

Problems with Aggregate Data and the Importance of Individual Differences in the Study of Pornography and Sexual Aggression: Comment on Diamond, Jozifkova, and Weiss (2010)

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The influence of pornography on attitudes and behaviors has been a longstanding question that has provoked considerable debate among researchers (Malamuth, Addison, & Koss, 2000; Marshall, 2000). Evidence associating pornography consumption with aggression would be important, not only for public policy and legislation, but in the assessment and treatment of special populations, such as sexual offenders. In this commentary, we briefly discuss the methodologies in which pornography's putative effects have been examined, with particular note of the aggregate approach employed by Diamond, Jozifkova, and Weiss (2010). We conclude with a brief review of the literature on pornography's role in affecting negative attitudes and behaviors among certain individuals.

Aggregate-Level Analyses

Investigations examining the putative effects of pornography have employed several different study designs. Some researchers have argued for examining the association between the availability of pornography in a given society and fluctuations in the incidence of sexual crimes. Analyzing aggregate-level data is consistent with numerous cross-national studies that

have attempted to identify important societal indicators as predictors of problematic behavior (e.g., LaFree, 1999).

Recently, Diamond et al. examined the incidence of a range of officially reported sexual and non-sexual offences in the Czech Republic over a period of approximately 30 years. Fluctuations in sex crime rates were compared across periods in which various sexually-explicit materials were banned to a time when all pornographic material, including child pornography, was legal and widely available. Results were consistent with many of the earlier population-based studies conducted in many different countries (e.g., Diamond & Uchiyama, 1999; Kutchinsky, 1973, 1991), such that the shift toward legalized pornography was associated with either a decrease (or no substantial and lasting increase) in the incidence of child sexual abuse, hands-off sexual offending (e.g., indecent exposure), and rape or attempted rape. In discussing their findings, Diamond et al. suggested that pornography is a substitute for sexual aggression, stating that “our findings support the displacement function of pornography for potential sex offenders.”

Although every methodology has some advantages and disadvantages, there are several potential problems inherent in using and presenting aggregate data in isolation and then forming conclusions about individuals. Such problems can result from drawing conclusions based on incompatible units of analysis and on utilizing overly simplistic explanatory models (Malamuth & Pitpitan, 2007).

One of the more serious problems with aggregate data used in pornography research results from the inappropriate transfer of aggregate results toward individualistic explanations; in other words, drawing conclusions from the wrong units of analysis. Several authors have described the discordance between ecological correlations, where the statistical object is a group of persons, and individual correlations.

In one of the most cited examples, Robinson (1950) described the type of ecological fallacy that is a serious potential flaw in

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reporting solely aggregate level research and found striking discrepancies between ecological and individual correlations. In an analysis of the 1930 U.S. census, Robinson reported a negative correlation at the aggregate level between illiteracy and immigrant status, suggesting that areas with lots of immigrants were highly literate. At the individual level, the correlation between immigrant status and literacy was positive, indicating that immigrants were less likely to be literate. The former correlation at the aggregate level occurred because of a tendency for immigrants to settle in areas where the native-born population was highly literate (generally, urban areas).

There are several other examples of the discrepancies between aggregate and individual level data. Zimring (2006) has effectively shown how the various explanations for the decline in crime in America ostensibly supported at the aggregate level are not well supported when examined in a more precise and critical manner. Researchers should be cautious about inferring any casual connection when identifying what appears to be an association between changes in the overall crime rate (in either direction) with changes in the overall consumption of pornography.

Another limitation to aggregate data pertains to the fact that antisocial behaviors are “over-determined.” Over-determination occurs when there are two or more sufficient and distinct causes for the same effect. Even if one were to assume that pornography use had some direct effect on sexual crimes in some circumstances, there are clearly many other factors associated with such crimes, some of which may be more direct and powerful. In addition, the type of data presented at the societal level may be of little use to researchers interested in pornography’s putative effect. Researchers utilizing aggregate data positing a causal role for pornography on crime should consider not only simplistic models of the potential casual role of pornography, where total exposure is the only factor and the effects that might occur are “main effects,” but also try to test the confluence of multiple interacting factors.

Individual-Level Analyses

In contrast to population-based studies, other researchers have investigated the link between pornography and aggression at the individual level. Researchers have used both naturalistic designs, where pornography use is correlated with negative attitudes (e.g., attitudes supporting aggression, calloused attitudes, stereotypical views, etc.) and behavioral responses (e.g., sexual harassment, aggression, etc.), often while controlling for other variables, and experimental designs, in which participants are exposed to various forms of sexually explicit material and then assessed as to their physiological arousal, negative attitudes and beliefs, and/or aggressive behavior.

Numerous investigations and meta-analyses have supported the hypothesis that pornography can contribute to negative

outcomes (Allen, Emmers, Gebhardt, & Giery, 1995b; Hald, Malamuth, & Yuen, 2010; Kingston, Fedoroff, Firestone, Curry, & Bradford, 2008; Vega & Malamuth, 2007). These findings have been generally consistent when looking at either embedded sexual content in mainstream media (for a review, see Kingston, Malamuth, Fedoroff, & Marshall, 2009) or sexually explicit material (i.e., pornography).

