". Second, participants have to press the same key for images of the sexualized women and words related to "bad", and a different key for words related to "good". Reaction time is used as the measure of participants' attitude. For example, an individual who has positive attitudes toward women would be faster when images of women and words related to "good" are on the same key. This measure has already been adapted in a previous study (Vaes et al., 2011) to evaluate dehumanization of women.

Further, future research should focus more on the impact of male physical representations. In Study 1, we found that male physical representation was a better predictor of hostile attitudes toward women. However, based on the systematic review we did in the meta-analysis, we know that only 5 studies out of 97 examined the impact of sexualized male content on aggression. For example, one study could try to replicate our findings from Study 2, but use male sexualized characters instead of female sexualized characters. Such studies should be careful to distinguish between various types of male physical representation (e.g., a male sexualized body, muscularity and a male sexualized outfit). Indeed, they have been shown to interact together in study 1. Several variables should also be considered as potential mediators of the relation between male physical representation and aggression against women. For example, drive for muscularity has already been shown to be predicted by exposure to media (Cramblitt & Pritchard, 2013; Daniel & Bridges, 2010; Smolak & Stein, 2006). On the other hand, drive for muscularity has been shown to be related to hostile sexism (Swami & Voracek, 2013). Therefore, a study that examined the potential mediating effect of drive for muscularity on the relation between sexualized media and hostile sexism might be relevant.

Practical Implications

We believe that the results from the present thesis have important practical implications. Indeed, results from the meta-analysis showed that sexualized media in general impacts aggressive behavior, thoughts, and attitudes. This impact might

appear small at first sight, but should not be taken lightly for three reasons. First, sexualized media might have severe consequences especially because they impact behaviors. For example, we have shown that playing a sexualized video game increases online sexual harassment and several studies included in the meta-analysis showed that consumption of sexualized media is related to actual behaviors of sexual harassment (Galdi et al., 2014), sexual coercion (Simons, Simons, Lei, & Sutton, 2012), and even rape (Boeringer, 1994). Second, longitudinal studies have shown that exposure to sexualized content has a cumulative impact on aggression. Third, the impact of sexualized content can be generalized beyond the college student population and for all ages.

Regarding the focus of the present thesis, there is no reason to believe that the impact of sexualized video games should be different from other types of media. Indeed, no significant difference of effect sizes was found between video games and other forms of visual media in the meta-analysis. Therefore, there is a need for an increase of awareness about the potential impact of sexualized video game content. Mostly, sexualized content should be avoided at least in video games made for children and adolescents. Indeed, Study 1 showed that video games intended for adolescents (i.e., rated 12+, PEGI, 2018) contained the most female and male sexualized content. Considering the large portion of adolescents playing video games (Interactive Software Federation of Europe, 2018; UKIE, 2018), the potential cumulative effect of such content, and its potentially severe consequences, we believe that parents and video game publishers should try to protect children and adolescents.

Finally, the present thesis provided strong evidence for, at least for a short-term effect, of video game sexualized content on aggressive behaviors (Study 2 and Study 5). In the future, more attention should be focused on the impact of such content in a multiplayer online environment. Such environments offer the opportunity for aggression against other players through chat windows, voice chat, and even directly through gameplay (e.g., in some MMORPG, it is possible to kill another player's character, wait for him to come back to life, and then kill it again). Like others before us (Brehm, 2013) we urge video game publishers to develop strong policies about video game online aggression. Further, we also recommend online video games to avoid sexualized content as it might lead to more aggressive behavior.

Conclusion

In the present thesis, we examined the impact of sexualized content in video games on aggressive attitudes and behaviors against women. More precisely, we had three main objectives that were: (1) development of an objective instrument of evaluation of female and male sexualized video game content and stereotyped roles, (2) examine the impact of female sexualized content on aggressive behavior and attitudes toward women, and (3) conduct a meta-analytic review of the impact of sexualized content on aggression.

Our first objective was partly met. We successfully developed the sexualized part of the instrument of evaluation, but we came to the conclusion that the development of the stereotyped role part was too complex to be realized. The sexualized part of the protocol was called "Video Game Sexualized Protocol" (VGSP) and possessed good internal consistency and excellent inter-coder reliability. In total, three factors of sexualization were identified for both male and female characters ("sexualized body", "muscularity", and "revealing outfit"). Further, to fulfill our second objective, we based all our hypotheses on the confluence model integrated into the General Aggression Model (Anderson & Anderson, 2008). In total, four studies were carried out that examined the impact of sexualized content on aggressive attitudes and behavior against women. Results showed that female sexualized content in video games influences online sexual harassment against women and the blame of a rape victim. However, sexualized content had no effect on general negative attitudes toward women, hostile sexism, and dehumanization. Therefore, our results confirmed that the confluence model integrated into the GAM is at least partly relevant to examine the influence of sexualized content. Our final study was a meta-analysis and revealed that sexualized content from all types of visual media influence aggressive behavior, aggressive cognition, and hostile attitudes. These findings helped confirm the relevance of the GAM to predict aggression against women based on exposure to sexualized content.

Results from the present thesis have important theoretical implications. First, sexualization appears to be a multi-dimensional construct. The VGSP identified that at least two constructs can be considered as part of the sexualization concept (a sexualized body and a sexualized outfit). These two constructs were shown to act independently or in interaction together to predict negative attitudes toward women. Further, we reached the conclusion that the confluence model integrated into the GAM has a predictive value to analyze the impact of sexualized content on aggression against women. However, we also came to realize that the predictive

power of GAM might potentially be increased if it was modified. Specifically, we suggested extending the GAM to all negative behaviors toward women, not just aggressive behaviors. Further, we suggested some theories to integrate in order to explain how sexualized content in video games can provoke the development of gender stereotypes and beliefs, and to help determine their impact on cognition and behaviors of players.

We also identified several gaps in the literature and suggested several areas of research for future studies to fill those gaps. First, sexualized content can be decomposed into sub-constructs that could be evaluated separately or in interaction with other constructs. Second, there is a need for more studies regarding the impact of video game sexualized content on angry feelings and hostile attitudes toward women. Third, too few studies have examined the impact of male physical representation on aggressive behavior and hostile attitudes toward women.

As a final conclusion, results from the present thesis showed that the impact of sexualized content should not be taken lightly. Studies 2 and 5 showed that sexualized content can impact actual aggressive behavior against women. Based on the present thesis, we believe that sexualized content should be avoided for children and adolescents. Further, we believe that video game producers should limit the amount of sexualized content in video game environments that offer direct aggression opportunity, such as online video games.

