

# Pornography and Attitudes Supporting Violence Against Women: Revisiting the Relationship in Nonexperimental Studies

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A meta-analysis was conducted to determine whether nonexperimental studies revealed an association between men's pornography consumption and their attitudes supporting violence against women. The meta-analysis corrected problems with a previously published meta-analysis and added more recent findings. In contrast to the earlier meta-analysis, the current results showed an overall significant positive association between pornography use and attitudes supporting violence against women in nonexperimental studies. In addition, such attitudes were found to correlate significantly higher with the use of sexually violent pornography than with the use of nonviolent pornography, although the latter relationship was also found to be significant. The study resolves what appeared to be a troubling discordance in the literature on pornography and aggressive attitudes by showing that the conclusions from nonexperimental studies in the area are in fact fully consistent with those of their counterpart experimental studies. This finding has important implications for the overall literature on pornography and aggression. *Aggr. Behav.* 35:1–7, 2009. © 2009 Wiley-Liss, Inc.

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## INTRODUCTION

In a meta-analysis conducted by Allen et al. [1995b] the investigators failed to find a significant association between attitudes supporting violence against women and pornography consumption in nonexperimental studies. This result is both at odds with results emerging from experimental studies and the overall literature in the area including other meta-analyses by Allen and associates. Here a consistent significant association between pornography and various dependent measures including both attitudes supporting violence against women and actual aggressive behavior has been found [Allen et al., 1995a,b, 2000].

For many researchers, the incongruity between the results emerging from experimental vs. nonexperimental studies concerning the association between attitudes supporting violence against women and pornography has understandably raised doubts about the ability of generalizing the conclusions emanating from experimental studies to “real world” settings [e.g., Lo and Ran, 2005; Seto et al., 2001]. In addition, if such doubts are well founded, they also constitute a major challenge to models positing that attitudes

supporting violence against women are one of the interacting pathways mediating and moderating behavioral effects of pornography, e.g., The Confluence Model of Sexual Aggression [Malamuth et al., 1995].

However, as elaborated upon below, serious doubts may be raised about the accuracy of the conclusions reached by Allen et al. [1995b] in their meta-analysis of the relationship between attitudes supporting violence against women and pornography in nonexperimental studies. On this basis, we conduct a new and up-to-date meta-analysis that corrects for problems and questionable decisions in the Allen et al. [1995b] meta-analysis. In addition, we examine the potential relationship between attitudes supporting violence against women and content of pornography across included studies as violent forms of pornography have been reported to

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be more clearly associated with risk factors pertaining to sexual aggression than nonviolent forms [e.g. Boeringer, 1994].

### Definitions

The widely accepted conceptualization of “attitudes” usually incorporates three components including affective responses, cognitive evaluations, and behavioral predispositions toward an entity [e.g., Breckler, 1984]. When applying this approach to defining “attitudes supporting violence against women” and deciding which studies should be included within a meta-analysis of this area, we included various scales assessing (a) affective responses to acts such as rape, other types of sexual aggression, and partner violence, (b) evaluative cognitions, and (c) behavioral predispositions or attractions toward such aggressive acts [e.g., Malamuth, 1981, 1989a,b]. Thus, we follow the lead of Allen et al. [1995b] although these investigators used the term “rape myth acceptance” rather than “attitudes supporting violence against women.” We believe that this latter term better describes the conceptual territory encompassed by the various scales included.

The term “pornography” refers to sexually explicit materials intended to create sexual arousal in the consumer. Nonviolent pornography is defined as sexually explicit materials without any overt coercive content, but which may sometimes imply acts of submission and/or coercion by the positioning of the models, use of props or display of unequal power relationships. Violent pornography is defined as sexually explicit materials in which nonconsensual, coercive, and/or violent sexual relations are explicitly portrayed [see also Senn and Radtke, 1990].

