



Theoretically Suggested Divergent Predictions for Pornography Use, Religiosity, and Permissive Sexual Attitudes

Paul J. Wright¹

Received: 21 June 2021 / Revised: 9 August 2021 / Accepted: 12 August 2021 / Published online: 23 November 2021
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2021

Abstract

Pornography and attitude change studies most often adopt a sexual scripting (SS) perspective. The moral incongruence (MI) perspective on pornography has gained prominence in recent years, however, and may lead to differential predictions from the SS approach. Specifically, a detailed reading of MI and SS papers reveals the potential for discrepant predictions about the effect of pornography on sexual permissiveness, one of the most studied outcomes in pornography research. From an SS perspective, pornography use increases sexual permissiveness, but the preexisting traditional sexual scripts of the religious lessen the magnitude of this effect. Alternatively, the MI perspective implies the possibility that religious persons become more opposed to permissive sexuality as a result of their pornography use, as a way to mitigate the cognitive dissonance they feel for engaging in a sexual behavior proscribed by their faith tradition. The present study explored these divergent possibilities using nationally representative U.S. data. Across four meta-samples and four indicators of sexual permissiveness, religious nonviewers of pornography were the least sexually permissive, followed by religious viewers, nonreligious nonviewers, and nonreligious viewers. These results were robust over time and maintained after adjusting for demographics. For theorizing about pornography, religiosity, and sexual permissiveness, these results suggest that an SS approach may be preferable to an MI approach. The importance of continued research using both the SS and MI perspectives is discussed, however, emphasizing that the present study extrapolated a potential prediction from MI rather than a formal postulate put forth by the model's creators.

Keywords Pornography · Sexual permissiveness · Moral incongruence · Sexual scripts · Religiosity

Introduction

Advances in the technologies of media production, distribution, and access have led an increasing number of sexologically oriented social and behavioral scientists to speculate about the potential effects of pornography (Grubbs & Kraus, 2021; Wright, 2020). Following the social psychologists who pioneered the field (Donnerstein & Berkowitz, 1981; Malamuth & Check, 1985; Zillmann & Bryant, 1982), much of this research has been grounded in the concept of sexual scripting (SS) (Grubbs et al., 2019a, 2019b; Tokunaga et al., 2020). Sexual scripts are symbolically imparted guidelines for sexual behavior. They answer the questions “Who does what to whom in what kind of relationship, to what consequence?” (Gagnon & Simon, 2005, p. 206). From a SS

perspective, pornography's popularity and provision of sexual scripts make it an important source of social influence (Ezzell, 2014; Ward et al., 2016).

An emerging paradigm in the study of the impacts of pornography use is the moral incongruence (MI) approach (Grubbs & Perry, 2019; Grubbs et al., 2019a, 2019b). The MI approach attributes the influence of pornography to cognitive dissonance that arises when religious people consume a media form that their moral worldview prohibits.¹ While SS research generally focuses on social learning (e.g., learning of sexually aggressive scripts) and MI research generally focuses on clinical concerns (e.g., perceived addiction to pornography), recent MI hypothesizing has been extended to topical areas traditionally conceptualized around SS principles. For instance, Perry (2018a) and Perry and Whitehead (2019) suggest that MI-induced sexual guilt, not the learning of unrealistic sexual scripts for self and partner (e.g., Wright et al., 2017; Zillmann & Bryant, 1988), may be responsible for associations between pornography use and sexual and relational dissatisfaction.

✉ Paul J. Wright
paulwrig@indiana.edu

¹ The Media School At Indiana University, 601 East Kirkwood Avenue, Bloomington, IN 47405, USA

This research, alongside a close inspection of MI tenets, suggests that the MI and SS approaches can also lead to differential predictions about the nature of pornography use, religiosity, and attitude change. Using nationally representative data gathered from multiple samples of men and women in the USA across several decades, this study explores MI- and SS-derived predictions for the interplay between pornography use, religiosity, and permissive sexual attitudes. The association between pornography and sexual permissiveness is one of the most commonly studied attitude change contexts among social–psychologically oriented pornography scholars (Tokunaga et al., 2019).

Several notes about the present study’s paradigmatic orientation, data, and theorizing are in order, before proceeding. Firstly, this paper adopts an effects perspective for conceptual, organizational, and explanatory purposes. But it must be emphasized that the term “pornography effects” as used herein refers only to a field of study and interpretive orientation toward linkages between pornography use and socio-sexual beliefs, attitudes, and behaviors (for an anthology of the broader field of media effects, see Oliver et al., 2020). My own views on debates about whether there is sufficient evidence to conclude that sexual media (including pornography) affect the attitudes of at least some consumers have been expressed elsewhere (e.g., Wright, 2011, 2020). The sole purpose of the present study is to examine, from an effects perspective, how data on pornography use and permissive sexual attitudes map onto MI- and SS-derived predictions. Secondly, it is readily acknowledged that the cross-sectional data employed in the present study are not sufficient in and of themselves for making causal claims. Finally, while the nature of the interplay between pornography use and religiosity on permissive sexual attitudes put forth by the present study is explicitly identified by the SS approach (e.g., Wright, 2011), the present study’s MI-derived predictions are an extrapolation from MI writings rather than a formal axiom put forth by the originators of the MI perspective (e.g., Grubbs & Perry, 2019).

Sexual Script Approach

The SS perspective is the predominant approach in the pornography effects literature for explaining correlations between the use of pornography and the expression of attitudes consistent with themes for sex depicted in pornography (Wright, 2020). The specific theoretical articulation most often applied to scripting analyses of pornography is Wright’s (2011) sexual script acquisition, activation, application model of sexual media socialization ($_3$ AM) (e.g., Braithwaite et al., 2015; Elliott, 2017; Ezzell, 2014; Foubert & Bridges, 2017; Guizzo & Cadinu, 2020; Huntington et al., 2021; Johnson et al., 2019; Rasmussen & Bierman, 2018; Rothman et al., 2021; Sun et al., 2015; Tomaszewska

& Krahe, 2018; Vandenbosch et al., 2018; Ward et al., 2016). The $_3$ AM is a critical synthesis and integration of a variety of mass communication, information processing, and behavioral theories, as well as conceptual and empirical work not tied to any particular named theory (Wright, 2020).

The model asserts that exposure to sexual media can result in the learning of novel sexual scripts [sexual script acquisition], the priming of already acquired sexual scripts [sexual script activation], and the utilization of sexual scripts to guide judgments about one’s own sexual behavior or evaluations of other people’s sexual behavior [sexual script application]. The model further proposes that scripting effects can be specific or abstract. A specific scripting effect occurs when the observation of a particular behavior affects the viewer’s attitudes about that specific behavior. An abstract scripting effect occurs when the viewer deduces the general principle or belief guiding the modeled behavior and then references this information to guide attitudes about different, but conceptually related, behaviors. In this way, the model predicts that viewing specific sexual behaviors can lead to modified cognitions of not only those behaviors but also of behaviors that were not depicted. In sum, by depicting particular sexual relationships and acts, at varying frequencies, and with varying consequences, pornography can provide consumers with cues as to what is sexually normative, appropriate, and desirable.

