RESEARCH ARTICLE

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 (e.g., magazines, television programs, films, and video games). Theoretically, media depictions of females as sex objects could lead to negative attitudes and even aggressive behavior toward them in the real world. Using the General Aggression Model (Anderson & Bushman, 2002) as a theoretical framework, this meta-analytic review synthesizes the literature on the effects of sexualized media (both violent and nonviolent) on aggression-related thoughts, attitudes, and behaviors. Our sample includes 166 independent studies involving 124,236 participants, which yielded 321 independent effects. Overall, the effects were "small" to "moderate" in size ($r = .16$ [.14–.18]). Significant correlations were found in experimental, cross-sectional, and longitudinal studies, indicating a triangulation of evidence. Effects were stronger for violent sexualized media ($r = .25$ [.19–.31]) than for nonviolent sexualized media ($r = .15$ [.13–.17]), although the effects of nonviolent sexualized media were still significant and nontrivial in size. Moreover, the effects of violent sexualized media on aggression were greater than the effects of violent non-sexualized media on aggression obtained in previous meta-analyses. Effects were similar for male and female participants, for college students and non-students, and for participants of all ages. The effects were also stable over time. Sensitivity analyses found that effects were not unduly influenced by publication bias and/or outliers. In summary, exposure to sexualized media content, especially in combination with violence, has negative effects on women, particularly on what people think about them and how aggressively they treat them.

KEYWORDS
aggression, meta-analysis, pornography, sexualized media, violence

1 | INTRODUCTION

A recent report from the World Health Organization (WHO) found that one in three women globally are victims of physical or sexual violence (WHO, 2021). It starts early too; one in four young women (aged 15–24 years) are violence victims. Dr. Tedros Adhanom Ghebreyesus, WHO Director-General, said: "Violence against women is endemic in every country and culture, causing harm to millions of women and their families, and has been exacerbated by the COVID-19 pandemic." Violence against women is a serious global health issue, and no single factor is responsible for it. But one possible risk factor for aggression and violence against women is exposure to sexualized media, especially sexualized media depicting violence against women.

Sex is a common theme in the mass media. What impact, if any, does exposure to sexualized media have on viewers? For decades, researchers have attempted to answer this question using studies that have examined many different kinds of media, including printed media (e.g., Oddone-Paolucci et al., 2000; Wright et al., 2016), television, film, video (e.g., Paik & Comstock, 1994), and video games (Burnay et al., 2019; Dill et al., 2008; Driesmans et al., 2015; Fox & Potocki, 2016; Yao et al., 2010). The present meta-analytic review synthesizes this literature to assess whether violent and/or nonviolent sexualized media is linked to aggression-related thoughts, feelings, attitudes, and behaviors. Sexualization occurs when "a person is held to a standard that equates physical attractiveness (narrowly defined) with being sexy" (Collins et al., 2010, p. 1). Sexualized media portray characters as sex objects. The depictions range from advertisements picturing scantily clad women to hardcore pornography picturing women in a degrading manner. Violent media are those that depict intentional attempts by individuals to inflict extreme physical harm on others, such as rape (Anderson & Bushman, 2001, p. 354). In addition, the present meta-analytic review examines factors that might moderate the effects of violent and/or nonviolent sexualized media on aggression-related variables.

1.1 | Nonviolent and violent sex in the mass media

In 2012, the "pornography industry" was an $8 billion industry in the United States (US) alone (Spencer, 2012). The revenue of this industry has declined since 2012, principally because of the abundance of free pornography on the Internet. Regardless of whether people pay for it, pornography is widely consumed worldwide. In 2017, Pornhub.com, the most popular pornographic website, had an average of 81 million daily visits (Pornhub, 2017). For comparison, the quantity of data transferred by Pornhub every five minutes is equivalent to the entire content of the New York Public Library's 50 million books. In 2017 alone, it represented a total of 3772 petabytes of data, which was enough data to fill the memory of every iPhone used around the world at that time (Pornhub, 2017). Consumers of pornographic media are mostly male (Carroll et al., 2016).

Women are often sexualized in all forms of media. In pornographic movies, for example, women are more likely than men to be treated as sex objects (Brosius et al., 1993; Cowan et al., 1988; Jensen & Dines, 1998). A report from the Women Media Center (WMC) found that about a third of female characters are sexualized (i.e., depicted scantily clad or nude) in television and film (WMC, 2017). Further, 13- to 20-year-old females were just as likely as 21- to 39-year-old females to be sexualized. In 2005, the Kaiser Family Foundation (KFF, 2005) analyzed the sexual content of 959 television programs distributed on the top 10 television channels in the US. Out of the 959 programs, 68% contained discussions about sex and 35% contained sexual behaviors. Furthermore, the presence of sex in the media appears to be increasing over time. For instance, television (TV) programs in 2004 contained significantly more sexual behavior (35%) than TV programs in 1998 (23%).

Often, sex and violence are associated in the media. Content analyses show that violence is a common theme in "adult" books, magazines, movies, and Internet sites (e.g., Barron & Kimmel, 2010; Malamuth & Briere, 1986). The music industry also tends to link sex with violence. For example, one 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 et al., 2008). Sex and violence also often occur together in video games. Content analyses of video games show that female characters are typically portrayed as sexualized and passive whereas male characters are often portrayed as hyper muscular and aggressive (Downs & Smith, 2010; Lynch et al., 2016; Summers & Miller, 2014).

We use meta-analytic review procedures to better understand the effects of exposure to violent and nonviolent sexualized media on aggression. Importantly, we use the General Aggression Model (GAM; Anderson & Bushman, 2002) as a theoretical framework to explain why sexualized media might increase aggression—by increasing aggression-related thoughts, feelings, and attitudes. The GAM is an excellent model for explaining violent media effects (Anderson & Bushman, 2018), which we discuss in the next section.

1.2 | Why do sexualized and violent sexualized media increase aggression?

The GAM (Anderson & Bushman, 2002, 2018), depicted in Figure 1, is a meta-theory that subsumes or incorporates several other aggression theories, including social learning theory, social cognitive theory, script theory, priming theory, cognitive neoassociation theory, excitation transfer theory, and desensitization theory. In the GAM, behavior is largely based on the learning, activation, and application of related knowledge structures, such as scripts stored in memory. In films and plays, scripts guide actors by telling them what to say and do. In memory, scripts serve a similar function. Scripts can be learned by direct experience, by merely imaging a sequence of events, or by observing others, including media characters (Bandura et al., 1963). Once learned, the script helps the person understand similar
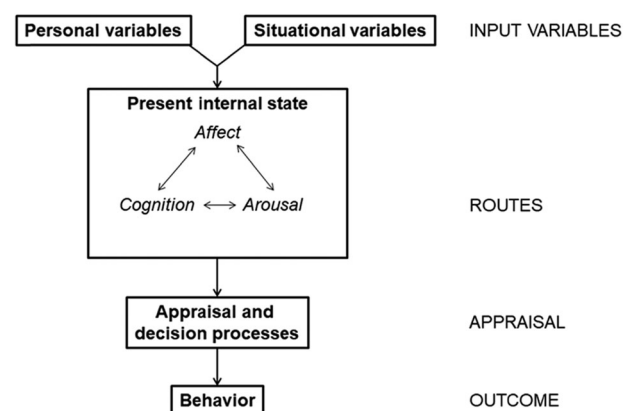

FIGURE 1 The General Aggression Model. *Source*: Anderson and Bushman (2002) and Krahé (2013).

situations, and guides their behavior: The person first selects a script from memory to represent the situation, assumes a role in the script, and behaves accordingly (Fiske & Taylor, 1991; Schank & Abelson, 1977). The media contain many potential scripts, including examples of how men should treat women. Consequently, exposure to sexualized media can lead to the view that women are objects for the sexual gratification of men, especially when the sexualized media portray women in a negative and degrading manner. Modern pornography has been shown to contain demeaning and aggressive actions (e.g., calling the person abusive names, ejaculating in a person's face, spanking, gagging) usually perpetrated by men against women (Bridges et al., 2010; Sun et al., 2008). Some authors have suggested that exposure to this type of media could lead to the objectification of women and the general acceptance of violence against them (Wright & Tokunaga, 2016). As these knowledge structures are rehearsed, they become more complex, differentiated, and sticky (i.e., resistant to change). Also, through repeated exposure to sexualized media, especially violent sexualized media, individuals might become habitually aggressive.

The four major components of the GAM are depicted in Figure 1; they include (1) person and situation inputs, (2) cognitive, affective, and arousal routes through which these input variables have their impact, (3) appraisal processes, and (4) behavioral outcomes. We briefly explain each component and how they relate to this meta-analytic review.

1.2.1 | Input variables

Factors that facilitate aggression can be categorized as features of the situation or as features of the person in the situation. *Personal variables* include all the specific characteristics that a person brings to the situation, such as their gender, personality traits, and genetic predispositions. In this meta-analytic review, we primarily focus on one personal variable—participant gender. We predict stronger effects of sexualized media on male participants than on female participants because sexualized media often depict women as objects for the sexual gratification of men, as noted above. For exploratory purposes, we also consider participant age and whether participants were college or university students. The latter variable was coded because concerns have been raised about the generalization of results in psychological research involving student samples (e.g., Hanel & Vione, 2016). *Situational variables* include important contextual and external features of the situation. In this meta-analytic review, we primarily focus on one situation variable—exposure to violent and nonviolent sexualized media. We also code various characteristics of the media, described below.

1.2.2 | Routes

Personal and situational input variables influence aggressive behavior through their impact on the person's present internal state,

represented by cognition, affect, and arousal. Aggressive *cognition* refers to thoughts, memories, and ideas that are associated with aggression and violence. Aggressive *affect* refers to feelings of anger and hostility (in general or toward females in particular). *Arousal* refers to self-reports or observations of physiological arousal, such as heart rate, blood pressure, and skin conductance. Note that physiological arousal differs from sexual arousal. Thus, there are three possible routes to aggression—through aggressive cognition, aggressive affect, and physiological arousal. This meta-analytic review does not focus on the effects of sexualized media on physiological or sexual arousal. It is already well-established that sexualized media can increase both types of arousal (e.g., Murnen & Stockton, 1997).