### The Basis for Predicting Associations

The basis for predicting associations between exposure to violent pornography and aggressive tendencies, including attitudes supporting violence against women, may be viewed as in keeping with more general models of the impact of violent media on aggressive tendencies [e.g., Anderson and Carnagey, 2004; Huesmann and Kirwil, 2007], although additional mechanisms may also be at play when images of sex and aggression are intermingled [e.g., Anderson and Anderson, 2008; Donnerstein and Hallam, 1978].

The proposed processes responsible for predicting an association between nonviolent pornography and aggressive responses, including attitudes supporting

violence against women, rely on the fact that nonviolent pornography often portrays women as highly sexually promiscuous and frequently as being dominated and “used” by males. These images may prime and reinforce various sexually aggressive schemata and “rape myth” attitudes, e.g., that some women deserve to or enjoy being harassed, maltreated sexually, or raped [Berkel et al., 2004; Lonsway and Fitzgerald, 1995; Milburn et al., 2000]. The proposed associations may not occur for most men, but be particularly likely for men who hold hostile/power schemas associated with women and sexuality and/or adhere to attitudes that dichotomize women into “whores” vs. “madonnas” [see also Bargh et al., 1995; Edelman, 2009; Kingston et al., 2008; McKenzie-Mohr and Zanna, 1990; Vega and Malamuth, 2007; Zurbriggen, 2000].

## METHOD

### Problems in the Allen et al. [1995b] Meta-analysis

First, in our opinion, half of the eight studies included in the meta-analysis of Allen et al. [1995b] should not have been included due to lack of fit in concept definitions, sampling procedures, subject samples, and/or the assessment instruments used. These four studies include: Burt [1980], Mosher [1988], and Padgett et al. [1989, two studies]. For illustration purposes we will discuss only one example here namely Burt [1980]. However, a more detailed description of the reasons why the above studies were excluded may be obtained from the first author. In the study by Burt [1980], there is a clear error in what type of media was classified as “sexually explicit media” or “pornography.” The media assessed by Burt actually consisted of “exposure to media treatments of sexual assault,” defined as “television, motion picture, dramatic, and newspaper treatments of rape or sexual assault” (p 221). Such media typically document the horrors of rape, rather than show sexually explicit images designed to sexually arouse the consumer (i.e. pornography). Importantly, the same theoretical models (e.g., social learning theory) that would predict a positive association between pornography use and attitudes supporting violence against women would in fact predict the opposite, i.e. a negative association, for this type of documentary media. For this reason we believe that Burt [1980] should not have been included in the meta-analysis.

Second, in the Allen et al. [1995b] study, we found a mistake in the statistical analyses concerning the likely presence of a moderating variable.<sup>1</sup> This error was graciously acknowledged by Dr. M. Allen (personal communication, November 25, 2005). Meta-analyses commonly present a statistical test of heterogeneity in an attempt to establish whether all studies are evaluating the same effect [Higgins et al., 2003; Hunter et al., 1982; Leandro, 2005]. A failed test of heterogeneity as given by a significant  $\chi^2$  indicates the likely presence of a moderating variable. A nonsignificant  $\chi^2$  indicates the likely absence of a moderating variable and hence homogeneity across included studies. Allen, Emmers et al. erroneously reported that “after deleting the Check [1985, Experiment 2] and Malamuth and Check [1985, Nonexperimental] studies, the new average correlation was homogeneous and that the sample probably did not contain a moderating variable” (p 18). However, our reanalysis showed that the new average correlation in fact was heterogeneous, indicating the likely presence of a moderating variable ( $\chi^2_{(5)} = 14.23, P = .0142, I^2 = 65\%$  using Cochran’s  $Q$  and Higgin’s  $I^2$ ). This calls for a more cautious or even different interpretation of the results and following conclusions of this particular part of the Allen, Emmers et al. meta-analysis.