A “permissive” approach to sex is one that diverges from traditional sexual values (Lo et al., 1999). While there has been considerable debate about the extent and nature of certain depictions in pornography, such as sexual violence and the objectification of women (Bridges et al., 2010; McKee, 2005), there is consensus that sexual scripts in pornography diverge from traditional sexual values prohibiting behaviors such as extramarital, premarital, teenage, and same-sex sex (Bishop, 2015; Jensen, 2010; Linz & Malamuth, 1993; Perry & Schleifer, 2018; Peter & Valkenburg, 2006; Rasmussen, 2016; Vannier et al., 2014; Wright, 2013; Zillmann, 2000). From a SS perspective, attitude change toward acceptance of sexual permissiveness is a consequence of pornography consumption. That people who consume pornography are more sexually permissive than people who do not consume pornography is one of the most consistent findings in the pornography effects literature (Tokunaga et al., 2019).

While the $_3$ AM concurs that, on the average, pornography consumers will be more sexually permissive than nonconsumers (Wright, 2013; Wright et al., 2013), it predicts that incongruity between consumers’ existing sexual scripts and the sexual scripts they encounter in pornography increases the probability that the latter “will be deemed inappropriate and discarded” (Wright, 2011, p. 356). Consistent with research on religiosity and sexual permissiveness (Ahrold et al., 2011; Murray et al., 2007), the $_3$ AM posits that devout individuals are more likely than nonreligious persons to

possess sexual scripts discordant with pornography's permissive approach to sex. Accordingly, the $_3AM$ suggests that "because most religions emphasize relational and procreational sexual values, high levels of religiosity may discourage the internalization of sexual scripts provided by the mass media" (p. 353). While some sexual scripting effects may occur in regard to pornography and permissiveness among the religious, the degree of influence will be less so than for the nonreligious. In sum, from a $_3AM$ perspective, religious pornography consumers will be more sexually permissive than religious persons who do not consume pornography, but less sexually permissive than nonreligious pornography consumers.

Moral Incongruence Approach

The MI approach to pornography effects has become increasingly prominent in recent years (Grubbs & Perry, 2019; Grubbs et al., 2019a, 2019b). The essence of the MI approach is straightforward—when religious people view pornography (a behavior discouraged by the majority of religious traditions; Boulton, 2008; Hald & Mulya, 2013; Musda, 2013; Sherkat & Ellison, 1997; Thomas, 2013; Tsuria, 2017), they experience guilt, shame, and distress, and this collection of negative self-perceptions and affect leads to certain undesirable outcomes. The most common undesirable outcome identified in empirical studies is a perceived addiction to pornography independent of any objective clinical markers of an out-of-control behavior. As Grubbs et al. (2019a, 2019b) explain, in religious populations, "it seems that failure to abstain from *any* pornography use may be interpreted as evidence of dysregulation and compulsivity, despite the objectively small amount of use" (p. 404). Depression is another undesirable outcome that has recently been linked to MI (Perry, 2018b).

While attitude change has not been a focal point of MI research, recent efforts have expanded the approach in an attempt to explain pornography effects typically explicated using attitude change principles derived from SS theorizing. As reviewed previously, Perry (2018a) and Perry and Whitehead (2019) have suggested that MI may explain why pornography use is associated with lower sexual and relational satisfaction, rather than SS, the most common explanation (Wright et al., 2017; Zillmann & Bryant, 1988). Moreover, virtually all MI papers use the word "dissonance" (or its variants) to succinctly summarize the cognitively incongruent state of the religious pornography user. That cognitive dissonance can produce attitude change is one of the oldest social psychological principles (Festinger, 1957; Petty & Brinol, 2010).

From a general perspective on dissonance reduction, a number of options are available to the religious pornography

consumer. Most obviously, such a person could abandon their theological views in order to enjoy pornography without the burden of religious guilt (Perry, 2017; Perry & Hayward, 2017). But the concept of MI implies that the user's faith maintains despite their consumption of pornography; without the maintenance of faith, moral incongruence would be theorized as transient and inconsequential rather than significantly intertwined over time with pornography use and perceived pornography problems (Grubbs et al., 2020). Adopting a pro-pornography stance seems similarly unlikely; changing one's attitudes toward pornography could only reduce dissonance if coupled with a corresponding reduction in religiosity, but the preservation of faith in spite of pornography use is implied by the MI perspective. For example, Grubbs et al. (2018) predicted that baseline levels of religiosity-based moral disapproval of pornography (e.g., believing that viewing pornography is a "sin") would predict perceived addiction to pornography one year later among pornography users. Hypothesizing that religiosity at present predicts an MI-related pornography outcome 12 months later presupposes the continued religiosity of the pornography consumer over time.

Conversely, it would seem to more be consistent with the MI perspective for a religious pornography consumer to reduce dissonance by increasing their adherence to other religious teachings on human sexuality. Because "most religions emphasize relational and procreational sexual values" (Wright, 2011, p. 353), this could mean, for example, becoming more antagonistic toward extramarital, premarital, teenage, and same-sex sex than would have been the case from their religious beliefs alone. Specifically, from an MI perspective on pornography use, religiosity, and dissonance reduction, it could be deduced that religious pornography consumers will be even less sexually permissive than religious persons who do not consume pornography.

To put it another way, religious pornography consumers may compensate for their use of pornography by "doubling down on their original opinions (thus becoming more extreme in the direction of their original opinions)" vis-à-vis the adoption of hardline, religiosity consistent attitudes toward non-traditional sexuality (see PytlikZillig et al., 2018, p. 81, for a general discussion of this attitudinal phenomenon). Although this prediction is derived from the present study's interpretation of MI reasoning rather than a formal postulate put forth by the originators of MI theory, it is consistent with research and theorizing on "moral compensation" (Zhong et al., 2009) and "moral cleansing" (Tetlock et al., 2000). Theory and research findings in these traditions are consistent with the notion that religious people could become even more outspoken against permissive sexual behaviors as a way to compensate for and cleanse themselves symbolically of their morally transgressive pornography use (Green & Low, 2014; Jordan et al., 2011; Merritt et al., 2010; Sachdeva et al.,

2009; Tetlock et al., 2000; Zhong & Liljenquist, 2006; Zhong et al., 2009).