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Annex

Annex 1: Supplementary Material from "The Development and Validation of an Objective Measure of the Sexualized Content of Video Games: the Video Game Sexualization Protocol"

Appendix 1

Name, PEGI rating, ESRB rating, and genre of every game from the sampling of study 1

Name	PEGI Rating	ESRB Rating	Genre
94%	3	E	Puzzle
2048	3	E	Puzzle
1010 !	3	E	Puzzle
4 Pics 1 Word	3	E	Puzzle
94 Degrees	3	E	Puzzle
94 Seconds	3	E	Puzzle
AA	3	E	Strategy
Age of Empires II	7	T	Strategy
Alan Wake's American Nightmare	16	T	TPS
Amazing Thief	3	E	Adventure
Angry Birds Star Wars II	3	E	Action
Assassin's Creed	16	M	Action-Adventure
Assassin's Creed II	18	M	Action-Adventure
Assassin's Creed III	18	M	Action-Adventure
Batman : Arkham Asylum	16	T	Action
Batman : Arkham Origins	16	T	Action-Adventure
Battlefield 4	18	M	FPS
Binding of Isaac : Rebirth	16	M	Action
Blitz Brigade	16	M	FPS
Bloodborne	18	M	Action-RPG
Boom Beach	7	E 10+	Strategy
Borderlands	18	M	FPS
Borderlands 2	18	M	FPS
Bounce	/	/	Action-Adventure
Bouncing Ball!	3	E	Action-Adventure
Bubble Mania	3	E	Puzzle
Bubble Witch 2 Saga	3	E	Puzzle
Bubble.io	3	E	Casual
Call of Duty : Advanced Warfare	18	M	FPS
Call of Duty : Black Ops II	18	M	FPS
Call of Duty : Modern Warfare 2	18	M	FPS
Call of Duty : Modern Warfare 3	18	M	FPS
Candy Crush Saga	3	E	Puzzle
Candy Crush Soda Saga	3	E	Puzzle
Car Parking Games	3	E	Simulation

Car Parking Simulator	7	E	Simulation
Circle	3	E	Arcade
Cities: Skyline	3	E	Simulation
City Quiz	3	E	Puzzle
Clash of Clans	7	E 10+	Strategy
Colossatron	7	/	Action
Company of Heroes : Tales of Valor	16	M	Strategy
Company of Heroes 2	18	M	Strategy
Counter Strike : Global Offensive	18	M	FPS
Crazy Quiz	3	E	Puzzle
Criminal Case	16	T	Adventure
Crossy Road	3	E	Action-Adventure
Dark Souls	16	M	Adventure-RPG
Dead or Alive 3	16	T	Fighting
Dead or Alive 4	16	M	Fighting
Dead or Alive 5	16	M	Fighting
Dead or Alive: Dimension	16	T	Fighting
Destiny	16	T	FPS
Dofus	12	/	RPG
Don't Touch The Spikes	3	E	Casual
Dragon Ball Xenoverse	12	T	Fighting
Dragon Ball Z Ultimate Tenkaichi	12	T	Fighting
Dragon Ball Z: Battle of Z	12	T	Fighting
Dragon Ball Z: Raging Blast 2	12	T	Fighting
Dumb Ways To Die 2	7	T	Action-Adventure
Dying Light	18	M	Action-Adventure
EA SPORTS UFC	16	T	Simulation
F1 2014	3	E	Racing
Farm Heroes Saga	3	E	Casual
FarmVille	3	E	Casual
Fifa 2008	3	E	Simulation
Fifa 2011	3	E	Simulation
Fifa 2014	3	E	Simulation
Fifa 2015	3	E	Simulation
Fifa Street	3	E	Simulation
Final Fantasy 12	16	T	RPG
Final Fantasy 13	16	T	RPG
Final Fantasy X	12	T	RPG
Flappy Bird	3	E	Casual
Flow Free	3	E	Puzzle
Frozen Free Fall	3	E	Puzzle
Fruit Ninja	3	E	Action-Adventure
Geometry Dash	3	E	Casual
Goodgame empire	/	/	Strategy
Gran Turismo 5	3	E	Racing
Grand theft auto IV	18	M	Action
Grand theft auto V	18	M	Action

Grid	3	E	Racing
Hearthstone: Heroes of warcraft	7	T	Card game
Hill Climb Racing	3	E	Racing
Inotia 3	12	T	RPG
Jelly Jump	3	E	Casual
Jetpack Joyride	7	E	Action-Adventure
Just Dance 2014	3	E 10+	Rythm-and-dance
Just Dance 2015	3	E 10+	Rythm-and-dance
Killzone	16	M	FPS
Killzone 2	18	M	FPS
Killzone 3	18	M	FPS
Killzone: Shadow Fall	16	M	Action
League of Legends	12	T	Strategy
Left 4 Dead 2	18	M	FPS
Legend of Zelda : Twilight Princess	12	T	Action-Adventure
LittleBigPlanet 2	7	E	Platformer
Logo Quiz	3	E	Puzzle
Mafia II	18	M	Action
Mario Kart 7	3	E	Racing
Mario Kart 8	3	E	Racing
Mario Kart DS	3	E	Racing
Mario Kart Wii	3	E	Racing
Mass Effect 2	18	M	Action-RPG
Matches Puzzle	/	/	Puzzle
Minecraft	12	E 10+	Puzzle-Adventure
Minecraft : Pocket Edition	12	E 10+	Puzzle-Adventure
Minion Rush	7	E 10+	Action-Adventure
Mirror's Edge	16	T	Action-Adventure
Mmm Fingers	3	E	Casual
Monster Busters	3	E	RPG
Mortal Kombat 9	18	M	Fighting
Mortal Kombat X	18	M	Fighting
Mortal Kombat: Armageddon	18	M	Fighting
Mortal Kombat: Unchained	18	M	Fighting
MotoGP 15	3	E 10+	Racing
Moviestarplanet	3	E	Simulation
Mx vs Atv: Untamed	3	E	Racing
Mx vs. Atv ALIVE	12	E	Racing
Mx vs. Atv Reflex	3	E	Racing
Mx vs. Atv Supercross	3	E	Racing
My Talking Tom	3	E	Casual
NARUTO SHIPPUNDEN: Ultimate Ninja STORM 3	12	T	Adventure-Fighting
NBA 2K15	3	E	Simulation
Need For Speed 2015	7	T	Racing
Need For Speed Hot Pursuit	7	E 10+	Racing
Need For Speed Rivals	7	E 10+	Racing

Need For Speed: No limits	7	T	Racing
New Super Mario Bros.	3	E	Action Platformer
New Super Mario Bros. 2	3	E	Action Platformer
No More Room in Hell	/	/	Action
Panic Parachute	/	/	Casual
Papa Pear Saga	3	E	Puzzle
Parking Mania	3	E	Racing
Payday 2	18	M	FPS
Pet Rescue	3	E	Casual
Piano Tiles	3	E	Casual
Pixel Guns 3D	7	T	Action-Adventure
Pokémon Alpha Sapphire	7	E	RPG
Pokémon Emerald Version	7	E	RPG
Pokémon Omega Ruby	7	E	RPG
Pokémon Rumble	7	E 10+	Action
Pou	3	E	Casual
Public Transport Bus Simulator 3D	3	E	Simulation
Pyramide Solitaire Saga	3	E	Puzzle
R.U.S.E.	16	T	Strategy
Ratchet & Clank 2: Going Commando	7	E 10+	Action-Platformer
Ratchet & Clank 3: Up Your Arsenal	7	E 10+	Action-Platformer
Ratchet & Clank: Into the Nexus	7	E 10+	Action-Platformer
Ratchet & Clank: Q-force	7	E 10+	Action-Platformer
RIDE	3	E	Racing
Six Guns	16	E	Action
SKATE 3	16	T	Sports
Sleeping Dog	18	M	TPS
Small City	/	/	Casual
Snake	3	E	Casual
Solitaire	3	E	Card game
Split/Second	7	E 10+	Action-Racing
Stick Hero	3	E	Action-Adventure
Street Fighter IV	12	T	Fighting
Subway Surfers	3	E 10+	Action-Adventure
Superbuzzer : le jeu de Quiz de culture générale	3	E	Puzzle
Tap Titans	3	E 10+	RPG
TEKKEN 3D Prime Edition	16	T	Fighting
TEKKEN 6	16	T	Fighting
TEKKEN REVOLUTION	12	T	Fighting
TEKKEN TAG TOURNAMENT 2	16	T	Fighting
Temple Run 2	7	E	Action-Adventure
Tetris	3	E	Puzzle
The Crew	12	T	Racing
The Hobbit: Kingdoms of Middle-earth	/	/	Strategy
The Last of Us	18	M	Action
The Sims 3	7	T	Simulation
The Sims 4	12	T	Simulation