### The Present Meta-Analysis

**Procedure.** We used two methods for collecting studies. First, we examined previous meta-analyses and reviews on pornography for relevant studies [in particular Allen et al, 1995a,b; Bauserman, 1996; Fisher and Grenier, 1994; Malamuth et al., 2000; Oddone-Paolucci et al., 2000]. Second, we conducted a thorough literature search of the following databases: PsychInfo, PsycArticles, PubMed, and Sociological Abstracts using erotica\*, porn\*, sexual media\*, rape\*, and violence\* as key words searching the databases from inception to February 2009. This resulted in a large number of references. We then reviewed each reference

<sup>1</sup>Depending on the particular focus of the study, individual differences such as attraction to sexual aggression or attitudes supporting violence against women may be treated as a mediator, a moderator or an outcome variable. Mediators reflect the generative mechanisms or processes through which the identified variable influences the outcome. That is, how an effect came about. In contrast, a moderator is a third variable that affects the direction and/or the strength of a relationship between two variables. In statistical analyses this is revealed as an interaction effect and in meta-analyses as a failed test of heterogeneity.

carefully according to the following four inclusion criteria:

1. The definition of pornography matched or approximated our own. That is, “sexually explicit materials intended to create sexual arousal in the receiver.”
2. The study included a measure of attitudes supporting violence against women.
3. The study included enough statistical information on male participants to estimate the association between pornography consumption and attitudes supporting violence against women.
4. The study used nonoffender samples.

The first three criteria match closely those used by Allen et al. [1995b] in their meta-analysis. However, Allen, Emmers et al. included in some studies the data for both female and male participants. As research has consistently shown gender to be a strong differentiating variable in this area of research [e.g., Bryant, 2009; Hald, 2006; Hald and Malamuth, 2008] we elected not to do so, with one exception. In the Emmers-Sommer and Burns [2005] study ten women (2.4%) was included in the calculation of results. We thought it unlikely that such a small percentage would have much overall impact and decided to include the study. The fourth criterion does not explicitly replicate Allen, Emmers et al., although Allen, Emmers et al. also did not include studies using offender populations. Our rationale for excluding studies using offender samples pertain to the fact that various researchers have raised questions about the veridicality and validity of self-reports of convicted offenders as compared with nonoffender samples [e.g., Hanson and Bussiere, 1998; Hare, 1985].

A total of nine studies and 2,309 participants were included in the final meta-analysis (Table I) [Barak et al., 1999; Demaré et al., 1993]. We acknowledge that the inclusion of only nine studies in the final meta-analysis may call for a more cautious interpretation of results.

**Measures.** The following measures of attitudes supporting violence against women were used in the studies included in the meta-analysis:

*The acceptance of interpersonal violence scale* (AIV—6 items): The AIV assess attitudes condoning the use of force and violence in relationships. The internal reliability of the AIV is .59 as measured by Cronbach’s  $\alpha$  [Burt, 1980].

*The adversarial sexual beliefs scale* (ASB—9 items): The ASB investigates the degree to which participants perceive male and female relations as “fundamentally exploitative” [Burt, 1980]. The

TABLE I. Studies Included in (1) The Meta-Analysis and (2) The Sensitivity Analyses

Study/Author	Year	Attitudes supporting violence against women scales used	N	Correlation <sup>a</sup>
<i>1. Meta-analysis</i>				
Barak, Fisher, Belfry, and Lashambe	1999	LSH, RMA	31	.310
Boeringer	1994	LF, LR	477	.283
Check	1985	AIV, ASB, LF, LR, RMA	434	.111
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.142
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.090
Garcia	1986	ATR	115	.045
Lam and Chan	2007	PSH, SHP	227	.208
Malamuth and Check	1985	RMA	121	.290
Vega and Malamuth	2007	ASB, AIV, HTW, RMA	102	.312
<i>2A. Sensitivity analysis I: Nonviolent pornography</i>				
Boeringer	1994	LF, LR	477	.205
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.084
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.030
Garcia	1986	ATR	115	.012
Malamuth and Check	1985	RMA	121	.290
Vega and Malamuth	2007	ASB, AIV, HTW, RMA	102	.312
<i>2B. Sensitivity analysis II: Violent pornography</i>				
Boeringer	1994	LF, LR	477	.361
Demare, Briere, and Lips	1993	AIV, LF, LR, RMA	383	.171
Emmers-Sommer and Burns	2005	AIV, ASB, RMA	419	.210
Garcia	1986	ATR	115	.070