It is important to note that these three routes to aggression are not mutually exclusive or even independent, as indicated by the double-headed arrows connecting cognition, affect, and arousal in Figure 1. For example, attitudes can have both cognitive and affective components. An *attitude* is a global evaluation, such as being in favor or opposed to some issue (e.g., Petty & Cacioppo, 1986). These global evaluations are a type of knowledge structure stored in memory or created at the time of judgment (Schwarz, 2007). Thus, aggressive attitudes fit in nicely within the GAM (Blankenship et al., 2019), which is based on knowledge structures related to aggression. 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 can predict aggression and violence against women.

In this meta-analytic review, we examine the effects on five aggressive attitudes: (1) sexism, (2) rape myth acceptance, (3) violence beliefs, (4) objectification, and (5) dehumanization. There are two types of *sexism*: (1) hostile sexism and (2) benevolent sexism. Hostile sexism is an attitude that characterizes women as seeking to control men. Benevolent sexism is an attitude that characterizes women as pure beings who ought to be protected, supported, and adored. This subjectively positive attitude can also cause women to be seen as less competent than men (Glick & Fiske, 1996, 2001). *Rape myth acceptance* can be defined as false beliefs about rape, rape victims, and rapists that create a climate hostile to rape victims (Burt, 1980). *Violent beliefs* are endorsement of violence as an acceptable response to certain situations (Parent & Moradi, 2011). *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). Finally, *dehumanization* is described as a process in which a person is denied humanness (e.g., treated like animals, objects, treated as not completely human; Gervais et al., 2013). In terms of cognitive and affective components, sexism and rape myth acceptance include both affective and cognitive components, violence beliefs and objectification beliefs include mainly cognitive components, and dehumanization includes mainly affective components.

1.2.3 | Appraisal

Modifications of one's internal state will cause the individual to appraise a situation and act according to this appraisal. People with fewer cognitive resources might engage in more impulsive behaviors, including aggressive ones, because they might not be able to reappraise the situation. According to the GAM, after an appraisal, aggressive attitudes can manifest themselves as aggressive behaviors. Unfortunately, this meta-analytic review could not examine the effects of sexualized media on aggressive cognitive appraisals due to the dearth of empirical studies on this topic.

1.2.4 | Outcome

The outcome of interest in this meta-analytic review is *aggressive behavior*, defined as any behavior intended to harm another individual who is motivated to avoid that harm (Baron & Richardson, 1994).

1.3 | Present meta-analytic review

The present meta-analytic review has three main objectives. First, it integrates the literature on sexualized media (both nonviolent and violent) on aggression. Second, it uses the GAM to explain why

exposure to sexualized media, especially violent sexualized media, might increase aggression, namely by increasing aggression-related thoughts, feelings, and attitudes. Third, it examines several potential moderator variables.

The current meta-analytic review is much larger and broader than previous meta-analytic reviews (see Allen, Emmers, et al., 1995; Hald et al., 2010; Oddone-Paolucci et al., 2000; Paik & Comstock, 1994; Wright et al., 2016). For example, the last meta-analysis to date (Wright et al., 2016) focused on the impact of pornographic content on actual acts of sexual aggression and found an association of $r = .28$. The second most recent meta-analysis (Hald et al., 2010) examined the impact of pornographic content on attitudes supporting violence against women by focusing on nonexperimental studies and found an association of $r = .18$. All other relevant meta-analyses are over 20 years old (see Table 1 for a summary of the association found in these meta-analyses). The present meta-analysis is much broader than meta-analyses of pornographic media; we examined sexualized media ranging from scantily clothed media characters to hard-core pornography. We also examined a larger set of dependent variables (i.e., aggression-related thoughts, feelings, attitudes, and behaviors). In addition, it examines the effects of various conceptual and methodological moderator variables.

Based on theory and previous research, we coded six moderators that we predicted would influence the magnitude of effects. First, we predicted that sexualized media would lead to more aggression

TABLE 1 Summary of previous meta-analytic results compared with present results

Authors year	Type of media	Outcome variable	k	r
Wright & Tokunaga (2016)	Pornography	Sexual aggression	22	.28
Hald et al. (2010)	Pornography	Attitudes supporting violence against women	9	.18
Oddone-Paolucci et al. (2000)	Pornography	Sexual aggression	34	.32
		Rape myth	10	.35
Allen et al. (1995)	Pornography	Sexual aggression	33	.13
Paik & Comstock (1994)	Violent and erotic television content	Laboratory aggression	/	.48
	Erotic television content	Laboratory aggression	/	.54
Current meta-analysis (2020)	Sexualized media	Aggression	71	.19
	Sexualized and violent media	Aggression	18	.33
	Sexualized media	Aggressive thoughts	28	.14
	Sexualized and violent media	Aggressive thoughts	5	.27
	Sexualized media	Aggressive attitudes	152	.13
	Sexualized and violent media	Aggressive attitudes	16	.15

Note: "/" means the number of studies was not reported.

against female victims than against male victims. Second, we predicted stronger effects when the sexualized media depicted male perpetrators and female victims. Most perpetrators of sexual violence are males, whereas most victims of sexual violence are females (CDC, 2010; Stop Street Harassment, 2018). Therefore, the concepts of male perpetrator and female victim might be more strongly associated with memory. Third, we predicted stronger effects when the media presents nonconsensual sex because misperception of consent has been shown to be a predictor of aggressive behaviors such as rape (Willan & Pollard, 2003). Fourth, we predicted stronger effects when the victim and the perpetrator depicted in the media are acquaintances than when they are strangers because rape by an acquaintance is less often considered a "real rape." This is particularly important because most victims of sexual aggression know their perpetrators (CDC, 2010; Stop Street Harassment, 2018). Fifth, we predicted stronger effects when victims are depicted in the media as enjoying the violent sexual relationship because it is a common rape myth belief that women like being roughed up (Burt, 1980). Sixth, we predicted stronger effects for active forms of media (e.g., video games) than for passive forms of media (e.g., print, film; Lin, 2013), because active media requires higher levels of engagement.

2 | METHODS

2.1 | Literature search procedures

Formal and informal channels were used to search the literature. Formally, PsycINFO was searched (1806–2021) using the following terms in the title: *erotic** or *obscen** or *sex** or *explicit** or *porn** or *objectif**; and the following terms in the 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 empirical studies and yielded 43,166 research reports. Reference sections of reviews and books on the effects of violent and nonviolent sexualized media also were combed (Allen, D'Alessio, et al., 1995; Allen, Emmers, et al., 1995; Donnerstein & Linz, 1986; Linz et al., 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 were searched as well. Authors who had published research on the topic were contacted via e-mail to acquire relevant unpublished studies. These additional strategies resulted in 27 research reports. Of the 43,193 research reports, 166 were included in the final sample (see the PRISMA diagram in Figure 2; Moher et al., 2009). We report the data for each sample and moderator in the Open Science Framework online repository, along with our coding guide (osf. io/23sgh).

2.2 | Inclusion criteria

Three inclusion criteria were used. First, a study needed to include a manipulation or measure of exposure to sexually explicit media. If a study measured total or overall media exposure instead of sexualized media exposure, it was excluded. Second, the study needed to include a measure of aggression-related thoughts, feelings, attitudes, and/or behaviors. Third, a study needed to include an effect size or provide enough information to calculate the effect size (or estimate it using one of several formulas; Wilson, 2015). If that was not possible, the first author of the study was contacted to acquire the information. If the first author failed to provide us this information, the study was excluded.

2.3 | Outcome variables

We tested whether exposure to sexualized media influences aggressive behaviors, thoughts, feelings, and attitudes.

2.3.1 | Aggressive behaviors

In experimental studies, *aggressive behaviors* were mostly evaluated using actual aggressive behaviors but that targeted an accomplice (e.g., the Computer chat job interview or the computer harassment task; Burnay et al., 2019; Galdi et al., 2017) or simulated aggressive acts that were presented as aversive to the participant such as electric shocks (e.g., Leonard & Taylor, 1983). In nonexperimental studies, participants reported past behaviors of sexual aggression or nonsexual aggression (e.g., Baer et al., 2015; Mancini et al., 2014).

2.3.2 | Aggressive thoughts

In the studies included in this meta-analytic review, *aggressive thoughts* were mostly evaluated using self-report measures such as the Likelihood of Sexual Harassment Scale (LSHS; Pryor, 1987), which assesses an individual's intention to engage in sexual harassment. Some studies used cognitive stimuli other than the self-reported likelihood of engaging in different behaviors, such as cognitive sexism or thought fantasies for aggressive content (Fisher & Grenier, 1994; McKenzie-Mohr & Zanna, 1990).

2.3.3 | Aggressive feelings

Some studies included in this meta-analytic review measured *aggressive feelings* using a self-report mood scale, such as the hostility subscale of the Multiple Affect Adjective Checklist (Zuckerman & Lubin, 1965).
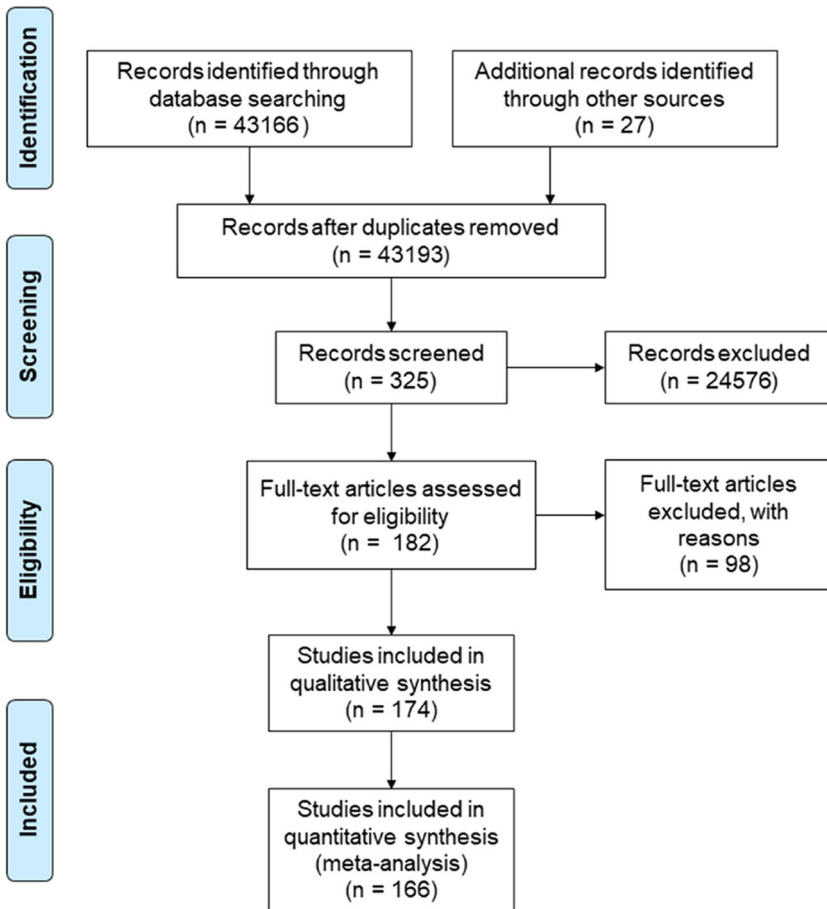
2.3.4 | Aggressive attitudes