The Sims 4 : Get to Work!	12	T	Simulation
The Sims free to play	12	T	Simulation
Tiana et le diadème	/	/	/
Tomb Raider	18	M	Action
Top Eleven	3	E	Simulation
Township	3	E	Simulation
Traffic Racer	3	E	Racing
Triple Jump Champion	/	/	/
Unepic	12	T	Action
Unturned	/	/	Action
Watch dogs	18	M	TPS-Action
Wii Play	7	E	Casual
Wonder Rocket 3 Game	/	/	/
World of Warcraft: Cataclysm	12	T	RPG
World of Warcraft: Mist of pandaria	12	T	RPG
World of Warcraft: Warlord of Draenor	12	T	RPG
World of Warcraft: Wrath of the Lych King	12	T	RPG
WWE SuperCard	12	T	Card game
Zig Zag	3	E	Casual
Zombie Tsunami	7	E 10+	Casual

Note. FPS = First-Person Shooter, TPS = Third-Person Shooter, RPG = Role-Play Game

Appendix 2

Name, PEGI rating, ESRB rating, and genre of every game from the sampling of study 1

Name	PEGI Rating	ESRB Rating	Genre
2048	3	E	Puzzle
100 PICS	12	T	Puzzle
94%	3	E	Puzzle
AdVenture Capitalist	3	T	Simulation
Adventure town	3	E	RPG
Age of Conan	18	M	Action-Adventure
Age of empires III	12	T	Strategy
Age of empires III: Conquerors	12	T	Strategy
Age of Empires II: The Age of Kings	12	E 10+	Strategy
Age of Empires III: The Asian Dynasties	12	T	Strategy
Age of Mythology	12	T	Strategy
Agent Alice	12	T	Reflexion
Aion	12	T	RPG
Alexandra Ledermann 8 Les secrets de Haras	3	/	Adventure
Alice: Madness Returns	18	M	Action-Adventure
Alien: Isolation	18	M	Action-Adventure
Allods	/	/	RPG
Alone in the Dark	16	M	Horror-Adventure
Amnesia: The Dark Descent	16	M	Horror-Adventure
Amour sucre	/	/	Romance
Angry Birds Friends	3	E	Puzzle-Action
Angry Birds	3	E	Puzzle-Action
Angry Birds Trilogy	3	E	Puzzle-Action
Animal Crossing: New Leaf	3	E	Simulation
Animal Crossing: Wild world	7	E	Simulation
Anno 2070	7	T	Strategy
Annonces online	/	/	/
ArcheAge	16	M	RPG
Arma 3	16	M	FPS
Army of two : The Devil's Cartel	18	M	TPS
Assasin's creed	18	M	Action-Adventure
Assasin's creed II	18	M	Action-Adventure
Assasin's Creed Brotherhood	18	M	Action-Adventure
Assassin's creed III	18	M	Action-Adventure
Assassin's creed IV: Black flag	18	M	Action-Adventure
Assassin's Creed Unity	18	M	Action-Adventure
Assassin's Creed Rogue	18	M	Action-Adventure
Astroflux	/	/	Action-Adventure
Aura kingdom	12	T	RPG
Avalon Code	12	E 10+	Action-RPG

Baldur's Gate 1	16	T	RPG
Batman: Arkham Asylum	16	T	Action-Adventure
Batman: Arkham City	18	T	Action-Adventure
Batman: Arkham Origins	16	T	Action-Adventure
The Battle for Wesnoth	/	/	Strategy
Battlefield Hardline	18	M	FPS
Battlefield 3	16	M	FPS
Battlefield 1942	16	T	FPS
Battelfield: Bad Compagny 2	16	M	FPS
Battlefield 2: Project Reality	16	T	FPS
Battlefield 4	18	M	FPS
Bayonetta	18	M	Action
Bayonetta 2	18	M	Action
Beyond good & evil	12	T	Action-Adventure
Beyond two souls	16	M	Action
Best fiends	3	E	Casual
BioShock	18	M	FPS
BioShock infinite	18	M	FPS
Blade & Soul	16	M	RPG
Blood Bowl	16	T	Strategy
Bloodborne	16	M	Action-RPG
Boom Beach	7	E 10+	Strategy
Borderlands	18	M	FPS
Borderlands 2	18	M	FPS
Borderlands: The pre-sequel	18	M	FPS
Bouncy ball	3	EC	Casual
Bravely Default	12	T	RPG
Brave Frontier	7	E 10+	RPG
Broforce	16	M	Platformer
Bubble Witch Saga	3	E	Puzzle
Bully: Scholarship Edition	16	T	Action
Burnout	3	E	Racing
Call Of Duty 2	16	T	FPS
Call of Duty: Advanced warfare	18	M	FPS
Call of Duty: Black Ops	18	M	FPS
Call of Duty: Black Ops II	18	M	FPS
Call Of Duty: Ghost	16	M	FPS
Call of Duty 4: Modern warfare	16	M	FPS
Call of Duty: Modern warfare 2	18	M	FPS
Call of Duty: Modern warfare 3	18	M	FPS
Call of Duty: World at War	18	M	FPS
Candy Crush Saga	3	E	Puzzle
Candy Crush Soda	3	E	Puzzle
Castlevania Lord of Shadow	16	M	Action-Adventure
Captain Toad Treasure Tracker	3	E	Puzzle-Platformer
Catherine	18	M	Puzzle-Adventure

Cave Story	7	E 10+	Action-Adventure
Chess Online	3	E	Puzzle
Child of light	7	E 10+	RPG
Cities: Skylines	3	E	Simulation
Clash of Clan	7	E 10+	Strategy
Company of Heroes	18	M	Strategy
Counter-Strike	16	M	FPS
Counter-Strike: Condition Zero	16	M	FPS
Counter-Strike: Global Offensive	18	M	FPS
Crash Bandicoot	3	E	Platformer
Criminal Case	16	T	Adventure
Dark Cloud	12	T	Action-RPG
Dark Souls	16	M	Adventure-RPG
Dark Souls 2	16	T	Adventure-RPG
Darkest Hour	/	/	Action-Simulation
DayZ	16	M	FPS-RPG
Dead Rising 3	18	M	Action-Horror
Dead Space	18	M	TPS
Dead Space 2	18	M	TPS
Dead Space 3	18	M	TPS
Destiny	16	T	FPS
Deus Ex: Human Revolution	18	M	FPS
Diablo 2	16	M	Action-RPG
Diablo 3	16	M	Action-RPG
DmC Devil May Cry : Definitive Edition	16	M	Action
Diplomat Solitaire	3	E	Card Game
Dirty Bomb	/	/	FPS
Disgea Hour of Darkness	12	T	Strategy-RPG
Dishonored	18	M	Action
Divinity: Original Sin	16	M	RPG
Dofus	12	/	RPG
Donkey Kong Country Tropical Freeze	3	E	Platformer
Don't starve	12	T	Adventure
Don't Starve Together	12	T	Adventure
Don't Touch The Spikes	3	E	Casual
DOOM	18	M	FPS
DOOM II	16	M	FPS
Dota 2	/	/	Strategy
Dragon Age: Inquisition	18	M	RPG
Dragon Age: Origins	18	M	RPG
Dragon Mania Legends	12	E	Simulation
Dragon Qest VIII: Journey of the Cursed King	12	T	RPG
Dragon Quest IX: Sentinels of the Starry Skies	12	E 10+	RPG
Dragon ball Xenoverse	12	T	Fighting