Summary

A review of papers written from the SS and MI perspectives suggests the possibility of divergent predictions about the interplay between pornography, religiosity, and permissive sexual attitudes. From an SS perspective, pornography's depiction of permissive sexuality as normative and rewarding leads to attitude change toward more acceptance of sexual permissiveness, but the preexisting traditional sexual scripts of the religious reduce the magnitude of this effect. Religious pornography consumers will be more sexually permissive than religious persons who do not consume pornography, but less sexually permissive than nonreligious pornography consumers, according to the SS approach. Conversely, the adoption of an MI perspective suggests the possibility that religious persons become more antagonistic toward permissive sexuality as a consequence of their pornography consumption, as a way to reduce the cognitive dissonance they feel for engaging in a sexual behavior prohibited by their faith tradition. It would be consistent with MI (but inconsistent with SS) if religious pornography consumers were less sexually permissive than religious persons who do not consume pornography. In sum, while the adoption of either an SS or MI approach would lead to the prediction that the religious will be less sexually permissive than the nonreligious, there is the potential for divergence in terms of the permissiveness of religious and nonreligious pornography consumers. To compare these differing perspectives, as well as to probe the permissiveness rank-ordering of the religious and nonreligious who do or do not consume pornography across all groupings, this study uses nationally representative data gathered from US adults across multiple decades via the General Social Survey (GSS).

Two research questions are posed. The first research question (RQ1) asks whether, across all available GSS data, the pattern of sexual permissiveness among religious nonviewers, religious viewers, nonreligious nonviewers, and nonreligious viewers is consistent with the MI or SS approaches. The second research question (RQ2) asks whether the results for the main (i.e., RQ1) analyses are paralleled when limited to post-Internet GSS years and after individual differences are included as covariates. It has often been suggested that pornography viewed online may have differential effects from traditionally delivered pornography (Grubbs et al., 2019a, 2019b; Wright et al., 2016) and that individual differences confound associations between pornography and permissive sexual attitudes (e.g., that associations are due to men being more permissive and more likely to consume pornography or to young people

being more permissive and more likely to consume pornography (Wright, 2013; Wright et al., 2013).

Method

Subjects

The GSS is an ongoing, National Science Foundation-funded, full-probability, national, computer-assisted personal interview survey examining the social beliefs and behaviors of residence-inhabiting adults in the USA aged 18 or older (The General Social Survey, 2020). The GSS undergoes institutional review board review by the National Opinion Research Center at the University of Chicago. Because the GSS adds culturally significant and socially important questions over time, some core questions are included in every GSS survey, while other questions are featured in only some surveys. To avoid respondent fatigue, not all participants in a particular survey are asked all of that year's questions. Further, in a given year, different sets of participants are asked different sets of questions. The questions of interest to the present inquiry had to do with pornography consumption, attendance at religious services, and attitudes toward teen, premarital, extramarital, and same-sex sex. Four meta-samples were created by merging the GSS cross-sectional samples across their pertinent measures and years (i.e., teen sex sample, premarital sex sample, extramarital sex sample, same-sex sex sample). Weight variable WTSSALL was applied per GSS user instructions (GSS Codebook, 2019).

Questions were collectively asked about pornography consumption, attendance at religious services, and attitudes toward teen sex in 1986, 1988, 1989, 1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, and 2018 ($N=6,421$). Questions were collectively asked pornography consumption, attendance at religious services, and attitudes toward premarital sex in 1975, 1978, 1983, 1986, 1988, 1989, 1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, and 2018 ($N=8,312$). Questions were collectively asked pornography consumption, attendance at religious services, and attitudes toward extramarital sex in 1973, 1976, 1980, 1984, 1987, 1988, 1989, 1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, and 2018 ($N=8,701$). Questions were collectively asked pornography consumption, attendance at religious services, and attitudes toward same-sex sex in 1973, 1976, 1980, 1984, 1987, 1988, 1989, 1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, and 2018 ($N=8,445$). Table 1 presents descriptive statistics for each sample's age, political orientation, educational achievement, sex, race, and sexual orientation.

Table 1 Descriptive statistics

	Sample			
	Teen sex	Premarital sex	Extramarital sex	Same-sex sex
<i>Demographics (%)</i>				
<i>Age</i>				
18–27	15.8	16.9	16.4	16.5
28–37	20.0	20.3	19.1	19.1
38–47	18.8	18.2	18.5	18.4
48–57	16.8	16.7	16.8	16.8
58–67	13.3	13.5	14.4	14.3
68–77	9.8	9.5	9.7	9.8
78–89+	5.5	4.9	5.1	5.1
<i>Education</i>				
Less than high school	16.9	20.1	22.4	22.5
High school	52.2	52.3	51.2	51.0
Junior college	6.4	5.6	4.9	4.9
Bachelors	17.0	15.4	14.1	14.1
Graduate	7.5	6.7	7.5	7.5
<i>Sex</i>				
Female	55.4	56.1	57.3	57.0
Male	44.6	43.9	42.7	43.0
<i>Race</i>				
White	79.1	81.8	82.0	81.7
Person of color	20.9	18.2	18.0	18.3
<i>Sexual orientation^a</i>				
Heterosexual	96.2	96.1	95.7	95.5
Sexually Diverse (LGB)	3.8	3.9	4.3	4.5
<i>Political orientation</i>				
Liberal	24.1	24.7	25.4	25.5
Moderate	36.5	36.4	36.3	36.0
Conservative	39.4	38.9	38.3	38.5
<i>Predictor (%)</i>				
Religious, does not view porn	50.8	53.0	54.4	54.8
Religious, views porn	6.8	6.6	7.7	7.6
Not religious, does not view porn	29.0	28.2	25.3	24.9
Not religious, views porn	13.5	12.2	12.7	12.6
<i>Permissive attitudes (M, SD)</i>				
Teen sex	1.51 (0.88)			
Premarital sex		2.59 (1.31)		
Extramarital sex			1.34 (0.72)	
Same-sex sex				1.87 (1.29)

1 = always wrong, 4 = not wrong at all

^aMeasured from 2008 onward (2008, 2010, 2012, 2014, 2016, 2018)

Measures

Based on whether they had viewed a pornographic (i.e., “x-rated”) movie in the last year (no/yes) and attended religious services at least once a week or not at all (i.e., either did not attend religious services at all, or attended once a week or more), participants were classified as either religious nonviewers, religious viewers, nonreligious nonviewers, or

nonreligious viewers. Attendance at religious services is frequently used to index religiosity, in general (Barkan & Greenwood, 2003; Maselko & Kubzansky, 2006; Sander, 2017), and in pornography research, in particular (see Grubbs & Perry, 2019; Grubbs et al., 2019a, 2019b). Further, using weekly attendance to identify the devout is a common tactic (Borgonovi, 2008; Doran & Price, 2014; Iannaccone & Everton, 2004; McCleary & Barro, 2006; Solt, 2014). The GSS

assessment of pornography consumption has been shown to yield theoretically expected associations with numerous attitudinal, behavioral, and demographic variables (see, for example, Perry & Schleifer, 2018; Wright, 2012, 2015; Wright & Bae, 2013; Wright et al., 2014).