Note: Attitudes supporting violence against women scales used: AIV = Acceptance of Interpersonal Violence, ASB = Adversarial Sexual Beliefs, ATR = Attitudes Toward Rape, LF = Likelihood of Force, LR = Likelihood of Rape, LSH = Likelihood of Sexual Harassment, PSH = The Perception of Sexual Harassment Scale, RMA = Rape Myth Acceptance, SHP = The Sexual Harassment Proclivities Scale.

<sup>a</sup>If an overall  $r$  was not provided, an overall average  $r$  was calculated on the basis of the  $r$ -values of each relevant scale included as suggested by Lipsey and Wilson [2001].

internal reliability of the ASB is .80 as measured by Cronbach's  $\alpha$  [Burt, 1980].

*The rape myth acceptance scale* (RMA—11 items): The RMA measures the degree to which participants believe in stereotypical rape myths. The internal reliability of the RMA is .88 as measured by Cronbach's alpha [Burt, 1980].

*The attitudes toward rape scale* (ATR—15, 25, or 55 items): The ATR includes eight factors. High scores on these factors reflect various aspects contributing to a general belief in rape myths, e.g., that women cause rape through their appearance and/or behavior [Field, 1978; Garcia, 1986]. The reliability of the ATR ranges between .81 and .93 as measured by Cronbach's  $\alpha$  [Daugherty and Dambrot, 1986].

*The likelihood of rape scale* (LR), *the likelihood of sexual force* (LSF), and *the likelihood of sexual harassment* (LSH) scale: The LR, LSF, and LSH are single item scales used to measure the hypothetical potential of a man to rape or commit similar sexual aggressive acts given the assurance that he would face no punishment [Malamuth, 1981]. Scores on these scales have been shown to have considerable construct and predictive validity and to correlate

highly with a much more elaborate measure of attraction to sexual aggression [e.g., Malamuth, 1989a,b; Malamuth and Dean, 1991].

*The perception of sexual harassment scale* (PSH—9 items): The PSH examines perceptions of sexual harassment [Biber et al., 2002]. The reliability of the PSH is .72 as reported by Lam and Chan [2007] and measured by Cronbach's  $\alpha$ .

*The Sexual Harassment Proclivities Scale* (SHP—10 items): The SHP assess participants' proclivity to engage in sexual harassment [Pryor, 1987]. The reliability of the PSH (5 items) is .83 as reported by Lam and Chan [2007] and measured by Cronbach's  $\alpha$ .

All included measures used Likert scales where higher scores indicate a higher degree of attitudes supporting violence against women.

## RESULTS

Owing to the findings of heterogeneity in the analyses reported below all analyses were conducted using both a fixed effect model and a random effect model and then compared. As the results of all

analyses using either model were very similar, only the result using the fixed effect model is reported here with the result using the random effect model being available from the first author [see also Higgins and Thompson, 2002; Leandro, 2005; Song et al., 2001].

The overall meta-analysis included nine studies and 2,309 participants. The average correlation between pornography consumption and attitudes supporting violence against women using a fixed effect model was significant ( $r = .18$ ,  $P < .001$ ; CI 95% (.14; .22)). However, a failed test of heterogeneity and inconsistency across studies was found indicating the likely presence of a moderating variable ( $\chi^2_{(8)} = 18.21$ ,  $P < .001$ ,  $I^2 = 56\%$ , using Cochran's  $Q$  and Higgin's  $I^2$ ).