We coded five distinct *aggressive attitudes* toward women: (1) *sexism*, (2) *rape myth acceptance*, (3) *violence beliefs*, (4) *objectification*, and (5) *dehumanization*. *Sexism* has usually been evaluated using the Attitude Toward Women Scale (ATWS; Spence & Helmreich, 1972). Sometimes, a distinction is made between hostile and benevolent sexism (Glick & Fiske, 1996). Because most studies combined these two kinds of sexism, only sexism was coded. *Rape myth acceptance* was typically measured using the Rape Myth Acceptance Scale (Burt, 1980). Some studies 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* were typically been measured using self-reported questionnaire such as the Acceptance of Interpersonal Violence Scale (AIVS; Burt, 1980). *Objectification* was usually measured using self-reports measures that include items such as "Sexually active girls are more attractive partners" and "There is nothing wrong with boys being interested in a woman only if she is pretty" (Peter & Valkenburg, 2007). *Dehumanization* has been measured by asking participants if a character (in a story or in pictures) or a partner possesses some typically human qualities or capacities such as various intellectual competencies (e.g., wishing, reasoning, abstract thinking, etc.), culture, value, and tradition (Jansma et al., 2016; Loughnan et al., 2013; Vaes et al., 2011).

2.4 | Victim gender

For every aggression-related outcome, we coded whether the victim was male or female.

2.5 | Media moderator variables

We coded for several aspects of the media that could act as moderating variables.

2.5.1 | Type of media comparison

In all of the studies included in this review, participants were exposed to sexualized media, with or without violence. To determine the magnitude of the effect of sexualized media on aggression-related outcomes and whether violence amplifies these effects, three comparisons were coded: (1) *sexualized and violent media versus violent media*, (2) *sexualized and violent media versus control media* (i.e., neutral

media without sex or violence), and (3) *sexualized media versus control media*.

2.5.2 | Amount of clothing

We coded the *amount of clothing* worn by the characters in the sexualized media (i.e., scantily clothed, nude with genitalia not visible, nude with genitalia visible). This moderator allows us to test if the degree of sexualized content influences the outcome.

2.5.3 | Negative perception of the character

We coded the negative perception of the character in the sexualized media (i.e., presence or absence). Based on the GAM (Anderson & Bushman, 2002, 2018), negative portrayal of the character such as objectification or degradation should cause more learning, activation, and application of aggressive scripts toward women, which might not be as pronounced with sexualization alone.

2.5.4 | Violent media characteristics

We coded six moderator variables specific to violent media. First, we coded whether the perpetrator of aggression in the media was male or female (i.e., gender of the perpetrator). Second, we coded whether the victim of aggression in the media was male or female (i.e., gender of the victim). Third, we coded whether the sexual interaction was consensual (i.e., every media character had given their full consent for the sexual acts), or not (i.e., at least one of the media characters did not give consent). Fourth, we coded whether the media characters were acquaintances or strangers. (i.e., relationship between the perpetrator and victim). Fifth, we coded whether the victim showed *enjoyment of the violence*. Sixth, we coded for the *presence of demeaning action* in the media depiction (e.g., calling a person abusive names, ejaculating in a person's face).

2.5.5 | Media format

We also coded several media formats (i.e., print, film, combination of print and film, video game).

2.6 | Source characteristics

We coded the *publication outlet* (i.e., whether the study was published in a peer-reviewed journal article or not). This provided one test of publication bias.

To test whether the observed effects were stable over time, we coded the *year of publication* (i.e., the year the data were collected or

the year the report was published if the report did not specify when the data were collected).

2.7 | Participant characteristics

To test for potential gender differences, we coded the *gender of the sample* to compare male and female participants. To examine whether age moderated the relations, we coded the average *age of participants*. We also coded whether the population sampled consisted of college/university students or not.

2.8 | Research design

To see if there is a triangulation of evidence across different methods (Bushman & Anderson, 2015), we coded the *research design* of the primary study (i.e., experimental, cross-sectional, or longitudinal design).

2.9 | Intercoder reliability

Two coders independently coded all of the studies. To assess intercoder reliability, the intraclass coefficient was used for continuous characteristics and the kappa coefficient for categorical characteristics (Orwin & Vevea, 2009). The reliability coefficients ranged from .86 to 1.00, with a median of .97. Disagreement among the coders was resolved by discussion until 100% agreement was reached.

2.10 | Meta-analytic procedures

Conceptually, both exposures to sexual media and aggression are continuous variables. Thus, we used the correlation coefficient as the effect size. 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*-transformed correlation was weighted by the inverse of its variance. Thus, effect sizes from larger studies received more weight before they are pooled.

We used random-effects meta-analytic procedures for all analyses using the R package metaphor (Viechtbauer, 2021). Random-effects models assume that effect sizes differ from population means by both subject-level sampling error and study-level variability (Borenstein et al., 2009). We used a shifting unit of analysis approach (Cooper, 2017). Thus, each coefficient was coded as if it was an independent event. If two or more coefficients for a particular relation came from the same sample, they were averaged before conducting the meta-analysis. Finally, distributions with less than five studies (i.e., $k < 5$) were not analyzed.[1]

2.11 | Sensitivity analysis

To assess the robustness of obtained naïve meta-analytic results,[2] we examined whether publication bias, outliers, or both affected our results. Both of these phenomena have been identified as phenomena that can adversely affect meta-analytic results and associated conclusions (Kepes et al., 2013). In fact, publication bias has been referred to as the potentially greatest threat to the validity of meta-analytic results (Rothstein et al., 2005), and outliers have been shown to affect both the meta-analytic results as well as publication bias results (Banks et al., 2018; Terrin et al., 2003). We use several well-established methods that rely on distinct statistical assumptions to better triangulate the location of the true effect size (e.g., Kepes & McDaniel, 2015; Kepes et al., 2017); for more information on our approach, please see the Supporting Information).

We note that all methods are less stable with small sample sizes (i.e., small distributions), partly due to second-order sampling error and low statistical power (Kepes et al., 2012; Schmidt & Hunter, 2015; Sterne et al., 2011). That is why most publication bias assessment methods should only be used with at least 10 effect sizes in the respective distribution (Kepes et al., 2012; Sterne et al., 2011). Therefore, we urge caution when interpreting results from small distributions, especially ones with less than 10 effect sizes. Finally, no individual method is "perfect;" each has its own statistical assumptions and particular strengths and weaknesses (e.g., Kepes & McDaniel, 2015; Kepes et al., 2012; McShane et al., 2016). Therefore, when triangulating the location of the true effect size and determining whether a naïve meta-analytic mean, the meta-analytic mean before any adjustments, is robust to the influence of publication bias and outliers, we calculate the average and the median estimates of the adjusted mean estimates from all methods. We use the median in addition to the average because the median tends to minimize the potential undue influence of an estimate from any individual method on the overall results and conclusions.

3 | RESULTS

3.1 | All outcomes combined

Table 2 presents the naïve results of the main analyses on all outcome variables combined (i.e., *aggressive behaviors*, *aggressive thoughts*, *aggressive feelings*, *aggressive attitudes*) and separately for each individual outcome. When possible, we report the negative perception of the character in the sexualized media (i.e., presence or absence). Columns one through three reports the name of the analyzed distribution as well as the associated number of samples (k) and individual observations (N). Columns four through six display the naïve observed mean ($\bar{r}_o$) and the associated 95% confidence interval (95% CI). The next three columns show three heterogeneity-related statistics, the 90% prediction intervals (90% PIs), I^2, and tau (τ). Table 3 mirrors Table 2 and presents the results of the main analyses on specific attitudes (i.e., objectification, violence beliefs,

dehumanization, rape myth acceptance, and sexism). Both tables present the results from all studies, from sexualized media studies, and from sexualized and violent media studies. Sexualized media studies varied sexualization but held violent content constant. Thus, sexualized media encompasses both the sexualized media versus control media, and the sexualized and violent media versus violent media. Too few studies compared sexualized and violent media versus violent media ($k = 12$) to rigorously examine their effects across the different outcomes. We have the most confidence in the results from sexualized media studies because they are not confounded by violent content. All meta-analytic mean estimates were significant (i.e., all confidence intervals excluded zero). To avoid redundancy with the results reported in the tables, we focus on the main results in the text.

For all samples ($k = 321$), the naïve meta-analytic mean effect size was $r = .16$, with a 95% CI ranging from .14 to .18, which excludes zero. However, the 90% PI (−.11 to .41) was quite wide and included zero, indicating that there is substantial variability between the samples in the distribution. Furthermore, I^2 was 90.79, suggesting that the distribution is highly heterogeneous (Higgins et al., 2003). Therefore, several moderators are likely to be present.

3.2 | Outcome variables

When analyzing the samples involving sexualized as well as sexualized and violent media on aggression-related outcomes separately, we found some noticeable differences. For all outcome variables, the 90% PIs were relatively wide and the I^2 indices were relatively large, indicating heterogeneity.

3.2.1 | Aggressive behaviors

The naïve meta-analytic mean effect size for aggressive behaviors was $r = .22$, 95% CI = .19 to .26, $k = 99$. However, the 90% PI and I^2 suggest that the distribution was highly heterogeneous. Separating the data further shows that the naïve mean effect was noticeably smaller for the *sexualized versus control* distribution ($r = .19$, $k = 71$) than for the *sexualized and violent versus control* distribution ($r = .33$, $k = 18$). The *sexualized and violent versus violent* distribution was too small to be analyzed ($k = 4$). Also, their 95% CIs did not overlap, indicating that the effect of sexualized media that contains violence on *behaviors* is considerably stronger than the effect of sexualized media without violent content.