Sexual permissiveness was assessed via participants' moral attitudes (1 = always wrong, 4 = not wrong at all) toward teen sex (i.e., sex between teens aged 14 and 16), premarital sex (i.e., sex between mixed sex unmarried adults), extramarital sex (i.e., sex with someone other than the marriage partner), and same-sex sex (i.e., sex between two adults of the same sex). Evidence for the validity of these items can be found in many previous works (Davis, 2004; DiMaggio et al., 1996; Eagly et al., 2004; Evans, 1997; Harding & Jencks, 2003; Hayduk et al., 1995; Kozloski, 2010; Petersen & Hyde, 2010; Treas, 2002). Descriptive statistics for the focal measures by sample are presented in Table 1.

Analytic Approach

Analyses unfolded in the following order. First, using all available data, ANOVAs were carried out for each sample and permissiveness criterion to determine which groups were more and less sexually permissive. Second, the ANOVA for same-sex attitudes was carried out again using only heterosexual-identified participants, as the initial analysis did not differentiate participants by sexual orientation (as indicated in Table 1, the GSS sexual orientation question was not introduced until 2008). Third, the initial ANOVAs were carried out again using data from 1996 onward only. Historians have identified 1995 as an important turning point for popular internet use (Campbell, 2015; Dominick et al., 2008), and it has been suggested that pornography viewed online may have differential effects from traditionally delivered pornography (Grubbs et al., 2019a, 2019b; Wright et al., 2016). Fourth, ANCOVAs were conducted to see whether the initial ANOVA results replicated after adjusting for participants' age, political orientation, education, sex, and race, as these have been common covariates in MI and SS research (Perry, 2018b; Perry & Whitehead, 2019; Wright, 2013; Wright et al., 2014).² Consistent with the recommendations of Levine and Hullett (2002), effect sizes are noted with eta squared. Consistent with the recommendations of Cumming (2009,

2014), confidence intervals are used to evaluate specific differences between groups.³

Results

RQ1. The ANOVA for teen sex attitudes was significant ($F(3, 6641) = 461.49, p < 0.001, \eta^2 = 0.17$). Examination of the group means (see Table 2) indicated that the rank-ordering of sexual permissiveness regarding teen sex, from least permissive to most permissive, was religious nonviewers ($M = 1.18, SE = 0.014, 95\% CI: 1.158, 1.211$) < religious viewers ($M = 1.46, SE = 0.038, 95\% CI: 1.394, 1.541$) < nonreligious nonviewers ($M = 1.76, SE = 0.018, 95\% CI: 1.733, 1.804$) < nonreligious viewers ($M = 2.17, SE = 0.027, 95\% CI: 2.121, 2.226$).

The ANOVA for premarital sex attitudes was significant ($F(3, 8701) = 1,275.69, p < 0.001, \eta^2 = 0.31$). Examination of the group means (see Table 2) indicated that the rank-ordering of sexual permissiveness regarding premarital sex, from least permissive to most permissive, was religious nonviewers ($M = 1.92, SE = 0.016, 95\% CI: 1.897, 1.959$) < religious viewers ($M = 2.69, SE = 0.045, 95\% CI: 2.606, 2.784$) < nonreligious nonviewers ($M = 3.30, SE = 0.022, 95\% CI: 3.257, 3.343$) < nonreligious viewers ($M = 3.69, SE = 0.034, 95\% CI: 3.628, 3.761$).

The ANOVA for extramarital sex attitudes was significant ($F(3, 9024) = 396.75, p < 0.001, \eta^2 = 0.12$). Examination of the group means (see Table 2) indicated that the rank-ordering of sexual permissiveness regarding extramarital sex, from least permissive to most permissive, was religious nonviewers ($M = 1.13, SE = 0.010, 95\% CI: 1.118, 1.156$) < religious viewers ($M = 1.39, SE = 0.026, 95\% CI: 1.340, 1.441$) < nonreligious nonviewers ($M = 1.51, SE = 0.014, 95\% CI: 1.490, 1.546$) < nonreligious viewers ($M = 1.83, SE = 0.020, 95\% CI: 1.791, 1.870$).

The ANOVA for same-sex sex attitudes was significant ($F(3, 8765) = 695.40, p < 0.001, \eta^2 = 0.19$). Examination of the group means (Table 2) indicated that the rank-ordering of sexual permissiveness regarding same-sex sex, from least permissive to most permissive, was religious nonviewers ($M = 1.38, SE = 0.016, 95\% CI: 1.350, 1.414$) < religious viewers ($M = 1.70, SE = 0.044, 95\% CI: 1.617,$

Table 2 Groups means and standard deviations

Group	Religious nonviewers		Religious viewers		Nonreligious nonviewers		Nonreligious viewers	
	M	SD	M	SD	M	SD	M	SD
Teen sex	1.18	0.53	1.47	0.83	1.77	0.99	2.17	1.09
Premarital sex	1.93	1.15	2.70	1.26	3.30	1.06	3.69	0.67
Extramarital sex	1.14	0.45	1.39	0.77	1.52	0.86	1.83	0.99
Same-sex sex	1.38	0.93	1.70	1.18	2.42	1.43	2.80	1.38

1.791) < nonreligious nonviewers ($M = 2.41$, $SE = 0.025$, 95% CI: 2.367, 2.464) < nonreligious viewers ($M = 2.80$, $SE = 0.035$, 95% CI: 2.733, 2.870).

To summarize, group status was a consistent predictor of sexual permissiveness across samples and criterion variables. The nonoverlapping confidence intervals across groups support the hypothesis that the means came from different populations. The nature of the difference between religious nonviewers and religious viewers was consistent with the SS, not the MI, approach. Further, the nature of the difference between religious viewers and nonreligious viewers was consistent with the $_3AM$.

RQ2. All robustness checks were supportive of the main analyses. First, removing sexually diverse (i.e., LGB) participants did not impact the pattern of results for same-sex attitudes. The ANOVA was significant ($F(3, 1669) = 195.64$, $p < 0.001$, eta squared = 0.26), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.73$, $SE = 0.046$, 95% CI: 1.646, 1.825) < religious viewers ($M = 2.22$, $SE = 0.125$, 95% CI: 1.979, 2.470) < nonreligious nonviewers ($M = 3.17$, $SE = 0.054$, 95% CI: 3.068, 3.280) < nonreligious viewers ($M = 3.35$, $SE = 0.070$, 95% CI: 3.216, 3.491). The only deviation was a slight overlap in the confidence intervals for nonreligious nonviewers and nonreligious viewers. If a traditional mean comparison approach were applied, the LSD test would indicate these groups were significantly different ($p = 0.043$), while the Scheffe test would not ($p = 0.251$).