Dragon's Crown	12	T	Action-RPG
Dreamfall Chapter	12	M	Adventure
Dying Light	18	M	Action-Adventure
Dynasty Warriors 5	12	T	Action
Echo of soul	/	/	RPG
Eldarya	/	/	Romance
Elite: Dangerous	7	T	RPG
Empire Immo	/	/	Simulation
Empire: Total War	16	T	Strategy
Euro Truck Simulator 2	3	E	Simulation
Europa universalis IV	12	T	Strategy
EVOLVE	18	M	FPS
Fable	16	M	Adventure
Fallout 3	18	M	RPG
Fallout: New Vegas	18	M	RPG
Fantasy Life	7	E 10+	Adventure-RPG
Far Cry 3	18	M	FPS
Far Cry 4	18	M	FPS
Farm Heroes Saga	3	E	Casual
Farmerama	/	/	Simulation
Farmville	3	E	Casual
Farmville 2	3	E	Casual
Faster than light	/	/	Strategy
FIFA	3	E	Simulation
FIFA 6	3	E	Simulation
FIFA 13	3	E	Simulation
FIFA 15	3	E	Simulation
FIFA World	3	E	Simulation
Final Fantasy III	12	E 10+	RPG
Final Fantasy Type 0	16	M	RPG
Final Fantasy 7	16	T	RPG
Final Fantasy VIII	16	T	RPG
Final Fantasy X	12	T	RPG
Final Fantasy XII	16	T	RPG
Final Fantasy XIII	16	T	RPG
Final Fantasy XIV	16	T	RPG
Fire Emblem Awakening	12	T	RPG
Fire Emblem: Radiant Dawn	12	E 10+	RPG
Fistful of Frags	/	/	FPS
Football Manager 2015	3	E	Simulation
Fourmizzz	/	/	Simulation
Frozen Free fall	3	E	Puzzle
Fruit ninja	3	E	Action-Adventure
Goodgame Empire	/	/	Strategy
God of War Ascension	18	M	Action-Adventure
Gran turismo 6	3	E	Racing

Grand Fantasia	/	/	RPG
Grand Theft Auto IV	18	M	Action
Grand Theft Auto V	18	M	Action
Grand Theft Auto: San Andreas	18	M	Action
Grim Dawn	12	/	Action-RPG
Guacamelee!	12	E 10+	Action-Platformer
Guild Wars	12	T	RPG
Guild Wars 2	12	T	RPG
Half-Life 2	16	M	FPS
Half-Life: Opposting Force	16	M	FPS
Harry Potter and the Deathly Hallows Part 2	12	T	Action-Adventure
Hearthstone: Heroes of Warcraft	7	T	Card Game
Heroes and Generals	/	/	FPS
Heroes of the Storm	12	T	Strategy
Hyrule Warrior	12	T	Action
Hitman Absolution	18	M	Action
Hotline Miami 2: Wrong Number	18	M	Action
Equideow	3	E	Sport
Infamous: Second Son	16	T	Action-Adventure
Infinity Wars	/	/	Card Game
Injustice: Gods Among Us	16	T	Fighting
Into the Dead	16	M	Action
Jak 3	12	T	Action-Adventure
Jak X: Combat Racing	12	T	Racing
JCC Pokemon Online	7	E	Card Game
JoJo's Bizarre Adventure: All Star Battle	12	T	Fighting
James Cameron's AVATAR: THE GAME	12	E 10+	Adventure
Just Dance 2014	3	E 10+	Rythm-and-Dance
Just Dance 2017	3	E 10+	Rythm-and-Dance
Just Dance 4	3	E 10+	Rythm-and-Dance
Kerbal Space Program	3	E	Simulation
Killing Floor	18	M	FPS
Killing Floor 2	18	M	FPS
Killzone	16	M	FPS
Killzone Mercenary	18	M	FPS
Kim Kardashian	12	T	Aventure
KINGDIM HEARTS	12	E	Action-RPG
KINGDIM HEARTS 2.5 ReMix	12	E 10+	Action-RPG
KINGDIM HEARTS Birth by sleep	12	E 10+	Action-RPG
KINGDIM HEARTS 3D (Dream Drop Distance)	12	E 10+	Action-RPG
Kitchen scramble	3	E	Simulation
Imagine: Teacher	3	E	Simulation
League of Legends	12	T	Strategy
Left 4 Dead	18	M	FPS

Left 4 Dead 2	18	M	FPS
LEGO Batman	7	E 10+	Action-Adventure
LEGO Legends of Chima	7	E 10+	Action-Adventure
LEGO Harry Potter 1-4	7	E 10+	Action-Adventure
LEGO Harry Potter 5-7	7	E 10+	Action-Adventure
LEGO Star Wars	3	E	Action-Adventure
LEGO The hobbit	7	E 10+	Action-Adventure
Life is strange	16	M	Adventure
Life Quest Metropoville	3	E	Simulation
Lord of the rings online	12	T	RPG
Ma-Bimbo	3	E	Simulation
MAGICKA	16	T	RPG
Mafia	18	M	Action
Mahjong	3	E	Puzzle
Mario Kart 8	3	E	Racing
Mario Kart DS	3	E	Racing
Mario kart Wii	3	E	Racing
Mario Kart: Double Dash!!	3	E	Racing
Marvel Heroes 2015	12	E 10+	Action
Marvel Puzzle Quest	7	T	Puzzle
Mass Effect	18	M	Action-RPG
Mass Effect 2	18	M	Action-RPG
Mass Effect 3	18	M	Action-RPG
Max Payne 3	18	M	TPS
Medieval II: Total War	16	T	Strategy
MedEvil	7	T	Action-Adventure
Metal Gear Solid V: Ground Zeroes	18	M	Action
Metroid Prime	12	T	Action
Microsoft Flight Simulator 2004: A Century of Flight	3	E	Simulation
Middle-Earth: Shadow of Mordor	18	M	Action-RPG
Might and Magic VI	16	T	Strategy-RPG
Minecraft	7	E 10+	Puzzle-Adventure
Miramagia	12	T	Casual
Mirror's edge	16	T	Action
MONSTER HUNTER 3	12	T	Action-Adventure
MONSTER HUNTER 4 ULTIMATE	12	T	Action-Adventure
Mortal Kombat 9	18	M	Fighting
Mortal Kombat X	18	M	Fighting
Mount & Blade: Warband	16	T	Action-RPG
Myninja	/	/	RPG
Mystery Case Files	7	T	Puzzle-Adventure
NBA 2K13	3	E	Simulation
NBA 2K14	3	E	Simulation
NBA 2K15	3	E	Simulation
Need for Speed - Most Wanted	7	E	Racing