3.2.2 | Aggressive thoughts

For all studies that measured *aggressive thoughts*, the naïve meta-analytic mean effect size was $r = .16$, 95% CI = .09 to .23, $k = 34$. The results were noticeable smaller for *sexualized versus control* ($r = .14$, $k = 28$) than for *sexualized and violent versus control* ($r = .27$, $k = 5$) distributions, although

TABLE 2 Meta-analytic results for all outcomes and specific outcomes

Distribution	Meta-analysis		$\bar{r}_o$	95% CI	90% PI	I^2	τ
	k	N					
All outcomes	321	124,236	.16	.14 to .18	−.11 to .41	90.79	.16
Sexualized versus Control	253	97,080	.15	.13 to .17	−.09 to .37	88.10	.15
Sexualized and violent versus Control	41	22,722	.25	.19 to .31	−.05 to .52	94.71	.19
Sexualized and violent versus Violent	14	1153	.07	−.03 to .17	−.19 to .31	62.57	.15
Specific outcomes							
Aggressive thoughts	34	6444	.16	.09 to .23	−.16 to .45	86.90	.19
Sexualized versus Control	28	4574	.14	.05 to .22	−.18 to .43	85.14	.19
Sexualized and violent versus Control	5	1630	.27	.13 to .40	.00 to .50	87.04	.15
Sexualized and violent versus Violent	0						
Aggressive attitudes	180	71,460	.13	.11 to .16	−.10 to .34	86.61	.14
Sexualized versus Control	152	65,124	.13	.10 to .16	−.10 to .35	87.60	.14
Sexualized and violent versus Control	16	4400	.15	.06 to .23	−.10 to .38	82.86	.14
Sexualized and violent versus Violent	6	592	.09	−.04 to .22	−.13 to .30	55.26	.12
Aggressive feelings	8	717	.10	−.02 to .23	−.16 to .36	65.35	.15
Sexualized versus Control	2	*Distribution was not analyzed (too small)*					
Sexualized and violent versus Control	2	*Distribution was not analyzed (too small)*					
Sexualized and violent versus Violent	4	*Distribution was not analyzed (too small)*					
Aggressive behaviors	99	45,616	.22	.19 to .26	−.04 to .46	92.22	.16
Sexualized versus Control	71	27,239	.19	.16 to .23	−.03 to .40	86.92	.13
Sexualized and violent versus Control	18	16,469	.33	.25 to .41	.05 to .41	96.14	.18
Sexualized and violent versus Violent	4	*Distribution was not analyzed (too small)*					

Note: k = number of correlation coefficients; $\bar{r}_0$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

their 95% CIs overlapped. The *sexualized and violent versus violent* was not analyzed because no effects were reported.

3.2.3 | Aggressive feelings

For all studies that measured *aggressive feelings*, the naïve meta-analytic mean effect size was r = .10, 95% CI = −.02 to .23, k = 8. It was not possible to separate the data further because the resulting distributions were too small to be analyzed (k < 5 for all media comparisons).

3.2.4 | Aggressive attitudes

The naïve mean effect size for all studies that measured *aggressive attitudes* was r = .13, 95% CI = .11 to .16, k = 180. The results were similar for the *sexualized versus control* (r = .13, k = 152), the *sexualized*

and violent versus control (r = .15, k = 16), and the *sexualized and violent versus violent* (r = .09, k = 6) distributions; their 95% CIs overlapped. We also analyzed each type of aggressive attitude separately.

Sexism

The naïve mean effect size estimate for *sexism* was r = .08, 95% CI = .04 to .14, k = 64. We examined whether the type of media comparison moderated the obtained results. Although their 95% CIs overlapped considerably, the mean effect was noticeably larger for the *sexualized versus control* distribution (r = .11, k = 50) than for the *sexualized and violent versus control* distribution (r = .02, k = 8). The *sexualized and violent versus violent* distribution was too small to be analyzed (k = 2).

Rape myth acceptance

The naïve mean estimate for *rape myth acceptance* was r = .10, 95% CI = .07 to .14, k = 93. Accounting for the type of media compared did not noticeably affect the results. The mean estimates were similar for

TABLE 3 Meta-analytic results for all types of aggressive attitudes

	Meta-analysis						
Distribution	k	N	$\overline{r}_o$	95% CI	90% PI	I^2	τ
Type of aggressive attitude	255	86,601	.13	.10 to .15	−.10 to .34	84.79	.14
Sexism	64	42,552	.08	.04 to .11	−.11 to .25	83.39	.11
Sexualized versus Control	50	38,257	.11	.06 to .15	−.09 to .29	85.29	.12
Sexualized and violent versus Control	8	2926	.02	−.05 to .09	−.11 to .15	57.78	.07
Sexualized and violent versus Violent	2	Distribution was not analyzed (too small)					
Rape myth acceptance	93	21,789	.10	.07 to .14	−.12 to .32	79.92	.13
Sexualized versus Control	71	16,166	.09	.05 to .13	−.13 to .31	79.51	.13
Sexualized and violent versus Control	12	4070	.14	.05 to .22	−.07 to .33	79.13	.12
Sexualized and violent versus Violent	6	592	.10	−.04 to .24	−.15 to .35	64.04	.14
Violent beliefs	41	11,952	.14	.10 to .18	−.05 to .32	76.95	.11
Sexualized versus Control	32	9273	.14	.09 to .19	−.05 to .32	76.73	.12
Sexualized and violent versus Control	5	1697	.20	.04 to .35	−.11 to .47	88.43	.17
Sexualized and violent versus Violent	0						
Objectification	23	8596	.29	.22 to .35	.04 to .50	88.46	.15
Sexualized versus Control	22	8437	.29	.22 to .36	.04 to .51	88.87	.15
Sexualized and violent versus Control	0						
Sexualized and violent versus Violent	0						
Dehumanization	34	1713	.12	.07 to .17	.08 to .16	0.00	.00
Sexualized versus Control	33	1571	.12	.07 to .17	.08 to .16	0.00	.00
Sexualized and violent versus Control	0						
Sexualized and violent versus Violent	1	Distribution was not analyzed (too small)					

Note: k = number of correlation coefficients; $\overline{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

the *sexualized versus control* (r = .09, k = 71), the *sexualized and violent versus control* (r = .14, k = 12), and the *sexualized and violent versus violent* (r = .10, k = 6) distributions; their 95% CIs overlapped considerably.

Violence beliefs

The naïve mean estimate for *violence beliefs* was r = .14, 95% CI = .10 to .18, k = 41. Accounting for the type of media compared did not noticeably affect the results. The mean estimates were smaller for the *sexualized versus control* (r = .14, k = 32) than for *sexualized and violent versus control* (r = .20, k = 5) distributions, although their 95% CIs overlapped considerably.

Objectification

The naïve meta-analytic mean for *objectification* was r = .29, 95% CI = .22 to .35, k = 23. For objectification, no primary study contained data on *sexualized and violent versus control* and the *sexualized and violent versus violent* comparisons.

Dehumanization

The naïve mean estimate for *dehumanization* was r = .12, 95% CI = .07 to .17, k = 34. Further, the 90% PI and I^2 did not suggest the presence of substantial additional moderating effects. For dehumanization, no primary studies analyzed the *sexualized and violent versus control* and the *sexualized and violent versus violent* distributions.

3.3 | Victim gender

When comparing the results for male and female victims, several distributions were too small to analyze (k < 5; see Table 4). Therefore, all outcomes were combined. For *sexualized versus control* distribution, the naive mean effects were larger for female victims (r = .15, k = 161) than for male victims (r = .03, k = 31). Furthermore, their 95% CIs overlap only very slightly, indicating that they were likely to be different from each other.

TABLE 4 Meta-analytic results with victim of the dependent variable as moderator

| Distribution | Meta-analysis | | | | | | |
	k	N	$\overline{r_o}$	95% CI	90% PI	I^2	τ
All data	305	115,365	.16	.14 to .18	−.11 to .41	90.44	.16
Sexualized versus Control	238	89,131	.15	.12 to .17	−.09 to .36	87.13	.14
Male victim	31	1537	.03	−.07 to .12	−.26 to .32	56.38	.18
Female victim	161	66,095	.15	.12 to .18	−.10 to .38	88.51	.15
Sexualized and violent versus Control	40	21,885	.26	.20 to .32	−.05 to .53	94.90	.19
Male victim	2	Distribution was not analyzed (too small)					
Female victim	20	5590	.20	.13 to .28	−.06 to .44	85.55	.15
Sexualized and violent versus Violent	15	1295	.08	.00 to .17	−.14 to .30	57.07	.13
Male victim	3	Distribution was not analyzed (too small)					
Female victim	9	770	.09	.02 to .16	.03 to 15	0.00	.00

Note: k = number of correlation coefficients; $\overline{r_o}$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

3.4 | Media moderator variables

3.4.1 | Type of media comparison

First, we separated the data into types of media comparison: sexualized media compared to neutral media (*sexualized vs. control*), sexualized and violent media compared to neutral media (*sexualized and violent vs. control*), and sexualized and violent media compared to violent media (*sexualized and violent vs. violent*). Our results show that the mean effects were noticeably smaller when the *sexualized versus control* distribution (r = .15, k = 253; see Table 2) is compared to the *sexualized and violent versus control* distribution (r = .25, k = 41). Furthermore, their 95% CIs did not overlap, indicating that they were also different from each other. Specifically, the effect of violent sexualized media on aggressive outcomes is substantially stronger than for sexualized media alone. For *sexualized and violent versus violent* distribution, the naïve mean estimate was r = .07, k = 14. Thus, adding sex to the media does not seem to matter much; it was the violent content that mattered most.

3.4.2 | Amount of clothing

First, we compared the amount of clothing worn by the characters depicted in the media (see Table 5), and we combined all outcomes. The naïve mean effects were relatively similar for the *sexualized versus control* distributions that contained *scantily clothed* content (r = .12, k = 83), *nude and genitalia not visible* content (r = .08, k = 21), and *nude and genitalia visible* content

(r = .17, k = 113), and their 95% CIs overlapped. The naïve mean effects were relatively similar for *sexualized and violent versus control* that contained *nude and genitalia not visible* content (r = .31, k = 7) and the *nude and genitalia visible* content (r = .29, k = 25), and their 95% CIs overlapped. For the *sexualized and violent versus violent* distributions, it was not possible to compare between amounts of clothing (k < 5).

3.4.3 | Negative perception of the character

Our results involving the negative perception of the character as a moderator are in Tables 6 and 7. In general, we found relatively similar effect size estimates for males and females. However, the 90% PIs and I^2 indices were moderate to high, indicating heterogeneity.