Second, limiting the samples to data from 1996 onward did not impact the pattern of results. The ANOVA for teen sex attitudes was significant ($F(3, 4297) = 287.69$, $p < 0.001$, eta squared = 0.17), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.18$, $SE = 0.018$, 95% CI: 1.148, 1.219) < religious viewers ($M = 1.41$, $SE = 0.049$, 95% CI: 1.318, 1.511) < nonreligious nonviewers ($M = 1.76$, $SE = 0.022$, 95% CI: 1.723, 1.811) < nonreligious viewers ($M = 2.16$, $SE = 0.032$, 95% CI: 2.097, 2.224).

The ANOVA for premarital sex attitudes was significant ($F(3, 4241) = 726.89$, $p < 0.001$, eta squared = 0.34), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.94$, $SE = 0.024$, 95% CI: 1.901, 1.995) < religious viewers ($M = 2.73$, $SE = 0.065$, 95% CI: 2.606, 2.861) < nonreligious nonviewers ($M = 3.41$, $SE = 0.029$, 95% CI: 3.360, 3.474) < nonreligious viewers ($M = 3.72$, $SE = 0.042$, 95% CI: 3.639, 3.804).

The ANOVA for extramarital sex attitudes was significant ($F(3, 4081) = 145.71$, $p < 0.001$, eta squared = 0.10), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.11$, $SE = 0.015$, 95%

CI: 1.084, 1.143) < religious viewers ($M = 1.31$, $SE = 0.041$, 95% CI: 1.237, 1.398) < nonreligious nonviewers ($M = 1.44$, $SE = 0.019$, 95% CI: 1.406, 1.480) < nonreligious viewers ($M = 1.68$, $SE = 0.026$, 95% CI: 1.632, 1.732).

The ANOVA for same-sex attitudes was significant ($F(3, 3952) = 396.97$, $p < 0.001$, eta squared = 0.23), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.54$, $SE = 0.028$, 95% CI: 1.487, 1.598) < religious viewers ($M = 1.94$, $SE = 0.079$, 95% CI: 1.792, 2.101) < nonreligious nonviewers ($M = 2.82$, $SE = 0.036$, 95% CI: 2.757, 2.898) < nonreligious viewers ($M = 3.09$, $SE = 0.049$, 95% CI: 2.997, 3.188).

Third and finally, adjusting for participants' age, political orientation, education, sex, and race did not impact the pattern of results. Group status remained significant in the teen sex attitudes ANCOVA ($F(3, 6326) = 265.73$, $p < 0.001$, eta squared = 0.10), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.25$, $SE = 0.014$, 95% CI: 1.226, 1.281) < religious viewers ($M = 1.38$, $SE = 0.038$, 95% CI: 1.312, 1.459) < nonreligious nonviewers ($M = 1.73$, $SE = 0.018$, 95% CI: 1.702, 1.774) < nonreligious viewers ($M = 2.04$, $SE = 0.028$, 95% CI: 1.994, 2.104).

Group status remained significant in the premarital sex attitudes ANCOVA ($F(3, 7857) = 886.85$, $p < 0.001$, eta squared = 0.22), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 2.01$, $SE = 0.017$, 95% CI: 1.986, 2.051) < religious viewers ($M = 2.58$, $SE = 0.046$, 95% CI: 2.492, 2.7672) < nonreligious nonviewers ($M = 3.27$, $SE = 0.022$, 95% CI: 3.232, 3.321) < nonreligious viewers ($M = 3.56$, $SE = 0.035$, 95% CI: 3.497, 3.636).

Group status remained significant in the extramarital sex attitudes ANCOVA ($F(3, 7991) = 224.85$, $p < 0.001$, eta squared = 0.07), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.16$, $SE = 0.010$, 95% CI: 1.140, 1.181) < religious viewers ($M = 1.37$, $SE = 0.027$, 95% CI: 1.319, 1.426) < nonreligious nonviewers ($M = 1.51$, $SE = 0.015$, 95% CI: 1.482, 1.542) < nonreligious viewers ($M = 1.73$, $SE = 0.022$, 95% CI: 1.691, 1.779).

Group status remained significant in the same-sex attitudes ANCOVA ($F(3, 7777) = 521.975$, $p < 0.001$, eta squared = 0.14), and the rank-ordering of the group means was in the same direction: religious nonviewers ($M = 1.45$, $SE = 0.017$, 95% CI: 1.425, 1.491) < religious viewers ($M = 1.67$, $SE = 0.045$, 95% CI: 1.591, 1.766) < nonreligious nonviewers ($M = 2.45$, $SE = 0.025$, 95% CI: 2.404, 2.502) < nonreligious viewers ($M = 2.71$, $SE = 0.037$, 95% CI: 2.638, 2.781).

Discussion

The SS perspective is the most prevalent approach in the pornography effects paradigm for explaining associations between the consumption of pornography and the expression of attitudes consistent with themes for sex depicted in pornography (Wright, 2020). The moral incongruence (MI) perspective on pornography effects has also gained prominence in recent years (Grubbs & Perry, 2019; Grubbs et al., 2019a, 2019b). A detailed reading of MI and SS literatures suggests the possibility of discrepant predictions about the effects of pornography on sexual permissiveness, one of the most studied outcomes in pornography research (Tokunaga et al., 2019). From an SS perspective, pornography's portrayal of permissive sexuality as common and satisfying leads to attitude change toward more acceptance of sexual permissiveness, but the preexisting traditional sexual scripts of the religious lessen the magnitude of this effect. Religious pornography viewers will be more sexually permissive than religious persons who do not view pornography, but less sexually permissive than nonreligious pornography viewers, according to the SS approach. Alternatively, the adoption of a MI perspective suggests the possibility that religious persons become more opposed to permissive sexuality as a result of their pornography use, as a way to mitigate the cognitive dissonance they feel for engaging in a sexual behavior proscribed by their faith tradition (see also Green & Low, 2014; Jordan et al., 2011; Merritt et al., 2010; Sachdeva et al., 2009; Tetlock et al., 2000; Zhong & Liljenquist, 2006; Zhong et al., 2009). If this occurs, religious pornography consumers will be less sexually permissive than religious persons who do not consume pornography (it is noted for a final time that this is the present study's deduction from reading works on MI, rather than a MI postulate formally proposed by its originators).

The present study explored these divergent possibilities using nationally representative data gathered across multiple decades from men and women in the USA. Results supported the SS approach. Specifically, across four meta-samples and four indicators of sexual permissiveness, religious nonviewers were the least sexually permissive, followed by religious viewers, nonreligious nonviewers, and nonreligious viewers. These results were robust over time and maintained after adjusting for demographics.

What conclusions should be drawn from these results for the SS and MI perspectives? For theorizing about pornography, religiosity, and sexual permissiveness, they suggest that an SS approach may be preferable to an MI approach. The persistent rank-ordering of religious viewers as more sexually permissive than religious nonviewers leaves little leeway for alternative interpretation on this front. The ${}_3\text{AM}$ -specific finding that religious viewers were less sexually permissive

than nonreligious viewers provides additional support for the SS perspective. Perhaps, if religious nonviewers and religious viewers had been indistinguishably ranked as the least permissive (even if intermittently), a case could have been made for some effect of MI. But this was not the case. Given the present study's results on sexual permissiveness, as well as the fit between SS predictions and pornography effect findings in other areas of sexuality, the present findings support the continued application of SS to research on pornography and sexuality (Tokunaga et al., 2019, 2020; Wright et al., 2016, 2017).