Neverwinter	12	T	RPG
Neverwinter night	12	T	RPG
New Super Mario Bros.	3	E	Platformer
Ni no kuni	12	E 10+	Adventure-RPG
Oddworld: New 'n' Tasty	16	T	Action-Adventure
OGame	7	/	Simulation
Okami	12	T	Action-Adventure
One Piece: Pirate Warriors	12	T	Action
ONE PIECE Unlimited World Red	12	T	Action-Adventure
Orbitum	/	/	/
Order & Chaos online	12	T	RPG
Papa's Burgeria	3	E	Strategy
PAYDAY	18	M	FPS
PAYDAY 2	18	M	FPS
Pengle	3	E	Reflexion
Persona Q: Shadow of the Labyrinth	12	M	RPG
Phoenix Wright: Ace Attorney - Dual Destinies	12	M	Adventure
Pet rescue Saga	3	E	Casual
Pillars of Eternity	16	M	RPG
Plague Inc	3	E 10+	Strategy
PlanetSide 2	16	T	FPS
Plants vs Zombies	7	E 10+	Action-Strategy
Plants vs Zombies 2	7	E 10+	Action-Strategy
PokeMMO	/	/	RPG
Pokémon Fire Red/Leaf Green	12	E	RPG
Pokémon Ruby/Sapphire	7	E	RPG
Pokémon Pearl	3	E	RPG
Pokémon Omega Ruby/Alpha Sapphire	7	E	RPG
Pokémon Shuffle	3	E	Puzzle
Pokémon X	7	E	RPG
Poker	/	/	Card Game
Postal 2	18	M	Action-Adventure
Pottermore	12	/	RPG
Pro Evolution Soccer	3	E	Simulation
Pro Cycling Manager 2014	3	E	Simulation
Professor Layton et l'Heritage des Aslantes	7	E 10+	Adventure
Professor Layton vs. Phoenix Wright: Ace Attorney	12	T	Adventure
Quake Live	12	T	FPS
Ratchet & Clank: Crack in time	7	E 10+	Action-Platformer
Ratchet & Clank: Into the Nexus	7	E 10+	Action-Platformer
Rayman Legends	7	E 10+	Action-Platformer
Rayman Origins	7	E 10+	Action-Platformer
Red Dead Redemption	18	M	Action-Adventure

Resident Evil 2	18	M	Survival-Horror
Resident Evil 4	18	M	Survival-Horror
Resident Evil 5	18	M	Survival-Horror
Resident Evil 6	18	M	TPS
Resident Evil Rebirth	18	M	Survival-Horror
Rift	12	T	RPG
Rise of the Tomb Raider	18	M	Action-Adventure
Royal Revolt 2	7	E 10+	Action
Rust	/	/	Adventure
Ryzom	12	T	RPG
Saints Row 2	18	M	Action
Saints Row: The Third	18	M	Action-Adventure
Saints Row IV	18	M	Action
SAMURAI WARRIORS 4	12	T	Action
The Secret World	16	M	RPG
Senran Kagura	16	M	Action
Shadowrun: Dragonfall	16	M	RPG
Shadow Warrior	18	M	FPS
Shin Megami Tensei: Devil Survivor	12	T	RPG
Sid Meier's Civilization V	12	E 10+	Strategy
Sid Meier's Civilization: Beyond Earth	12	E 10+	Strategy
Simpsons Springfield	12	T	Casual
The Sims 2	7	T	Simulation
The Sims 3	7	T	Simulation
The Sims 4	12	T	Simulation
Sly Cooper Thieves in Time	7	E 10+	Action
SMITE	12	T	Strategy
Sniper Elite	18	M	TPS
Sniper Elite: Nazi Zombie Army	18	M	TPS
Valiant Hearts: The Great War	12	T	Adventure
South Park: The Stick of Truth	18	M	RPG
Solitaire	3	E	Card Game
Space Engineers	12	T	Simulation
Spyro The Dragon	7	E	Action-Platformer
Spore	7	E 10+	Simulation
SSX	3	E	Simulation
SSX 3	7	E	Simulation
SSX Tricky	3	E	Simulation
Star Trek Online	12	T	RPG
Star Wars Battlefront	16	T	FPS
Star wars Knight of the Old Republic II	12	T	RPG
Star Wars The Force Unleashed	16	T	Action-Adventure
Star Wars: The Old Republic	16	T	RPG
Starcraft 2	16	T	Strategy
Subway Surfer	7	E 10+	Casual
Super Buzzer	3	E	Reflexion

Super caca	/	/	/
Super Mario Bros.	3	E	Platformer
Super Mario Galaxy 2	3	E	Platformer
Super Smash Bros. 4	12	T	Fighting
Super Smash Bros. Brawl	12	T	Fighting
Swordsman	3	E 10+	Adventure
Syberia	7	T	Adventure
Taichi Panda	12	T	RPG
Tales of Graces	12	T	Adventure-RPG
Tales of Xilia	12	T	RPG
Tales of Xilia 2	16	T	RPG
Tanki Online	3	E	Casual
Taptiles	3	E	Casual
Team Fortress	16	M	RPG
Team Fortress 2	16	M	RPG
Teeworlds	7	E 10+	Casual
Tekken 5	12	T	Fighting
TERA: Fate of Arun	12	M	RPG
Terraria	12	T	Adventure
Tetris	3	E	Puzzle
The Binding of Isaac: Rebirth	16	M	Action-RPG
The Crew	12	T	Racing
Darkest Dungeon	16	T	RPG
The Elder Scrolls III : Morrowind	18	M	RPG
The Elder Scrolls Online	18	M	RPG
The Elder Scroll IV Oblivium	16	M	RPG
The Elder Scrolls V: Skyrim	18	M	RPG
The Evil Within	18	M	Survival-Horror
The Last of Us	18	M	Action
The Legend of Zelda : Majora's Mask 3D	12	E 10+	Adventure
The Legend of Zelda: A Link to the Past	7	E	Adventure
The Legend of Zelda: Ocarina of Time	12	E 10+	Adventure
The Legend of Zelda: Skyward Sword	12	E 10+	Adventure
The Legend of Zelda: Twilight Princess HD	12	T	Adventure
The Legend of Zelda: The Wind Waker	7	E	Adventure
The secret society	3	E	Adventure
The Secret World	16	M	RPG
the smurfs	3	E	Casual
The Walking Dead a telltale games series	18	M	Adventure
The Witcher	18	M	RPG
The Witcher 3: Wild Hunt	18	M	RPG
The Witcher 2: Assassins of Kings	18	M	RPG
Thief	18	M	FPS
Throne rush	7	E 10+	Strategy
Titanfall	16	M	FPS