The means effects for *aggressive thoughts* were similar for presence (r = .14, k = 16) and absence (r = .12, k = 12) of negative content, and their 95% CIs overlapped (see Table 6). The naïve mean for *aggressive behavior* was only significant for presence (r = .22, 95% CI = .18 to .25, k = 50) and not for absence (r = .08, 95% CI = −.03 to .19, k = 22; see Table 6). It was not possible to analyze the *aggressive feelings* distribution (k < 5). For *aggressive attitudes*, the naïve mean effects were similar for presence (r = .13, k = 102) and absence and (r = .13, k = 51; see Table 10), and their 95% CIs overlapped. We had enough studies to compare presence and absence for all type of aggressive attitudes except objectification (see Table 11). The naïve means for *sexism* were noticeably smaller for presence (r = .08, k = 31) than absence (r = .15, k = 19), although their 95% CIs overlapped. The

Distribution	Meta-analysis						
	k	N	$\bar{r}_o$	95% CI	90% PI	I^2	τ
All data	282	110,392	.16	.14 to .18	−.11to .41	91.05	.17
Sexualized versus Control	220	87,836	.15	.12 to 17	−.09 to .37	88.12	.14
Scantily clothed	83	12,330	.12	.07 to .17	−.22 to .44	85.46	.21
Nude and genitalia not visible	21	1623	.08	−.02 to .18	−.22 to .37	65.43	.18
Nude and genitalia visible	113	73,543	.17	.17 to .19	−.03 to .35	89.24	.12
Sexualized and violent versus Control	36	18,349	.23	.21 to .33	−.04 to .53	94.09	.19
Scantily clothed	3	Distribution was not analyzed (too small)					
Nude and genitalia not visible	7	581	.31	.11 to .48	−.13 to .65	83.06	.25
Nude and genitalia visible	25	17,523	.29	.22 to .36	−.01 to .54	95.50	.18
Sexualized and violent versus Violent	14	1153	.08	−.02 to .17	−.16 to .31	59.87	.14
Scantily clothed	11	905	.04	−.05 to .24	−.15 to .24	47.78	.11
Nude and genitalia not visible	2	Distribution was not analyzed (too small)					
Nude and genitalia visible	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; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

naïve means for *rape myth acceptance* were similar for presence (r = .09, k = 55) and absence (r = .12, k = 16). The naïve mean effects for *violence beliefs* were similar for presence (r = .15, k = 22) and absence (r = .12, k = 10). For *objectification*, the absence distribution was too small (k < 5) to be compared to the presence distribution. For *dehumanization*, the naïve mean was noticeably smaller for presence (r = .07, k = 9) than for absence (r = .15 k = 24), although their 95% CIs overlapped.

3.4.4 | Violent media characteristics

Due to small samples, only two of the moderators of violent media characteristics were analyzed (i.e., *consent* and *enjoyment of the victim*). When comparing the results for consensual and non-consensual data, several distributions were too small to analyze (k < 5). Therefore, all outcomes were combined (see Table 8). In the *sexualized and violent versus control* distribution, the naïve mean effects were relatively similar for consensual (r = .24, k = 6) and nonconsensual (r = .21, k = 13) distributions, and their 95% CIs overlapped.

When comparing the results for victim enjoyment, several distributions were too small to analyze (k < 5). Therefore, all outcomes were combined (see Table 9). In the *sexualized and violent versus control* distribution, the naïve mean effects were relatively similar for

enjoying (r = .33, k = 6) and not enjoying (r = .30, k = 6) distributions, and their 95% CIs overlapped.

3.4.5 | Media format

For media format (i.e., print and/or film, video game; see Table 10), we combined all outcomes. Some distributions were too small to analyze (k < 5). For the *sexualized versus control* distributions, the naïve means were relatively similar for the different media formats, including print (r = .14, k = 82), film (r = .19, k = 69), print and film (r = .13, k = 52), and video games (r = .12, k = 16), and their 95% CIs overlapped. For the *sexualized and violent versus control* distribution, the naïve means were slightly larger for film (r = .31, k = 18) than for print and film (r = .24, k = 14), but their 95% CIs overlapped.

3.5 | Source characteristics

3.5.1 | Publication outlet

When comparing the results for the published and unpublished data, the effects were very similar, suggesting that publication bias did not contaminate the results using this measure (see Table 11). For instance, for *sexualized versus control* media, the naïve mean effects

TABLE 6 Meta-analytic results for all outcomes and specific outcomes in the sexualized versus control distribution with negative perception of the character (presence vs. absence) as moderator

Distribution	Meta-analysis						
	k	N	$\bar{r}_o$	95% CI	90% PI	I^2	τ
All outcomes	256	97,874	.15	.13 to .17	−.09 to .37	88.06	.15
Presence	169	87,157	.16	.13 to .18	−.09 to .39	91.37	.15
Absence	87	10,717	.12	.08 to .15	−.04 to .27	47.82	.09
Specific outcomes							
Aggressive thoughts	28	4574	.14	.05 to .22	−.18 to .43	85.14	.19
Presence	16	3281	.14	.02 to .26	−.25 to .50	91.43	.23
Absence	12	1293	.12	.07 to .18	.08 to .17	0.00	.00
Aggressive attitudes	153	65,869	.13	.10 to .16	−.10 to .35	87.64	.14
Presence	102	58,076	.13	.09 to .16	−.12 to .36	91.17	.15
Absence	51	7793	.13	.09 to .17	.00 to .25	39.46	.07
Aggressive feelings	3	*Distribution was not analyzed (too small)*					
Presence	1	*Distribution was not analyzed (too small)*					
Absence	2	*Distribution was not analyzed (too small)*					
Aggressive behaviors	72	27,263	.19	.16 to .23	−.03 to .40	86.93	.14
Presence	50	25,752	.22	.18 to .25	.01 to .41	88.95	.13
Absence	22	1511	.08	−.03 to .19	−.26 to .40	71.76	.20

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; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

were very similar for published studies (r = .15, k = 177) and un-published studies (r = .12, k = 32), and their 95% CIs overlapped. For *sexualized and violent versus control* media, the naïve mean effects were also very similar for published studies (r = .28, k = 26) and un-published studies (r = .25, k = 5), and their 95% CIs overlapped. For *sexualized and violent versus violent* media, only the published data distribution was sufficiently large to be analyzed.

3.5.2 | Year of publication

There was no significant linear relation between the *year of publica-tion* and the magnitude of the effect, b = .0003 (−.0029 to .0022). Thus, the effects were stable over the years examined (1971–2021).

3.6 | Participant characteristics

3.6.1 | Participant gender

Our results involving the gender of the sample as a moderator are in Tables 12 and 13. Unfortunately, several effect sizes had to be ex-cluded because many primary studies did not report separate results for males and females. In general, we found relatively similar effect

size estimates for males and females. However, the 90% PIs and I^2 indices were high, indicating heterogeneity.

The means effects for *aggressive behaviors* were similar for males (r = .18, k = 52) and females (r = .19, k = 12), and their 95% CIs over-lapped (see Table 12). For *aggressive attitudes*, the naïve mean effects were relatively similar for males (r = .11, k = 84) and females and (r = .10, k = 47; see Table 12), and their 95% CIs overlapped. We had enough studies to compare male samples and female samples for most types of aggressive attitudes (see Table 13). The naïve means for *sexism* were similar for males (r = .09, k = 27) and females (r = .10, k = 15). The naïve means for *rape myth acceptance* were similar for males (r = .09, k = 40) and females (r = .06, k = 21). The naïve mean effects for *violence beliefs* were similar for males (r = .15, k = 23) and females (r = .11, k = 6). For *objectification*, the female samples were too small (k = 4) to be compared to the male samples. For *dehumanization*, the naïve mean was noticeably smaller for males (r = .08, k = 18) than for females (r = .15 k = 14], although their 95% CIs overlapped.

3.6.2 | Participant age

There was no significant linear relation between the *age of partici-pants* and the magnitude of the effect, b = −.0034 (−.0099 to .0030). The average ages ranged from 8.93 to 46.00.

Distribution	Meta-analysis						
	k	N	$\overline{r_o}$	95% CI	90% PI	I^2	τ
Type of aggressive attitude	208	73,702	.13	.11 to .16	−.10 to .35	85.55	.14
Sexism	50	38,257	.11	.06 to .15	−.09 to .29	85.29	.12
Presence	31	36,668	.08	.03 to .14	−.12 to .28	89.76	.12
Absence	19	1589	.15	.08 to .22	−.03 to .33	46.96	.11
Rape myth acceptance	71	16,165	.09	.05 to .13	−.13 to .31	79.51	.13
Presence	55	14,790	.09	.04 to .13	−.14 to .31	82.40	.14
Absence	16	1375	.12	.03 to .20	−.10 to .32	54.34	.12
Violent beliefs	32	9273	.14	.09 to .19	−.05 to .32	76.73	.12
Presence	22	8288	.15	.09 to .21	−.05 to .33	81.08	.12
Absence	10	985	.12	.02 to .22	−.10 to .32	57.60	.12
Objectification	22	8437	.29	.22 to .36	.04 to .51	88.87	.15
Presence	20	7609	.30	.22 to .37	.03 to .52	89.79	.16
Absence	2	Distribution was not analyzed (too small).					
Dehumanization	33	1571	.12	.07 to .17	.08 to .16	0.00	.00
Presence	9	543	.07	−.02 to .15	−.00 to .14	0.00	.00
Absence	24	1028	.15	.09 to .21	.10 to .20	0.00	.00

TABLE 7 Meta-analytic results for all types of aggressive attitudes in the sexualized versus control distribution with negative perception of the character (presence vs. absence) as moderator

Note: k = number of correlation coefficients; $\overline{r_o}$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

3.6.3 | Student samples

When comparing the results for student and nonstudent samples, several distributions were too small to analyze ($k < 5$). Thus, all outcomes were combined (see Table 14). The effects were also heterogeneous. For the *sexualized versus control* distribution, the naive mean effects were relatively similar for college students ($r = .13$, $k = 127$) and non-students ($r = .17$, $k = 8$), and their 95% CIs overlapped. For the *sexualized and violent versus control* distribution, the naïve mean was noticeably smaller for students ($r = .23$, $k = 23$) than for non-students ($r = .35$, $k = 10$), although their 95% CIs overlapped. We could not analyze the *sexualized and violent versus violent* distribution because $k = 1$.