It would be misguided, however, to conclude that MI does not result when the religious view pornography. Grubbs and Perry (2019) rightly note that “by definition, the contrast between religious individuals' reported moral disapproval of pornography and their reported use rates suggests that many religious people are likely experiencing some moral incongruence around their actions” (p. 31). Second, it would be imprudent to conclude that the MI approach is invalid. Clearly, the MI approach is adroit at predicting perceived addiction to pornography (Grubbs et al., 2019a, 2019b; Wright, 2019; see also Perry et al., 2021, for MI consistent findings on sexuality and happiness). Third, it would be unwise to conclude that MI-induced cognitive dissonance does not work in tandem with SS dynamics to produce certain pornography effects. For example, the link between pornography and sexual dissatisfaction has already been shown via path analysis to be predictive from SS variables (Wright et al., 2019, 2021). However, both SS (Wright et al., 2018) and MI (Perry & Whitehead, 2019) inspired papers have found that pornography-sexual dissatisfaction linkages are stronger for the more religious. In sum, while the results of the present study were in alignment with SS and not MI, there are sufficient data in certain areas of pornography effects research to clearly support the continued exploration of MI-derived predictions. Furthermore, it must be remembered that the most specific instantiation of MI—the Pornography Problems due to Moral Incongruence model, or PPMI—has the goal of explaining perceived addiction to pornography and similar self-reported pornography-related problems, not attitude change following pornography use (Grubbs et al., 2019a, 2019b).

Limitations and Future Directions

Subsequent research can expand upon the present study in several ways. First, analyses could be stratified by faith tradition to see if an MI indicative attitudinal doubling down on pornography promoted but religiously discouraged sexual attitudes does occur for some religious groups. Second, permissive sexual behaviors could be studied to see whether the SS consistent and MI inconsistent attitudinal

findings of the present study replicate onto behavioral indices. Third, efforts could be made to enhance internal validity, as the present data were from a cross-sectional survey. The present study could be replicated experimentally, for example. Religious and nonreligious persons could be identified via pretest, assigned to either view or not view pornography, and then presented a questionnaire embedded with items tapping sexual permissiveness. While the religious would not choose to view pornography in such an experimental design, it is still possible that an MI dynamic may evidence itself from mere exposure alone. In addition to experimental replications, the present findings could be replicated with a multi-wave survey design to more definitively address questions of temporal sequencing (but see Wright, 2021b, for a review of longitudinal survey studies suggesting the downstream effects of pornography use). Finally, studies that propose MI explanations for findings previously theorized in the SS tradition could measure whether MI is actually associated with cognitive dissonance surrounding pornography use, and whether this dissonance is more predictive of the outcomes under study than sexual script mediators.

Footnotes

¹While MI could arise from nonreligious worldviews (e.g., political views oppositional to pornography), MI research has primarily focused on religiosity as the source of MI (Grubbs & Perry, 2019; Grubbs et al., 2019a, 2019b).

²For a critical treatment of the use of covariates in pornography effects research, see Wright (2021a).

³This approach is more conservative than the conventional $p < 0.05$ method for examining group differences (Schenker & Gentleman, 2001). As noted by Cumming (2009), “when 95 per cent confidence intervals (CIs) on independent means do not overlap, the two-tailed p -value is less than 0.05 and there is a statistically significant difference between the means. However, p for nonoverlapping 95 per cent CIs is actually considerably smaller than 0.05” (p. 205).

Funding Not applicable.

Data Availability GSS data and material are publically available at <https://gss.norc.org/get-the-data>

Code Availability Not applicable.

Declarations

Conflict of Interest The author declares that he has no conflict of interest.

References

- Ahrold, T. K., Farmer, M., Trapnell, P. D., & Meston, C. M. (2011). The relationship among sexual attitudes, sexual fantasy, and religiosity. *Archives of Sexual Behavior, 40*(3), 619–630. <https://doi.org/10.1007/s10508-010-9621-4>
- Barkan, S. E., & Greenwood, S. F. (2003). Religious attendance and subjective well-being among older Americans. *Review of Religious Research, 45*(2), 116–129. <https://doi.org/10.2307/3512578>
- Bishop, C. J. (2015). A synthesis and review of the gay male pornography literature. *Psychology & Sexuality, 6*(1), 5–27. <https://doi.org/10.1080/19419899.2014.983739>
- Borgonovi, F. (2008). Divided we stand, united we fall: Religious pluralism, giving, and volunteering. *American Sociological Review, 73*(1), 105–128. <https://doi.org/10.1177/000312240807300106>
- Boulton, C. (2008). Porn and me(n): Sexual morality, objectification, and religion at the Wheelock anti-pornography conference. *The Communication Review, 11*(3), 247–273. <https://doi.org/10.1080/10714420802306544>
- Braithwaite, S. R., Givens, A., Brown, J., & Fincham, F. (2015). Is pornography consumption associated with condom use and intoxication during hookups? *Culture, Health & Sexuality, 17*(10), 1155–1173. <https://doi.org/10.1080/13691058.2015.1042920>
- Bridges, A. J., Wosnitzer, R., Scharrer, E., Sun, C., & Liberman, R. (2010). Aggression and sexual behavior in best-selling pornography videos. *Violence against Women, 16*(10), 1065–1085. <https://doi.org/10.1177/1077801210382866>
- Campbell, W. J. (2015). *1995: The year the future began*. University of California Press.
- Cumming, G. (2009). Inference by eye: Reading the overlap of independent confidence intervals. *Statistics in Medicine, 28*(2), 205–220. <https://doi.org/10.1002/sim.3471>
- Cumming, G. (2014). The new statistics: Why and how. *Psychological Science, 25*(1), 7–29. <https://doi.org/10.1177/0956797613504966>
- Davis, J. A. (2004). Did growing up in the 1960s leave a permanent mark on attitudes and values? *Public Opinion Quarterly, 68*(2), 161–183. <https://doi.org/10.1093/poq/nfh010>
- DiMaggio, P., Evans, J., & Bryson, B. (1996). Have American’s social attitudes become more polarized? *American Journal of Sociology, 102*(3), 690–755. <https://doi.org/10.1086/230995>
- Dominick, J. R., Messere, F., & Sherman, B. L. (2008). *Broadcasting, cable, the internet, and beyond*. McGraw Hill.
- Donnerstein, E., & Berkowitz, L. (1981). Victim reactions in aggressive erotic films as a factor in violence against women. *Journal of Personality and Social Psychology, 41*(4), 710–724. <https://doi.org/10.1037/0022-3514.41.4.710>
- Doran, K., & Price, J. (2014). Pornography and marriage. *Journal of Family and Economic Issues, 35*(4), 489–498. <https://doi.org/10.1007/s10834-014-9391-6>
- Eagly, A. H., Diekmann, A. B., Johannesen-Schmidt, M. C., & Koenig, A. M. (2004). Gender gaps in sociopolitical attitudes: A social psychological analysis. *Journal of Personality and Social Psychology, 87*(6), 796–816. <https://doi.org/10.1037/0022-3514.87.6.796>
- Elliott, I. A. (2017). Applying sexual offense theory to online sexual offenders. In D. P. Boer (Ed.), *The Wiley handbook on the theories, assessment, & treatment of sexual offending* (pp. 519–546). John Wiley & Sons.
- Evans, J. H. (1997). Worldviews or social groups as the source of moral value attitudes. *Sociological Forum, 12*(3), 371–404. <https://doi.org/10.1023/A:1024625210910>
- Ezzell, M. B. (2014). The impact of pornography as a component of gender and sexual socialization. In L. Coleman & J. M. Hald (Eds.), *The philosophy of pornography: Contemporary perspectives* (pp. 17–34). Rowman & Littlefield.