Several meta-analyses have reported that pornography influences attitudes and beliefs supporting violence against women and acceptance of “rape myths.” This is important given the positive correlation between the expression of hostile attitudes and aggressive behavior (e.g., Kim & Hunter, 1993). Early experimental studies (e.g., Zillman & Bryant, 1984) have shown that prolonged exposure to common non-violent pornography has been found to produce beliefs in sexual promiscuity as well as acceptance of male dominance and female servitude. Recently, Hald et al. (2010) quantitatively reviewed the literature to determine the relation between pornography consumption and anti-social attitudes, as demonstrated in non-experimental studies ($k = 9$, $n = 2,309$). Results indicated a significant and positive correlation between pornography consumption and negative attitudes and beliefs ($r = .18$). These latest findings, along with other meta-analyses (Allen, D’Alessio, & Brezgel, 1995a; Oddone-Paolucci, Genuis, & Violato, 2000), suggest that pornography consumption is associated with negative attitudes and beliefs and that this effect can be generalized across experimental and non-experimental research.

In addition to measuring attitudes and beliefs, experimental and non-experimental designs have investigated pornography’s impact on self-reported and actual aggressive behavior. Allen et al. (1995a) examined the association between pornography and non-sexual aggression across 33 experimentally controlled studies. Overall, results indicated an association between pornography use and aggression, although type of pornography was a moderating variable, such that exposure to more violent pornography produced a significant effect. It is also important to note that the relation between pornography and aggression has been examined using more naturalistic designs in both offender and non-offender populations (Boeringer, 1994; Kingston et al., 2008; Malamuth et al., 2000; for a review, see also Kingston et al., 2009). Results have generally supported a positive correlation between pornography (particularly violent pornography) and aggressive behavior.

The Importance of Individual Differences

The research cited above suggests that there is at least a small and significant effect between pornography consumption and inappropriate attitudes and aggressive behavior, at least under some conditions (e.g., for individuals who have additional risk factors and who consume a significant amount of pornography, particularly violent pornography). Some studies at the individual

level, however, have shown that numerous people view pornography and do not commit acts of violence. In fact, some researchers have reported positive outcomes after viewing pornography, such as increasing satisfaction with sexual interactions (Weinberg, Williams, Kleiner, & Irizarry, 2010) in addition to other self-perceived positive effects (Hald & Malamuth, 2008).

It has, therefore, been suggested by some researchers that the negative effects of pornography are critically dependent on a complex interaction with particular individual and cultural differences (e.g., Malamuth et al., 2000). This is a key feature of several multifactorial models of sexual aggression (Knight & Sims-Knight, 2003; Malamuth, 2003). The confluence model (Malamuth, 2003), for example, has predominantly guided research on individual susceptibility to pornography and was constructed from research demonstrating that sexually aggressive men possess several key characteristics that are present both developmentally and at the time of aggression. The confluence model includes a cumulative-conditional probability explanation for the causes of sexual aggression and, as such, highlights the importance of investigating a particular predictor (e.g., pornography) within the context of other individual differences (e.g., personality characteristics). According to this model, individuals who exhibit certain combinations of risk factors are more likely to seek out pornography and more likely to be affected negatively by such exposure than individuals with little or none of these characteristics.

Most recently, Hald and Malamuth (2011) specifically tested the confluence model's predictions regarding pornography use in Denmark, since that country has been the most visible one in which aggregate findings have been used to suggest that there are no negative effects of pornography exposure. Using a representative sample of men, they found that, as predicted, exposure to "common fare degrading" pornography caused Low Agreeable men to be more accepting of aggression against women but there was no significant effect for men who were relatively high in Agreeableness. This finding highlights the importance of examining the cause and effect association at the level of the individual who views pornography. In general, researchers have shown that individuals exhibiting proclivities toward sexual aggression and antisocial personality traits (e.g., psychopathy) are more likely to seek out sexually explicit material, including deviant/illegal pornography and to be more negatively influenced by such material than are individuals without these characteristics (Kingston et al., 2008, 2009; Lam & Chan, 2007; Malamuth et al., 2000; Shim, Lee, & Paul, 2007).

Conclusions

Several methodologies have been proposed to examine pornography's putative effects on attitudes and behaviors. There is a long history of utilizing the aggregate approach; such studies have often been used to draw conclusions about

individuals. As indicated earlier, Diamond et al. described several aggregate-level studies and hypothesized that pornography may be cathartic or perhaps serves as a substitute for sexual aggression. They further stated that this effect seems to also apply to the production of child pornography (using artificially produced stimuli).

To be fair, the aggregate approach has some benefits and it is not the purpose of this article to criticize the specific methodology used by Diamond et al. Rather, we suggest that drawing conclusions from ecological data and then making broad-based statements about individuals (e.g., sexual offenders) is problematic. Numerous studies (e.g., Kingston et al., 2008) and meta-analyses (Hald et al., 2010) have consistently reported the negative effects of pornography consumption for individuals presenting with certain pre-existing characteristics. The aggregate approach, if reported in isolation, does not do an adequate job of reporting on such differences. Although it is beyond the scope of this commentary, there has been some recent attention toward integrating the aggregate and individual approaches. Subramanian, Jones, Kaddour, and Krieger (2009), for example, have effectively promoted a multi-level perspective examining individual relationships while remaining cognizant of the historical and spatiotemporal context. Such an approach may be an interesting avenue for future research and would avoid both the ecological fallacy and the equally plausible individualistic fallacy.

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