3.7 | Research design

For the different research designs, because of small sample sizes ($k < 5$), all outcomes were combined (see Table 15). In addition, the measures of heterogeneity (90% PI and I^2) were relatively large. For the *sexualized versus control* distribution, the naïve mean effects were relatively similar for cross-sectional designs ($r = .17$, $k = 99$), experimental designs ($r = .14$, $k = 106$), and longitudinal designs ($r = .11$, $k = 34$), and all 95% CIs overlapped. This indicates a triangulation of

evidence across research design. For *sexualized and violent versus control* media, the distribution for longitudinal designs was too small to analyze ($k < 5$). The naïve means were similar for cross-sectional designs ($r = .27$, $k = 19$) and experimental designs ($r = .28$, $k = 14$), and their 95% CIs overlapped.

3.8 | Hypothesis tests

Based on our results, only one hypothesis was partially supported—sexualized content was significantly and positively correlated with aggressive thoughts, attitudes, and behaviors. The correlation was also positive for aggressive feelings, but the 95% CI included zero (probably due to the small number of studies: $k = 8$). The only significant moderator appeared to be victim gender, with the consequence of sexualized media being stronger against female victims than against male victims. Contrary to expectations, results showed similar effects for active forms of media (i.e., video games) and passive forms of media (i.e., print and film). Stability in the results was found for several moderators (i.e., gender sample, amount of clothing). All other hypotheses could not be tested because of limited data. Therefore, it was not possible to draw any conclusion about the gender of victims and perpetrators in the media, relationship between the perpetrator and victim, and the presence of demeaning action.

TABLE 8 Meta-analytic results with consent as moderator

Distribution	Meta-analysis						
	k	N	$\bar{r_o}$	95% CI	90% PI	I^2	τ
Sexualized and violent versus Control	35	19,177	.27	.21 to .34	−.03 to .53	94.33	.18
Consensual	6	1294	.24	.11 to .37	−.01 to .46	77.02	.14
Nonconsensual	13	3761	.21	.10 to .31	−.09 to .47	87.50	.17
Sexualized and violent versus Violent	13	1098	.06	−.03 to .15	−.16 to .27	54.91	.12
Consensual	1	Distribution was not analyzed (too small)					
Nonconsensual	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; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

TABLE 9 Meta-analytic results with enjoyment of the victim as moderator

Distribution	Meta-analysis						
	k	N	$\bar{r_o}$	95% CI	90% PI	I^2	τ
Sexualized and violent versus Control	38	18,742	.28	.21 to .34	−.03 to .53	93.73	.18
Enjoying	6	388	.33	.16 to .49	.01 to .59	65.61	.18
Not enjoying	6	308	.30	−.09 to .61	−.49 to .82	91.15	.47
Sexualized and violent versus Violent	14	1131	.08	−.02 to .17	−.16 to .30	58.29	.14
Enjoying	1	Distribution was not analyzed (too small)					
Not enjoying	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; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

3.9 | Sensitivity analyses

Tables SM1–SM14 present the results of our sensitivity analysis for all distributions (see Supporting Information), which we briefly describe here. For the overall effect (k = 321), our summary results suggested that the distributions are relatively free of publication bias, especially after the removal of outliers. Therefore, the naïve mean of .16 seems relatively robust to the influence of outliers and publication bias across all estimates (see Table SM1). For studies using *sexualized versus control* media (k = 253) and the studies examining *sexualized and violent versus control* media (k = 41), the situation is similar. By contrast, studies using *sexualized and violent versus violent* media (k = 14) appear to be overestimated. Instead of around .07, the true underlying mean may be around .05.

The more mixed results came from the sexualized media distributions. the most robust naïve meta-analytic mean estimates came from sexualized media studies with male samples that measured *aggressive behaviors* and *aggressive thoughts*. In sexualized studies in which the characters were presented negatively (*negative perception of the character*), the following distributions were robust: *aggressive attitudes*, *aggressive behaviors*, *violence beliefs*, *objectification*, and *dehumanization*. Similarly, when the characters were not presented negatively, the following distributions were robust: *aggressive attitude*, *rape myth acceptance*, and *dehumanization*. The film distribution (*media format*) was also robust. Other distributions were robust overall, such as the nude and genitalia visible (*amount of clothing*), video game (*media format*), nonstudent (*population sampled*), the cross-sectional (*research design*), and published (*publication outlet*). However, the robustness of these distributions should be interpreted with caution because results from the sensitivity analyses gave contradictory results. All naïve means from the other distributions seemed to be either over- or underestimated because of outliers, publication bias, or both.

Distribution	Meta-analysis						
	k	N	$\bar{r}_o$	95% CI	90% PI	I^2	τ
All data	276	112,820	.17	.14 to .19	−.10 to .41	91.13	.16
Sexualized versus Control	219	90,551	.15	.13 to .18	−.08 to .37	88.21	.14
Print	82	12,317	.14	.10 to .19	−.13 to .40	79.44	.17
Film	69	50,648	.19	.15 to .23	−.06 to .42	92.70	.15
Print and film	52	26,394	.13	.09 to .16	−.06 to .31	86.09	.11
Video game	16	1192	.12	.00 to .24	−.22 to .44	74.45	.20
Sexualized and violent versus Control	32	18,127	.28	.21 to .34	−.03 to .53	94.47	.18
Print	0						
Film	18	11,376	.31	.25 to .37	.15 to .47	83.43	.10
Print and film	14	6751	.24	.11 to .36	−.18 to .56	96.66	.25
Video game	0						
Sexualized and violent versus Violent	13	1089	.06	−.04 to .16	−.17 to .29	58.71	.13
Print	0						
Film	3						
Print and film	0						
Video game	10	833	.08	.00 to .15	−.01 to .16	8.73	.04

TABLE 10 Meta-analytic results with media format as moderator

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; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

Distribution	Meta-analysis						
	k	N	$\bar{r}_o$	95% CI	90% PI	I^2	τ
All data	268	109,915	.16	.14 to .19	−.11 to .41	91.32	.17
Sexualized versus Control	210	87,168	.15	.13 to .17	−.09 to .37	88.42	.14
Published data	177	78,276	.15	.13 to .18	−.07 to .36	87.83	.14
Unpublished data	32	8416	.12	.03 to .20	−.24 to .45	91.14	.22
Sexualized and violent versus Control	33	18,604	.27	.21 to .34	−.03 to .53	94.39	.18
Published data	26	16,604	.28	.20 to .35	−.03 to .54	95.24	.19
Unpublished data	5	1046	.25	.10 to .38	−.03 to .49	82.81	.15
Sexualized and violent versus Violent	13	1089	.06	−.04 to .16	−.17 to .29	58.71	.13
Published data	11	953	.06	−.05 to .17	−.20 to .32	65.00	.15
Unpublished data	2	*Distribution was not analyzed (too small)*					

TABLE 11 Meta-analytic results with publication outlet as moderator

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; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

TABLE 12 Meta-analytic results for all outcomes and specific outcomes with gender of the sample as moderator

Distribution	Meta-analysis						
	k	N	$\bar{r}_o$	95% CI	90% PI	I^2	τ
All outcomes	321	124,236	.16	.14 to .18	−.11 to .41	90.79	.16
Sexualized versus Control	253	97,080	.15	.13 to .17	−.09 to .37	88.10	.15
Male samples	161	42,442	.14	.11 to .17	−.11 to .37	85.24	.15
Female samples	64	11,742	.11	.06 to .17	−.18 to .39	84.02	.18
Sexualized and violent versus Control	41	22,722	.25	.19 to .31	−.05 to .52	94.71	.19
Male samples	30	11,485	.15	.17 to .32	−.08 to .53	92.83	.20
Female samples	5	5538	.28	.11 to .44	−.06 to .57	94.80	.19
Sexualized and violent versus Violent	14	1153	.07	−.03 to .17	−.19 to .31	62.57	.15
Male samples	7	463	−.02	−.17 to .14	−.31 to .28	63.64	.17
Female samples	4	*Distribution was not analyzed (too small)*					
Specific outcomes							
Aggressive thoughts	34	6444	.16	.09 to .23	−.16 to .45	86.90	.19
Sexualized versus Control	28	4574	.14	.05 to .22	−.18 to .43	85.14	.19
Male samples	23	4147	.15	.05 to .23	−.18 to .45	86.80	.20
Female samples	5	427	.09	−.10 to .27	−23 to .39	68.95	.17
Sexualized and violent versus Control	5	1630	.27	.13 to .40	.00 to .50	87.04	.15
Male samples	4	*Distribution was not analyzed (too small)*					
Female samples	0						
Sexualized and violent versus Violent	0						
Male samples	0						
Female samples	0						
Aggressive attitudes	180	71,460	.13	.11 to .16	−.10 to .34	86.61	.14
Sexualized versus Control	152	65,124	.13	.10 to .16	−.10 to .35	87.60	.14
Male samples	84	21,299	.11	.08 to .15	−.13 to .34	83.40	.15
Female samples	47	7758	.10	.04 to .15	−.17 to .35	78.20	.16
Sexualized and violent versus Control	16	4400	.15	.06 to .23	−.10 to .38	82.86	.14
Male samples	13	2605	.16	.05 to .26	−.14 to .43	83.91	.17
Female samples	2	*Distribution was not analyzed (too small)*					
Sexualized and violent versus Violent	6	592	.09	−.04 to .22	−.13 to .30	55.26	.12
Male samples	3	*Distribution was not analyzed (too small)*					
Female samples	1	*Distribution was not analyzed (too small)*					
Aggressive feelings	8	717	.10	−.02 to .23	−.16 to .36	65.35	.15
Sexualized versus Control	2	*Distribution was not analyzed (too small)*					
Male samples	2	*Distribution was not analyzed (too small)*					
Female samples	0						

TABLE 12 (Continued)

Distribution	Meta-analysis						
	k	*N*	$\overline{r}_o$	95% CI	90% PI	I^2	τ
Sexualized and violent versus Control	2	*Distribution was not analyzed (too small)*					
Male samples	1	*Distribution was not analyzed (too small)*					
Female samples	0						
Sexualized and violent versus Violent	4	*Distribution was not analyzed (too small)*					
Male samples	2	*Distribution was not analyzed (too small)*					
Female samples	1	*Distribution was not analyzed (too small)*					
Aggressive behaviors	99	45,616	.22	.19 to .26	−.04 to .46	92.22	.16
Sexualized versus Control	71	27,239	.19	.16 to .23	−.03 to .40	86.92	.13
Male samples	52	16,852	.18	.13 to .22	−.05 to .39	85.09	.14
Female samples	12	3557	.19	.09 to .29	−.07 to .43	85.94	.15
Sexualized and violent versus Control	18	16,469	.33	.25 to .41	.05 to .41	96.14	.18
Male samples	12	7411	.36	.25 to .45	.04 to .60	94.28	.19
Female samples	3	*Distribution was not analyzed (too small)*					
Sexualized and violent versus Violent	4	*Distribution was not analyzed (too small)*					
Male samples	2	*Distribution was not analyzed (too small)*					
Female samples	2	*Distribution was not analyzed (too small)*					

Note: *k* = number of correlation coefficients; $\overline{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

By contrast, the naïve means from the distributions from sexualized and violent media studies seem more robust overall. Indeed, only the naïve means from the following distributions were likely misestimated because of publication bias and/or outliers: film (*media format*) and experimental studies (*research design*). However, among the robust distributions, some results were inconsistent meaning that the likely location of the true means is uncertain for the nude and genitalia not visible (*amount of clothing*) and the published (*publication outlet*) distributions.