- Festinger, L. (1957). *A theory of cognitive dissonance*. Row Peterson.
- Foubert, J. D., & Bridges, A. J. (2017). What is the attraction? Pornography use motives in relation to bystander intervention. *Journal of Interpersonal Violence*, 32(20), 3071–3089. <https://doi.org/10.1177/0886260515596538>
- Gagnon, J. H., & Simon, W. (2005). *Sexual conduct: The social sources of human sexuality*. New Brunswick.
- Greene, M., & Low, K. (2014). Public integrity, private hypocrisy, and the moral licensing effect. *Social Behavior and Personality*, 42(3), 391–400. <https://doi.org/10.2224/sbp.2014.42.3.391>
- Grubbs, J. B., & Kraus, S. W. (2021). Pornography use and psychological science: A call for consideration. *Current Directions in Psychological Science*, 30(1), 68–75. <https://doi.org/10.1177/0963721420979594>
- Grubbs, J. B., Kraus, S. W., Perry, S. L., Lewczuk, K., & Gola, M. (2020). Moral incongruence and compulsive sexual behavior: Results from cross-sectional interactions and parallel growth curve analyses. *Journal of Abnormal Psychology*, 129(3), 266–278. <https://doi.org/10.1037/abn0000501>
- Grubbs, J. B., & Perry, S. L. (2019). Moral incongruence and pornography use: A critical review and integration. *Journal of Sex Research*, 56(1), 29–37. <https://doi.org/10.1080/00224499.2018.1427204>
- Grubbs, J. B., Perry, S. L., Wilt, J. A., & Reid, R. C. (2019a). Pornography problems due to moral incongruence: An integrative model with a systematic review and meta-analysis. *Archives of Sexual Behavior*, 48(2), 397–415. <https://doi.org/10.1007/s10508-018-1248-x>
- Grubbs, J. B., Wilt, J. A., Exline, J. J., Pargament, K. I., & Kraus, S. W. (2018). Moral disapproval and perceived addiction to internet pornography: A longitudinal examination. *Addiction*, 113(3), 496–506. <https://doi.org/10.1111/add.14007>
- Grubbs, J. B., Wright, P. J., Braden, A. L., Wilt, J. A., & Kraus, S. W. (2019b). Internet pornography use and sexual motivation: A systematic review and integration. *Annals of the International Communication Association*, 43(2), 117–155. <https://doi.org/10.1080/23808985.2019.1584045>
- GSS Codebook (2019). *Appendix A*. Retrieved from http://gss.norc.umd.edu/documents/codebook/GSS_Codebook_AppendixA.pdf
- Guizzo, F., & Cadinu, M. (2020). Women, not objects: Testing a sensitizing web campaign against female sexual objectification to temper sexual harassment and hostile sexism. *Media Psychology*. <https://doi.org/10.1080/15213269.2020.1756338>
- Hald, G. M., & Mulya, T. W. (2013). Pornography consumption and non-marital sexual behaviour in a sample of young Indonesian university students. *Culture, Health & Sexuality*, 15(8), 981–996. <https://doi.org/10.1080/13691058.2013.802013>
- Harding, D. J., & Jencks, C. (2003). Changing attitudes toward premarital sex. *Public Opinion Quarterly*, 67(2), 211–226. <https://doi.org/10.1086/374399>
- Hayduk, L. A., Ratner, P. A., Johnson, J. L., & Bottorff, J. L. (1995). Attitudes, ideology, and the factor model. *Political Psychology*, 16(3), 479–507. <https://doi.org/10.2307/3792223>
- Huntington, C., Markman, H., & Rhoades, G. (2021). Watching pornography alone or together: Longitudinal associations with romantic relationship quality. *Journal of Sex & Marital Therapy*, 47, 130–146. <https://doi.org/10.1080/0092623X.2020.1835760>
- Iannaccone, L. R., & Everton, S. F. (2004). Never on sunny days: Lessons from weekly attendance counts. *Journal for the Scientific Study of Religion*, 43(2), 191–207. <https://doi.org/10.1111/j.1468-5906.2004.00227.x>
- Jensen, R. E. (2010). A content analysis of youth sexualized language and imagery in adult film packaging, 1995–2007. *Journal of Children and Media*, 4(4), 371–386. <https://doi.org/10.1080/17482798.2010.510005>
- Johnson, J. A., Ezzell, M. B., Bridges, A. J., & Sun, C. F. (2019). Pornography and heterosexual women's intimate experiences with a partner. *Journal of Women's Health*, 28(9), 1254–1265. <https://doi.org/10.1089/jwh.2018.7006>
- Jordan, J., Mullen, E., & Murnighan, J. K. (2011). Striving for the moral self: The effects of recalling past moral actions on future moral behavior. *Personality and Social Psychology Bulletin*, 37, 701–713.
- Kozloski, M. J. (2010). Homosexual moral acceptance and social tolerance: Are the effects of education changing? *Journal of Homosexuality*, 57(10), 1370–1383. <https://doi.org/10.1080/00918369.2010.517083>
- Levine, T. R., & Hullett, C. R. (2002). Eta squared, partial eta squared, and misreporting of effect size in communication research. *Human Communication Research*, 28(4), 612–625. <https://doi.org/10.1111/j.1468-2958.2002.tb00828.x>
- Linz, D., & Malamuth, N. M. (1993). *Pornography*. Sage.
- Lo, V. H., Neilan, E., Sun, M., & Chiang, S. (1999). Exposure of Taiwanese adolescents to pornographic media and its impact on sexual attitudes and behavior. *Asian Journal of Communication*, 9(1), 50–71. <https://doi.org/10.1080/01292989909359614>
- Malamuth, N. M., & Check, J. V. (1985). The effects of aggressive pornography on beliefs in rape myths: Individual differences. *Journal of Research in Personality*, 19(3), 299–320. [https://doi.org/10.1016/0092-6566\(85\)90021-2](https://doi.org/10.1016/0092-6566(85)90021-2)
- Maselko, J., & Kubzansky, L. D. (2006). Gender differences in religious practices, spiritual experiences and health. *Social Science & Medicine*, 62(11), 2848–2860. <https://doi.org/10.1016/j.socscimed.2005.11.008>
- McCleary, R. M., & Barro, R. J. (2006). Religion and political economy in an international panel. *Journal for the Scientific Study of Religion*, 45(2), 149–175. <https://doi.org/10.1111/j.1468-5906.2006.00299.x>
- McKee, A. (2005). The objectification of women in mainstream pornographic videos in Australia. *Journal of Sex Research*, 42(4), 277–290. <https://doi.org/10.1080/00224490509552283>
- Merritt, A. C., Efron, D. A., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and Personality Psychology Compass*, 4(5), 344–357. <https://doi.org/10.1111/j.1751-9004.2010.00263.x>
- Murray, K. M., Ciarrocchi, J. W., & Murray-Swank, N. A. (2007). Spirituality, religiosity, shame and guilt as predictors of sexual attitudes and experiences. *Journal of Psychology and Theology*, 35(3), 222–234. <https://doi.org/10.1177/009164710703500305>
- Musda, N. (2013). Pornography in diversity. *Afkaruna*, 9(2), 95–111. <https://doi.org/10.18196/aijjs.2013.0022.95-111>
- Oliver, M. B., Raney, A., & Bryant, J. (Eds.). (2020). *Media effects: Advances in theory and research*. Routledge.
- Perry, S. L. (2017). Does viewing pornography diminish religiosity over time? Evidence from two-wave panel data. *Journal of Sex Research*, 54(2), 214–226. <https://doi.org/10.1080/00224499.2016.1146203>
- Perry, S. L. (2018a). Pornography use and marital quality: Testing the moral incongruence hypothesis. *Personal Relationships*, 25(2), 233–248. <https://doi.org/10.1111/per.12234>
- Perry, S. L. (2018b). Pornography use and depressive symptoms: Examining the role of moral incongruence. *Society and Mental Health*, 8(3), 195–213. <https://doi.org/10.1177/2156869317728373>
- Perry, S. L., Grubbs, J. B., & McElroy, E. E. (2021). Sex and its discontents: How moral incongruence connects same-sex and non-marital sexual activity with unhappiness. *Archives of Sexual Behavior*, 50, 683–694. <https://doi.org/10.1007/s10508-020-01860-2>
- Perry, S. L., & Hayward, G. M. (2017). Seeing is (not) believing: How viewing pornography shapes the religious lives of young Americans. *Social Forces*, 95(4), 1757–1788. <https://doi.org/10.1093/sf/sow106>