Titan Quest	12	T	RPG
Tom Clancy's Ghost Recon Phantoms	16	M	TPS
Tom Clancy's Splinter Cell: Blacklist	18	M	TPS
Tom Clancy's Splinter Cell Conviction	18	M	Action-TPS
Tomba! 2	3	E	Platformer
Tomb Raider	18	M	Action
Toontown	3	E	RPG
Torchlight II	12	T	Acion-RPG
Total War: Attila	16	T	Strategy
Total War: Rome 2	16	T	Strategy
Tout le monde veut prendre sa place	3	/	Puzzle
TowerFall Ascension	7	E 10+	Platformer-Action
Township	3	E	Casual
Transistor	12	T	Action-RPG
Travian	3	E	Strategy
Trials Fusion	12	E 10+	Racing
Trine 2	12	E 10+	Adventure
Trivial Pursuit	3	E	Puzzle
Tropico 5	16	T	Strategy
Two Dots	3	E	Refexion
Ultra Street Fighter IV	12	T	Fighting
Uncharted 2: Among Thieves	16	T	Action-Adventure
Uncharted 3: Drake's Deception	16	T	Action-Adventure
Valkyria Chonicles	16	T	RPG
Village life	/	/	Simulation
Virtua Tennis 4	3	E	Simulation
Wakfu	12	E 10+	RPG
Wasteland 2	18	M	RPG
War Thunder	12	T	Action
Warcraft III: Reign of Chaos	12	T	Strategy
WARFRAME	18	M	TPS
Warhammer 40,000: Dawn of War II Retribution	16	M	Strategy
Warsow	/	/	FPS
Watch Dogs	18	M	TPS
Wii Sport	7	E	Casual
WildStar	12	T	RPG
Wolfenstein	18	M	FPS
Wolfenstein: The New Order	18	M	FPS
World of diving	3	E	Adventure
World of Warcraft: Cataclysm	12	T	RPG
World of Warcraft: Wrath of the Lich King	12	T	RPG
World of Warcraft: Mists of Padaria	12	T	RPG
World of Warcraft: Warlords of dreanor	12	T	RPG
World of Warplanes	7	T	Action

Worms 3D	3	T	Strategy
WWE 2K14	16	T	Simulation
WWE 2K15	16	T	Simulation
XCOM: Enemy Within	18	M	Strategy

Annex 2: Jokes Used in "Effects of Sexualized Video Games on Online Sexual Harassment"

Table 1

All jokes (female sexist jokes in bold)

1	Quel animal a six pattes et marche sur la tête ? Un pou	C'est quoi un pull sans over ? C'est un tricot stérile
2	**Quel est le point commun entre une femme et une chaussette ? Une fois qu'elle est trouée, on la jette**	Comment appelle-t-on un squelette bavard ? Un os-parleur
3	Que dit un aveugle lorsqu'on lui donne du papier de verre ? C'est écrit serré	Comment se fait appeler un vampire snob ? Mon saigneur
4	Quelle est l'odeur d'un pet de clown ? Une drôle d'odeur	**Comment donner plus de liberté à une femme ? En agrandissant la cuisine**
5	Que dit un mur à un autre mur ? On se rencontre au coin ?	Quelle est la différence entre une voiture et un dieu ? Aucune, ils ont une vie d'ange tous les deux
6	**Comment épouser une femme jeune, belle, riche et intelligente ? En se mariant quatre fois**	Dans quel pays ne bronze-t-on pas du nez ? Le Népal.
7	Connaissez-vous la blague de la chaise ? - Non ? C'est dommage elle est pliante !	Quel est le crustacé le plus léger de la mer ? La palourde
8	Combien pèse un hipster ? Un Instagram	**Quelle est la différence entre une femme et une haie ? Pour sauter une haie, pas besoin de lui faire des compliments**
9	Comment s'appelle le journal publié chaque semaine au Sahara ? L'hebdromadaire.	Quelle est la capitale de Tamalou ? C'est : Gebobola
10	**Pourquoi y a-t-il toujours une fenêtre dans la cuisine ? Parce que les femmes ont aussi le droit d'avoir leur point de vue**	Pourquoi est-ce que les requins nagent dans l'eau salée ? Parce que le poivre les ferait éternuer
11	Qu'est-ce qu'une voyante qui lit dans le sucre en poudre ? C'est une extra-glucide.	Savez-vous comment les abeilles communiquent entre elles ? Par E-miel

12	Deux asticots se retrouvent dans une pomme : « Tiens ! Je ne savais pas que vous habitiez le quartier ! »	**Comment appelle-t-on une femme avec deux neurones ? Une femme enceinte**
13	Savez-vous pourquoi les savants ont des trous de mémoire ? Parce qu'ils se creusent la tête	Quand j'ai découvert que mon grille-pain n'était pas waterproof, ça m'a fait un choc
14	**Pourquoi appelle-t-on le syndrome prémenstruel ainsi ? Parce que la « maladie de la vache folle » était déjà prise**	Que préfèrent les abeilles dans le mariage ? La lune de miel
15	Quelle est la nourriture préférée des cannibales ? Les croque-monsieur	Patient : Docteur ! Je ne peux plus sentir mes jambes ! Docteur : C'est normal, nous avons dû amputer vos bras
16	Pourquoi la drogue est interdite en prison ? Parce que ça brule les cellules !	**Pourquoi les femmes ne portent pas de montre ? Parce qu'il y a une horloge sur le four**

Table 2

English translation of all jokes (female sexist jokes in bold)

1	Which animal has six legs and walks on the head ? A lice	What is a pull without ovary? A sterile knitting
2	**What is the similarity between a woman and a sock? Once they are perforated, your trow them away**	What do you call a talkative skeleton? A bone-speaker
3	What did the blind man say about the sheet of sandpaper? What a tiny handwritting	What do you call a snob vampire? My lord
4	How does a clown fart smell? Funny	**How to give more freedom to a woman? By enlarging the kitchen**
5	What did one wall say to the other? I'll meet you at the corner.	What is the difference between a car and a god? None, they both have an angel life
6	**How to marry a woman that is young, beautiful, rich, and smart? By getting married four times**	In which country your noze do not tan? Nepal
7	Do you know the joke about the chair? - No? Too bad, that is a folding one!	What is the lightest shellfish in the sea? The clam

8	How much does a hipster weigh? An instagram	**What is the difference between a woman and a hedge? To jump over a hedge, you do not have to compliment it**
9	How do you call a newpaper published every week in the Sahara? The Weekly-camel	What is the capital of Tamalou? it is: Gebobola
10	**Why is there always a windows in the kitchen ? Because women also heve the right to have their point of view**	Why do sharks swim in salt water? Because pepper would make them sneeze!
11	What is a seer that read the future out of powdered sugar? A carbo-psychic	How do bees communicates? By E-honey
12	Two maggots meet in an appel: « I didn't know you lived in the neighbourhood!"	**What do you call a woman with two brain cells? Pregnant.**
13	Do you know why scholars have memory lapses? Because they bang their head together	When I found out my toaster wasn't waterproof. I was shocked.
14	**Why is it called PMS? Because "Mad Cow Disease" was already taken.**	What do bees prefer in wedding? The honey moon
15	What is the favorite food of cannibals? Open-faced sandwiches	Patient: Doctor ! I cannot feel my legs. Doctor: It's normal, we had to amputate your arms
16	Why is drug banned in prison? Because it burn cells	**Why don't women wear watches? There's a clock on the stove.**

Note. All translations are literal and therefore the pun is lost for most jokes

Table 3

Male sexist jokes

1	Quelle est la définition d'un homme ? Un vibromasseur équipé d'un portefeuille
2	Comment appelle-t-on un homme qui a perdu son intelligence ? Un veuf
3	Pourquoi Dieu a créé l'homme avant la femme ? Parce qu'il faut toujours faire un brouillon
4	Qu'est-ce qui se passe quand un homme ouvre sa braguette ? Son cerveau montre le bout de son nez

5	Quelle est la différence entre le cerveau d'un homme et une olive ? La couleur
6	Quelle est la différence entre un homme et une prison ? Dans une prison, il y a des cellules grises
7	Qu'est-ce qu'un homme et un chien ont en commun ? Ils pensent juste à jouer avec leur queue
8	Quelle est la différence entre une batterie et un homme ? Au moins la batterie à un côté positif