4 | DISCUSSION

The three main objectives of this meta-analytic review were: (1) to integrate the literature on sexualized media (both nonviolent and violent) on aggression, (2) to explain why exposure to sexualized media, especially violent sexualized media, might increase aggression, namely by increasing aggression-related thoughts, feelings, and attitudes as predicted by the GAM, and (3) to examine several potential moderator variables.

Aligned with past meta-analytic studies (e.g., Allen, Emmers, et al., 1995; Oddone-Paolucci et al., 2000; Paik & Comstock, 1994; Wright & Tokunaga, 2015), we found that exposure to sexualized media increased aggression. However, our meta-analytic review used the GAM (Anderson & Bushman, 2002, 2018) as a theoretical framework to explain why sexualized media increase aggression, aggressive thoughts, feelings, and attitudes. Our meta-analytic review is broader and more nuanced than past meta-analytic reviews. Furthermore, we conducted comprehensive sensitivity analyses to determine the robustness of the obtained naïve meta-analytic mean estimates and associated results (see our Supporting Information). We used several well-established methods that rely on distinct statistical assumptions to better triangulate the location of the true effect size (e.g., Kepes & McDaniel, 2015; Kepes et al., 2017).

4.1 | Main findings

Overall, our results showed that exposure to sexualized media (compared to neutral media) was positively associated with aggressive behavior (*r* = .19), perhaps because it was also positively

TABLE 13 Meta-analytic results for all sub-attitudes with gender of the sample as moderator

Distribution	Meta-analysis						
	k	N	$\bar{r}_o$	95% CI	90% PI	I^2	τ
Type of aggressive attitude	255	86,601	.13	.10 to .15	−.10 to .34	84.79	.14
Sexism	64	42,552	.08	.04 to .11	−.11 to .25	83.39	.11
Sexualized versus Control	50	38,257	.11	.06 to .15	−.09 to .29	85.29	.12
Male sample	27	6118	.09	.03 to .15	−.12 to .29	74.93	.12
Female sample	15	4399	.10	−.01 to .21	−.21 to .39	86.63	.18
Sexualized and violent versus Control	8	2926	.02	−.05 to .09	−.11 to .15	57.78	.07
Male sample	5	1032	.03	−.08 to .13	−.14 to .19	58.52	.09
Female sample	2	Distribution was not analyzed (too small)					
Sexualized and violent versus Violent	2	Distribution was not analyzed (too small)					
Male sample	1	Distribution was not analyzed (too small)					
Female sample	1	Distribution was not analyzed (too small)					
Rape myth acceptance	93	21,789	.10	.07 to .14	−.12 to .32	79.92	.13
Sexualized versus Control	71	16,166	.09	.05 to .13	−.13 to .31	79.51	.13
Male sample	40	9324	.09	.03 to .15	−.17 to .34	83.58	.16
Female sample	21	2770	.06	−.01 to .13	−.16 to .27	67.20	.13
Sexualized and violent versus Control	12	4070	.14	.05 to .22	−.07 to .33	79.13	.12
Male sample	9	2281	.10	−.01 to .22	−.15 to .35	82.00	.15
Female sample	1	Distribution was not analyzed (too small)					
Sexualized and violent versus Violent	6	592	.10	−.04 to .24	−.15 to .35	64.04	.14
Male sample	2	Distribution was not analyzed (too small)					
Female sample	1	Distribution was not analyzed (too small)					
Violence beliefs	41	11,952	.14	.10 to .18	−.05 to .32	76.95	.11
Sexualized versus Control	32	9273	.14	.09 to .19	−.05 to .32	76.73	.12
Male sample	23	8373	.15	.09 to .21	−.05 to .34	81.11	.12
Female sample	6	588	.11	.00 to .21	−.04 to .26	34.56	.08
Sexualized and violent versus Control	5	1697	.20	.04 to .35	−.11 to .47	88.43	.17
Male sample	5	1697	.20	.04 to .35	−.11 to .47	88.43	.17
Female sample	0						
Sexualized and violent versus Violent	0						
Male sample	0						
Female sample	0						
Objectification	23	8596	.29	.22 to .35	.04 to .50	88.46	.15
Sexualized versus Control	22	8437	.29	.22 to .36	.04 to .51	88.87	.15
Male sample	10	2159	.28	.17 to .37	.03 to .49	79.97	.15
Female sample	4	Distribution was not analyzed (too small)					

(Continues)

TABLE 13 (Continued)

Distribution	Meta-analysis						
	k	N	$\overline{r}_o$	95% CI	90% PI	I^2	τ
Sexualized and violent versus Control	0						
Male sample	0						
Female sample	0						
Sexualized and violent versus Violent	0						
Male sample	0						
Female sample	0						
Dehumanization	34	1713	.12	.07 to .17	.08 to .16	0.00	.00
Sexualized versus Control	33	1571	.12	.07 to .17	.08 to .16	0.00	.00
Male sample	18	765	.08	.01 to .16	.02 to .14	0.00	.00
Female sample	14	746	.15	.07 to .22	.09 to .21	0.00	.00
Sexualized and violent versus Control	0						
Male sample	0						
Female sample	0						
Sexualized and violent versus Violent	1	*Distribution was not analyzed (too small)*					
Male sample	0						
Female sample	0						

Note: k = number of correlation coefficients; $\overline{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

TABLE 14 Meta-analytic results with population sampled as moderator

Distribution	Meta-analysis						
	k	N	$\overline{r}_o$	95% CI	90% PI	I^2	τ
All data	267	109,318	.16	.14 to .19	−.11 to .41	91.32	.17
Sexualized versus Control	209	86,571	.15	.13 to .17	−.09 to .37	88.45	.14
College students	127	20,225	.13	.10 to .16	−.09 to .34	73.53	.14
Other	82	66,347	.17	.13 to .21	−.08 to .40	93.82	.15
Sexualized and violent versus Control	33	18,604	.27	.21 to .34	−.03 to .53	94.39	.18
College students	23	3964	.23	.15 to .30	−.05 to .47	82.07	.17
Other	10	14,640	.35	.25 to .45	.07 to .59	97.55	.17
Sexualized and violent versus Violent	13	1089	.06	−.04 to .16	−.17 to .29	58.71	.13
College students	12	1032	.05	−.05 to .15	−.19 to .27	59.00	.13
Other	1	*Distribution was not analyzed (too small)*					

Note: k = number of correlation coefficients; $\overline{r}_o$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

TABLE 15 Meta-analytic results with research design as moderator

	Meta-analysis						
Distribution	k	N	$\overline{r_o}$	95% CI	90% PI	I^2	τ
All data	300	123,091	.16	.14 to .19	−.10 to .40	90.78	.16
Sexualized versus Control	239	100,342	.15	.13 to .17	−.08 to .36	87.99	.14
Cross-sectional	99	77,729	.17	.14 to .20	−.06 to .38	92.94	.14
Experimental	106	8735	.14	.10 to .19	.18 to .44	75.72	.20
Longitudinal	34	13,879	.11	.06 to .15	−.06 to .27	79.34	.10
Sexualized and violent versus Control	33	18,217	.27	.21 to .34	−.03 to .53	94.32	.18
Cross-sectional	19	17,204	.27	.20 to .35	−.02 to .52	96.24	.18
Experimental	14	1013	.28	.13 to .42	−.18 to .64	83.65	.27
Longitudinal	0						
Sexualized and violent versus Violent	14	1153	.08	−.02 to .17	−.16 to .31	59.87	.14
Cross-sectional	0						
Experimental	14	1153	.08	−.02 to .17	−.16 to .31	59.87	.14
Longitudinal	0						

Note: k = number of correlation coefficients; $\overline{r_o}$ = random-effects weighted mean observed correlation; 95% CI = 95% confidence interval; 90% PI = 90% prediction interval; I^2 = ratio of true heterogeneity to total variation; τ = between-sample standard deviation. Some studies were impossible to categorize due to missing values, in that case, these studies have been excluded from the corresponding sub-distributions.

associated with aggressive thoughts (r = .14) and aggressive attitudes (r = .13). Similarly, exposure to sexualized and violent media (compared to neutral media) was positively associated with aggressive behavior (r = .33), perhaps because it was also positively associated with aggressive thoughts (r = .27) and aggressive attitudes (r = .15). Further, when aggressive attitudes are divided into separate categories (i.e., sexism, objectification, rape myth acceptance, dehumanization, and violence beliefs), each one was positively associated with exposure to sexualized media. These findings are consistent with the GAM. They suggest the cognitive route is especially important for understanding why exposure to sexualized media containing violence is linked to aggression. Moreover, sexualization, no matter the representation of the model, is a sufficient situational variable to cause the activation of aggressive thoughts and attitudes against women. However, aggressive acts seemed only caused by the presence of a negative representation of the model. In other words, although sexualization alone causes the activation learning, activation, and application of aggressive knowledge structures, a negative representation is necessary to lead to aggressive behavior.

Five other main findings from our meta-analytic review are particularly important for science and practice. First, in studies that included a nonsexual comparison group, the impact of sexualized media on aggressive behavior was greater if it was accompanied by the depiction of violence than if it was not. This finding is consistent with previous meta-analyses that tended to report a stronger association between sexualized media consumption and aggressive

behaviors when the sexualized media also contained violence (e.g., Paik & Comstock, 1994). Therefore, the combination of sexualized and violent media content has an additive effect on aggressive behaviors and might suggest an interaction between these two kinds of media content.