Both theory and the experimental research literature suggest that violent pornography is more likely to have association with attitudes supporting violence against women than nonviolent pornography [e.g., Allen et al., 1995b]. Consequently, two sensitivity analyses based on type of pornography were conducted. Only studies providing the necessary differentiation of statistical information were included.

Across six studies and 1,617 participants, the average correlation between nonviolent pornography and attitudes supporting violence against women using a fixed effect model was found to be significant ( $r = .13$ ,  $P < .001$ ). However, a failed test of heterogeneity and inconsistency across studies was found ( $\chi^2_{(5)} = 16.42$ ,  $P = .006$ ,  $I^2 = 70\%$ , using Cochran's  $Q$  and Higgin's  $I^2$ ) indicating the likely presence of a moderating variable.

Across four studies and 1,394 participants the average correlation between violent pornography and attitudes supporting violence against women using a fixed effect model was found to be significant ( $r = .24$ ,  $P < .001$ ). However, a failed test of heterogeneity and inconsistency across studies was found ( $\chi^2_{(3)} = 14.22$ ,  $P = .003$ ,  $I^2 = 79\%$ , using Cochran's  $Q$  and Higgin's  $I^2$ ) indicating the likely presence of a moderating variable.

Using Fisher's  $Z$  transformation to compare the within-group correlations between violent and nonviolent pornography and attitudes supporting violence against women, it was found that the correlation between violent pornography and attitudes supporting violence against women ( $r = .24$ ) was significantly higher ( $P < .001$ ) than the correlation between nonviolent pornography and attitudes supporting violence against women ( $r = .13$ ).

## DISCUSSION

The result of the present meta-analysis shows a significant overall relationship between pornography

consumption and attitudes supporting violence against women in *nonexperimental* studies. This relationship was found to be significantly stronger for violent pornography than for nonviolent pornography, although both types of pornography showed significant positive associations with attitudes supporting violence against women. The finding of heterogeneity in the meta-analysis underlines the importance of targeting moderators in pornography research [see also Kingston et al., 2009].

The results are in contrast to earlier conclusions reported by Allen et al. [1995b] both concerning the existence of an overall significant relationship between pornography consumption and attitudes supporting violence against women in *nonexperimental* studies and the finding of heterogeneity indicative of moderators in this relationship. Further, our reanalysis of the meta-analysis as originally reported by Allen, Emmers et al. showed that even in their originally reported meta-analysis heterogeneity indicative of moderators was found despite their reporting of the contrary.

Two important implications may be drawn from this study. First, the results correct a glaring discrepancy in the research literature by showing that the relationship between men's pornography consumption and their attitudes supporting violence against women in nonexperimental studies are in fact fully consistent with those previously found in experimental studies focusing on the same association.

Second, the results highlight the role of individual differences as strong moderators of the association between pornography and attitudes supporting violence against women. Such moderation has now also been well documented in this research area with other dependent measures [e.g., Bryant, 2009; Kingston et al., 2008, 2009; Malamuth and Huppig, 2005; Vega and Malamuth, 2007]. More specifically, it has been consistently found that an association between pornography consumption and aggression is particularly likely for men who score high on other risk factors for sexual aggression.

Does a consistent significant, but relatively small association between pornography consumption and attitudes supporting violence against women in nonexperimental studies have practical significance? We believe it does. As shown by e.g., Rosenthal [1986] even small significant associations may translate into considerable social and practical significance across larger population samples. In addition, the type of attitudes studied here have been found to consistently predict "real world" sexually aggressive proclivities and behaviors in

both cross-sectional and longitudinal research [e.g., Hall et al., 2006; Malamuth et al., 1995; Meyer, 2000; Voller et al., 2009]. Finally, as has been well documented in the area of sexual aggression research virtually all risk factors have only relatively small associations with the dependent variables of interest. However, it is the confluence or interactive combination of these variables that can have strong predictive utility and thus social and practical significance [e.g., Malamuth, 1986; Malamuth et al., 1995, 2000; Vega and Malamuth, 2007].

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