Table 4

English translation of male sexist jokes

1	What's the definition of a man? A dildo with a wallet
2	How do you call a man that as lost his intelligence? A widower
3	Why God created men before women? Because you always need a draft
4	What happens when a man opens his zipper? His brain shows the tip of its nose
5	What's the difference between a man's brain and an olive? The color
6	What is the difference between a man and a prison? In prison there are grey cells
7	What's does men and dogs have in common? They only think about playing with their tail
8	What is the difference between a battery and a man? At least, the battery has a positive side

Note. All translations are literal and therefore the pun is lost for most jokes

Table 5

Response to sexist jokes

Type de Blague	**Réponse**
	Pour les blagues sexistes, les réponses dépendent du nombre de blagues sexistes envoyées par le participant
1ère blague sexiste	C'est pas drôle du tout :(
2ème blague sexiste	Je n'aime pas du tout cette blague
3ème blague sexiste	Cette blague n'est pas aussi drôle que les autres
4ème blague sexiste	Cette blague est vexante
5ème blague sexiste	Cette blague est dégueulasse

6ème blague sexiste	C'est une des pires blagues que j'aie jamais lues
7ème blague sexiste	Encore une blague vexante ? Peux-tu arrêter avec ces blagues ?
8ème blague sexiste	Sérieusement ? Je ne trouve pas ces blagues drôles du tout, elles sont vexantes !

Table 6

English translation of response to sexist jokes

Joke type	**Response**
	For sexist jokes, response is according to how many times the participant had sent.
1st sexist joke	That's not funny at all :(
2nd sexist joke	I don't like this joke at all
3rd sexist joke	This joke is not as funny as the others
4th sexist joke	That's an offensive joke
5th sexist joke	This joke is disgusting
6th sexist joke	That is one of the worst jokes I have ever read
7th sexist joke	Another offensive joke? Can you stop with those jokes?
8th sexist joke	Seriously? I don't find these jokes funny at all, they're offensive!

Annex 3: Supplementary Materials from "Effects of Sexualized Video Games on Online Sexual Harassment"

Manipulation Check of Humor and Sexist Ratings for Sexist and Nonsexist Jokes

The Sexual Harassment Task (Tang, 2016) used the number of female sexist jokes as a mean of sexual harassment toward females. In this pilot study, we used the same jokes as those used by Tang (2016), except for those jokes that did not translate well into French. We also included some male sexist jokes. Tang (2016) did not use male sexist jokes. In order to ensure the validity of our French jokes, an online pilot study was carried out that asked participants to judge how funny and sexist the jokes were. In the sexual harassment task, jokes are presented in pairs, and the participant had to choose either a sexist joke or a non-sexist joke to send to their partner. The objective of this pilot study was to test whether pairs of jokes were similar in terms of how humorous they were, but different in terms of how sexist they were.

Method

Participants

Participants were 50 students drawn from the same Belgian university. They were aged 18 to 35 years old (M = 26.38, SD = 3.02) and 24% were men.

Materials

Participants rated all the jokes contained in the main study. There were 8 female sexist jokes, 8 male sexist jokes and 24 neutral jokes that were presented in random order. For each joke, we asked the participants how funny, sexist toward females, and sexist toward males the jokes were using a 7-point scale ranging from 1 = *Not at all funny/sexist* to 7 = *Very funny/sexist*. A debriefing followed.

Results and Discussion

Analysis of Variance (ANOVA) was used to analyze ratings within the eight pairs. Recall that one joke within each pair was non-sexist and the other joke was sexist. A male sexist joke was given if the participant's partner was male, and a female sexist joke if the participant's partner was female. Fisher's Least Significant Difference (LSD) test was used to make pairwise comparisons.

The ANOVAs for humorous ratings found that the jokes within a pair did not differ in terms of how humorous they were for any of the eight pairs (see Table 1). Pairwise tests found no significant differences between any pairwise comparisons (see Table 1). Thus, the jokes within each pair did not differ in terms of how humorous they were.

Table 1

Repeated ANOVAs between female sexist jokes, male sexist jokes, and neutral jokes in terms of degree of humor

	Repeated ANOVA	Neutral jokes *M(SD)*	Female jokes *M(SD)*	Male jokes *M(SD)*
Group 1	$F(2, 98)=1.78$, $p=.188$	1.70(0.97)	2.04(1.44)	1.94(1.32)
Group 2	$F(2, 98)=0.23$, $p=.635$	2.52(1.66)	2.62(1.67)	2.66(1.60)
Group 3	$F(2, 98)=0.61$, $p=.438$	2.80(1.49)	2.88(1.57)	2.96(1.48)
Group 4	$F(2, 98)=0.29$, $p=.593$	2.58(1.63)	2.74(1.78)	2.74(1.55)
Group 5	$F(2, 98)=0.10$, $p=.749$	2.30(1.40)	2.44(1.46)	2.38(1.67)
Group 6	$F(2, 98)=0.58$, $p=.449$	2.50(1.42)	2.34(1.42)	2.70(1.56)
Group 7	$F(2, 98)=0.96$, $p=.332$	2.46(1.37)	2.28(1.76)	2.70(1.50)
Group 8	$F(2, 98)=0.50$, $p=.485$	2.32(1.25)	2.22(1.30)	2.48(1.54)

Note. Pairwise tests found no significant differences between any pairwise comparisons.

The ANOVAs for sexist ratings found that the sexist jokes within a pair differed on sexist rations (see Table 2). Pairwise comparisons found that sexist jokes were rated as more sexist than the non-sexist jokes, but that the male and female sexist jokes within each pair did not differ in terms of how sexist they were except for two of them (see Table 2). Thus, the manipulation of sexual content within each pair of jokes was successful. Importantly, only two of the male and female jokes differed in terms of how sexist they were.

Table 2

Repeated ANOVAs between female sexist jokes, male sexist jokes, and neutral jokes in terms of degree sexism

	Repeated ANOVA	Neutral jokes Male sexism *M(SD)*	Neutral jokes Female sexism *M(SD)*	Female jokes Female sexism *M(SD)*	Male jokes Male sexism *M(SD)*
Group 1	$F(3, 147)=490.72$, $p<.001$	$1.00(0.00)_a$	$1.00(0.00)_a$	$5.68(1.71)_b$	$5.48(1.54)_b$
Group 2	$F(3, 147)=392.02$, $p<.001$	$1.00(0.00)_a$	$1.04(0.28)_a$	$5.58(1.73)_b$	$5.28(1.65)_b$
Group 3	$F(3, 147)=162.13$, $p<.001$	$1.00(0.00)_a$	$1.00(0.00)_a$	$4.62(2.01)_b$	$4.24(2.22)_b$
Group 4	$F(3, 147)=269.72$, $p<.001$	$1.00(0.00)_a$	$1.14(0.50)_a$	$5.00(2.13)_b$	$5.16(1.80)_b$
Group 5	$F(3, 147)=253.03$, $p<.001$	$1.00(0.00)_a$	$1.00(0.00)_a$	$5.14(1.82)_b$	$4.96(2.08)_b$
Group 6	$F(3, 147)=246.51$, $p<.001$	$1.00(0.00)_a$	$1.00(0.00)_a$	$5.46(1.82)_b$	$4.80(1.99)_c$
Group 7	$F(3, 147)=231.41$, $p<.001$	$1.02(0.14)_a$	$1.02(0.14)_a$	$4.72(2.01)_b$	$4.86(1.96)_b$
Group 8	$F(3, 147)=276.39$, $p<.001$	$1.00(0.00)_a$	$1.00(0.00)_a$	$5.16(1.73)_b$	$4.68(1.75)_c$

Note. For each variable, means in the same row with different subscripts are significantly different at the .05 level.