Second, we found that a large segment of the population might be affected by sexualized media. Sexualized media appears to have a similar effect on men and women, which contradicts the common belief that only men are likely to behave aggressively after consuming sexualized media. This is consistent with earlier meta-analytic reviews (e.g., Allen, D'Alessio, et al., 1995; Oddone-Paolucci et al., 2000; Wright et al., 2016). Therefore, based on the GAM, we can affirm that women are as susceptible as men to learn scripts about how sexualized women should be treated. In a way, sexualized media are causing women to learn internalized oppression (i.e., "oppressive practices that continue to make the rounds even when members of the oppressor group are not present;" Bearman et al., 2009). Therefore, when these scripts of internalized sexism are activated by sexualized media, women are as likely as men to develop aggressive thoughts, feelings, attitudes, and behaviors toward other women. More studies with female participants are needed to better understand this phenomenon. In this meta-analytic review, only 51 studies included female samples, and 34 of them did not include comparison male samples. Most studies (k = 206, 64%) focused only on male participants for three reasons. First, males tend to be the primary consumers of pornography (Carroll et al., 2016). Indeed, 35% to 65%

of men consume pornography at least once a month dependent on their current relationship status versus only 5%–15% of women. In other words, men consume 6 to 42 times more pornography than women. Second, males are the primary perpetrators of sexual aggression (CDC, 2010; FRA, 2014; Stop Street Harassment, 2018). For example, 85% of women victims of sexual harassment or assaults reported that the perpetrators were men (Stop Street Harassment, 2018). Third, male sexual aggression is the focus of most theoretical models used in this literature, such as the confluence model of sexual aggression (Malamuth et al., 1995; Malamuth, 2003; Vega & Malamuth, 2007). Thus, primary studies tend to focus solely on male samples, which may have biased the available literature. For example, there were not enough female samples to examine the impact of sexualized media on aggressive affect and objectification. Further, the naïve mean estimates from distributions of female samples tended to not be robust to publication bias, with the exception of the aggressive behavior outcome. Future studies should include both male and female participants when evaluating the impact of sexualized media on aggression. In addition, our results indicated that sexualized media affects influences people of all ages. However, the studies we examined only included average ages in the range from 8.93 to 46. In addition to the generalizability across participant gender and age, our results suggested that sexualized media influenced both students and non-students. Because research in psychology is often conducted using college student participants, concerns have been raised about the generalization of results (Hanel & Vione, 2016). Our results show that these concerns do not apply to the effects of sexualized media content on aggressive outcomes. In other words, it should be possible to generalize the results obtained from college students to the general population. However, most of the reported studies were conducted in Western, Educated, Industrialized, Rich, and Democratic (WEIRD; Henrich et al., 2010) societies, which is a constraint on generality.

Third, there was a significant relationship between exposure to sexualized media and aggression in all three types of research designs (i.e., cross-sectional, longitudinal, and experimental). Based on all three research designs, we can triangulate the most likely location of the mean effect. Therefore, it can be concluded that exposure to sexualized media is correlated with serious forms of aggression in cross-sectional studies, has a causal relation with aggression in experimental studies, and can have long-term cumulative effects in longitudinal studies. However, the results from experimental and longitudinal studies were not necessarily robust to outliers and publication bias, and that their mean effect size might have been overestimated. Additional research using experimental and longitudinal designs is needed.

Fourth, consequences of sexualized media are greater when participants aggress against female victims than when they aggress against male victims. Indeed, the results were not significant for male victims. However, only 31 effects concerned male victims, which did not allow us to examine the results for each specific outcome. More primary research is needed with male victims before more definitive conclusions can be drawn.

Fifth, our results are robust across various conditions. Indeed, none of our moderators substantially impacted the results (e.g., amount of clothing, media format, enjoyment of the victim, and consent). In other words, we did not find any protective factors for the impact of sexualized media content on aggression.

4.2 | Magnitude of mean effect sizes

The mean effect sizes found in the present meta-analytic review are "small" to "medium" in size by conventional values (Cohen, 1988). Most of our effects fell between the 25th and 75th percentiles of the empirical distribution of social science effects (Lipsey & Wilson, 1993). According to the Promising Practices Network (2014), terms such as *significant, important, notable, consequential* are typically reserved for effects at least $d = .25$, which corresponds to $r = .12$. Nearly all of our effects exceeded this threshold. The correlations found in the present meta-analytic review were about the same magnitude as correlations found in other meta-analytic reviews of sexualized and sexual media effects (e.g., Allen, D'Alessio, et al., 1995; Oddone-Paolucci et al., 2000; Wright et al., 2016). The effects of violent sexualized media tend to be larger than the effects of violent media alone reported in previous meta-analytic reviews (e.g., Anderson et al., 2010), suggesting again an interaction between sex and violent media content on aggression, In terms of the U_3 value (Cohen, 1988), exposure to sexualized media with violent content increased aggression by 19%, whereas sexualized media without violent content increased aggression by 11%. Moreover, exposure to sexualized media increased aggressive thoughts by 8% and increased aggressive attitudes by 7%.

4.3 | Limitations and future research

One advantage of conducting a meta-analytic review is that it allows one to identify gaps in the literature and guide future research agendas. In the GAM (Anderson & Bushman, 2002), one of the routes to aggression is through aggressive feelings. Unfortunately, the effects of sexually explicit media on aggressive feelings remain difficult to interpret because only $k = 8$ studies were included in this meta-analytic review. Ideally, the minimum number of effect sizes needed to perform a meta-analysis is $k = 10$, especially if one wants to conduct publication bias analyses (Kepes et al., 2012; Sterne et al., 2011). Future research should examine the effects of sexualized media on aggressive feelings to determine if this is one of the routes through which sexualized media increase aggression.

Future studies should also include female participants as well as male participants. In this meta-analytic review, there were 122 male samples and only 51 female samples. Also, when we compared sexualized media to neutral media, there were three female distributions with fewer than 10 effect sizes (i.e., aggressive thoughts, objectification, and violent beliefs). In contrast, all male samples had at least 10 effect sizes. This clearly indicates that more primary studies with

female samples are needed. However, results from this meta-analysis did not reveal different effects between male and female samples, except for aggressive thoughts after the removal of outliers and accounting for publication bias (see Tables 4, 5, SM4, and SM5). Therefore, more studies are needed to increase our confidence in the results for the previously cited distribution, especially those involving women.

Further, the effects of several moderators could not be examined because too few effect sizes were available (e.g., sex of the perpetrator, sex of the victim, relationship between the perpetrator and victim, and presence of demeaning action). For example, only one violent sexualized media study had a female perpetrator, and only two sexualized media studies had a male victim. Similarly, more studies are needed on the impact of sexualized media content on aggression against male victims. Most studies used female victims. Only three studies used male victims.

In addition, almost all studies focused on heterosexual relations between media characters. In several studies, the description of the sexualized content was too vague to classify (e.g., enjoyment of the violence by the victim, presence of demeaning action, and relationship between the perpetrator and victim). Thus, only four studies could be coded for the relationship between the perpetrator and victim, seven studies were coded for the enjoyment of the violence, and nine studies were coded for the presence of demeaning action. To allow for the examination of these and additional moderators in future meta-analytic reviews, primary studies should provide more detailed descriptions of the media characters participants viewed.

An important strength of our meta-analytic review is that we conducted a comprehensive sensitivity analysis to assess the potential presence of publication bias and outliers. When conducting this analysis, we used several well-established methods that rely on distinct statistical assumptions to better triangulate the location of the true effect size (e.g., Kepes & McDaniel, 2015; Kepes et al., 2017). Some distributions were identified as having potentially non-robust results (e.g., aggressive thoughts and several aggressive attitudes towards women).

Most distributions were highly heterogeneous, suggesting the presence of moderator variables that were not accounted for. This means that we either failed to identify the moderator variables that caused the observed between study variance (i.e., heterogeneity) of some effect sizes, or that our distributions should have been broken down further, which is not possible before more studies are conducted. We had to combine several outcomes to analyze some distributions. The high levels of heterogeneity likely contributed to the results from our sensitivity analysis. However, we coded for numerous conceptual and methodological moderating effects presently examined in primary studies. Clearly, more research is needed to carefully examine possible moderators and identify the critical ones, which then allows for a more accurate estimation of the true naïve mean for several analyzed distributions.

Heterogeneity might also be due to the variation in method and stimuli used in most studies. Media in general have a large choice of content and sexualized media are not different (e.g., pornographic websites regroup hundreds of content categories such as hair color of the model, performed sexual activities, nationality, etc.). This large heterogeneity of media is reflected in research. In cross-sectional or longitudinal studies, it is impossible to control for every watched category of pornography. Further, experimental studies are all using their own unique stimuli issued from magazines, movies, or video games. For example, the scantily clad distribution in the present meta-analysis regroups experimental studies with a large range of stimuli models wearing a large range of revealing clothing going from cleavage to underwear. Such variability in the stimuli might have a fairly significant impact on effect sizes.

Relatedly, a majority of the experimental studies included in this meta-analysis failed to use a relevant control group. This is the case for every sexualized and violent versus control distributions included in our results. Relevant control groups are needed to eliminate confounding variables. Future research should be carefully designed to better control for the amount of heterogeneous and confounding influences, which then allows for a more precise estimation of the true effect size.

5 | CONCLUSIONS

Results from this meta-analytic review showed that exposure to sexualized media, and especially violent sexualized media, can increase aggression. Moreover, this meta-analytic review helps explain why exposure to sexualized media increase aggression. Consistent with the GAM (Anderson & Bushman, 2002, 2018), aggressive thoughts and aggressive attitudes were identified as important routes of the link between exposure to sexualized media and aggression. Aggressive attitudes have both cognitive and affective components. Aggressive feelings might also be a route, although more studies are needed to determine that. 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, the combination of sexualized and violent media content appears to have an additive effect when it comes to aggression. This finding has particular importance because sex and violence are often paired together in the mass media.

DATA AVAILABILITY STATEMENT
Once our manuscript is accepted for publication, we will make the full data set available on OSF. osf.io/w2uhk/.

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ENDNOTES
[1] Data are available on the website Open Science Framework.

[2] By "naïve," we mean the meta-analytic results, especially the mean, effect without any "adjustment" for potential biases (Copas & Shi, 2000).

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