Annex 4: Supplementary Materials from "Impact of Sexualized Video Game and Cognitive Load on Rape Myth Acceptance and Dehumanization of the Perpetrator"

Rape Date Story

Un jour, Sophie et Arnaud profitent séparément de boissons alcoolisées avec leurs amis, quand ils reçoivent un SMS. Le SMS les invite à une soirée déguisée « PDG et secrétaires sexy » qui se déroule le soir même. Arnaud se met sur son 31 avec un beau pantalon, une chemise et une cravate. Pendant ce temps, Sophie enfile une jupe droite serrante et un chemisier à boutons qui révèle son soutien-gorge.

Arnaud arrive à la fête le premier et est directement mené dans la pièce qui contient plusieurs casiers de bière. Sophie arrive dans la même pièce un peu plus tard. Après un verre ou deux, ils rejoignent tous les deux le groupe de la pièce d'à côté, pour jouer à des jeux à boire. Pendant qu'ils regardent les autres jouer à ces jeux, ils finissent par se remarquer mutuellement. Ils se trouvent mutuellement très mignons, Arnaud étant habillé en PDG avec une belle chemise et une cravate et Sophie étant habillée en « secrétaire sexy » avec une blouse dont l'encolure révèle un large décolleté et son soutien-gorge. Ils sont immédiatement attirés l'un par l'autre.

Quand c'est au tour d'Arnaud de jouer au « beer pong », il demande à Sophie d'être sa partenaire. Sophie est enchantée qu'il lui ait proposé et le rejoint immédiatement. Pendant qu'ils jouent, Sophie commence à flirter avec Arnaud, ce qui lui plait beaucoup.

Ils passent un moment formidable, gagnent plusieurs parties et réalisent qu'ils forment une bonne équipe. Quand ils finissent par perdre, ils sont remplacés par une autre équipe. Sophie marche vers Arnaud, touche son bras de façon joueuse et le remercie pour le super moment qu'elle passe. Arnaud y voit sa chance, la saisit par la taille pour la tirer à lui, la serre dans ses bras et laisse vagabonder sa main sur ses fesses. Cette situation met Sophie mal à l'aise et Arnaud réalise que Sophie ne semble pas répondre de manière chaleureuse. Pour sortir de la situation, Sophie dit à Arnaud qu'elle va chercher après ses amis, retourne dans la pièce dans laquelle ils étaient entrés la première fois et reprend une bière. Personne n'est dans la pièce quand Sophie y entre. Arnaud la suit et remarque qu'ils sont les seules personnes dans la pièce. Il s'approche d'elle par-derrière pendant qu'elle décapsule sa bière.

Arnaud passe ses bras autour d'elle et commence à déboutonner sa blouse. Surprise, Sophie dépose sa bière et repousse les mains d'Arnaud. Arnaud est amusé, pensant

que Sophie veut se faire désirer. Arnaud l'attrape par la taille, la tire à lui et commence à l'embrasser. Au début, Sophie l'embrasse en retour, pensant que c'est inoffensif, jusqu'à ce qu'Arnaud commence à dézipper sa jupe. Elle lui dit immédiatement de s'arrêter, recule et se dirige vers la porte. Arnaud, excité, se précipite devant elle et ferme la porte à clé en disant : « Quel est le problème ? Tu as peur de t'amuser un peu ? ». Il s'approche de nouveau d'elle et cette fois, Sophie l'embrasse la première. Arnaud retire alors la blouse de Sophie et commence à dégrafer son soutien-gorge. Après avoir retiré le soutien-gorge de Sophie, les mains d'Arnaud commencent à faire descendre sa jupe qui était déjà dézippée. Sophie se tortille et, se sentant inconfortable, murmure doucement à Arnaud de stopper. Arnaud a un sourire en coin, pense qu'elle est excitée, et l'embrasse plus fort, tout en la poussant contre le mur. Pendant qu'il baisse son pantalon, Sophie lui dit non et s'éloigne de quelques pas. Arnaud ne veut pas qu'ils arrêtent de s'amuser, donc il l'attrape par le bras et la repousse de nouveau contre le mur. Sentant que sa tentative d'arrêter la situation a échoué, Sophie se fige et reste silencieuse. N'entendant plus de protestation, Arnaud a un rapport sexuel avec Sophie. Quand Arnaud finit, Sophie remet rapidement ses vêtements et quitte la pièce sans rien dire.

English Translation of the Rape Date Story

One day, Sophie and Arnaud were enjoying a couple of alcoholic beverages separately with their friends when they get a text inviting them to a "CEO and Office Hoes" party. Arnaud decide to wear a nice shirt and tie with his best dress pants and Sophie put on tight pencil skirt with a button down top that is unbuttoned enough to show off her bra and cleavage.

Arnaud arrived at the party first and is led into a room with a keg. Sophie arrives a little later in the same room. After having a drink or two, they both joined a group in another room to play drinking games. While watching the other play, they noticed each other. They found each other really cute, Arnaud being dressed as a CEO in a nice shirt and tie and Sophie as an "Office Hoe" in a low cut shirt revealing her bra and cleavage. They are immediately attracted by each other.

When it is Arnaud's turn to play "beer pong", he asks Sophie to be his partner. Sophie is thrilled at the idea and joined him immediately. While they are playing, Sophie begins to flirt as they play which please Arnaud a lot.

They have a wonderful time winning multiple games in a row and they realize that they make a good team. After they lose, another team takes their place. Sophie walks toward Arnaud, playfully touches his arm and thanks him for the great time she had.

Arnaud see his chance, grabs her by the waist, pulling her in for a hug and let his hands wander to her butt. This situation makes Sophie uncomfortable and Arnaud realized that she doesn't seem to respond warmly. To get out of the situation, Sophie tells Arnaud that she is going to find her friend, goes back in the first room they went in, and gets another drink. No one is in the room when Sophie enters. Arnaud follows her and sees that she is the only person in the room. He arrives behind her while she was filling up her cup.

Arnaud reaches around Sophie and begins to unbutton her top. Sophie quickly puts down her cup and turns around putting his hands away. Arnaud is amused, thinking Sophie is playing hard to get. Arnaud grabs her around the waist, pulling her in, and begins to kiss her. At first, Sophie kisses him back, thinking it is harmless, until he begins to unzip her skirt. Sophie tells him to stop while pushing him away and heading towards the door. Arnaud, turned on, quickly jumps in front of her and locks the door saying, "What's the matter, are you afraid of a little fun?" Arnaud approaches her again and this time, Sophie kisses him first. Arnaud then pulls off her top and begins to unlock her bra. After taking Sophie's bra off, Arnaud's hands starts to push off her already unzipped skirt. Sophie squirms and, feeling uncomfortable, softly whispers stop. Arnaud smirks, thinking she is turned on and kisses her harder, pushing her against the wall. As he pulls down his pants Sophie says no and takes a few steps away. Arnaud does not want the fun to end so he grabs her arm and pushes her back against the wall. Feeling like her attempts to stop this situation failed, she freezes up and stays quiet. No longer hearing any protests, Arnaud has sexual intercourse with Sophie. When Arnaud finishes, Sophie quickly puts on her clothes and leaves the room without saying anything.