- Perry, S. L., & Schleifer, C. (2018). Till porn do us part? A longitudinal examination of pornography use and divorce. *Journal of Sex Research, 55*(3), 284–296. <https://doi.org/10.1080/00224499.2017.1317709>
- Perry, S. L., & Whitehead, A. L. (2019). Only bad for believers? Religion, pornography use, and sexual satisfaction among American men. *Journal of Sex Research, 56*(1), 50–61. <https://doi.org/10.1080/00224499.2017.1423017>
- Peter, J., & Valkenburg, P. M. (2006). Adolescents' exposure to sexually explicit online material and recreational attitudes toward sex. *Journal of Communication, 56*(4), 639–660. <https://doi.org/10.1111/j.1460-2466.2006.00313.x>
- Petersen, J. L., & Hyde, J. S. (2010). A meta-analytic review of research on gender differences in sexuality, 1993–2007. *Psychological Bulletin, 136*(1), 21–38. <https://doi.org/10.1037/a0017504>
- Petty, R. E., & Brinol, P. (2010). Attitude change. In R. F. Baumeister & E. J. Finkel (Eds.), *Advanced social psychology: The state of the science* (pp. 217–259). Oxford University Press.
- PytlíkZillig, L. M., Hutchens, M. J., Muhlberger, P., Gonzalez, F. J., & Tomkins, A. J. (2018). Attitude change and polarization. In *Deliberative public engagement with science* (pp. 61–87). Springer.
- Rasmussen, K. R. (2016). A historical and empirical review of pornography and romantic relationships: Implications for family researchers. *Journal of Family Theory & Review, 8*(2), 173–191. <https://doi.org/10.1111/jftr.12141>
- Rasmussen, K. R., & Bierman, A. (2018). Risk or release?: Porn use trajectories and the accumulation of sexual partners. *Social Currents, 5*(6), 566–582. <https://doi.org/10.1177/2329496518780929>
- Rothman, E. F., Beckmeyer, J. J., Herbenick, D., Fu, T. C., Dodge, B., & Fortenberry, J. D. (2021). The prevalence of using pornography for information about how to have sex. *Archives of Sexual Behavior, 50*, 629–646. <https://doi.org/10.1007/s10508-020-01877-7>
- Sachdeva, S., Iliiev, R., & Medin, D. L. (2009). Sinning saints and saintly sinners: The paradox of moral self-regulation. *Psychological Science, 20*(4), 523–528. <https://doi.org/10.1111/j.1467-9280.2009.02326.x>
- Sander, W. (2017). Religion, religiosity, and happiness. *Review of Religious Research, 59*(2), 251–262. <https://doi.org/10.1007/s13644-017-0285-6>
- Schenker, N., & Gentleman, J. F. (2001). On judging the significance of differences by examining the overlap between confidence intervals. *The American Statistician, 55*(3), 182–186. <https://doi.org/10.1198/000313001317097960>
- Sherkat, D. E., & Ellison, C. G. (1997). The cognitive structure of a moral crusade: Conservative Protestantism and opposition to pornography. *Social Forces, 75*(3), 957–980.
- Solt, F. (2014). Reversing the arrow? Economic inequality's effect on religiosity. In L. A. Keister & D. E. Sherkat (Eds.), *Religion and inequality in America* (pp. 337–353). Cambridge University Press.
- Sun, C., Miezán, E., Lee, N. Y., & Shim, J. W. (2015). Korean men's pornography use, their interest in extreme pornography, and dyadic sexual relationships. *International Journal of Sexual Health, 27*(1), 16–35. <https://doi.org/10.1080/19317611.2014.927048>
- Tetlock, P. E., Kristel, O. V., Elson, S. B., Green, M. C., & Lerner, J. S. (2000). The psychology of the unthinkable: Taboo trade-offs, forbidden base rates, and heretical counterfactuals. *Journal of Personality and Social Psychology, 78*(5), 853–870. <https://doi.org/10.1037/0022-3514.78.5.853>
- The General Social Survey. (2020). *About the GSS*. Retrieved from gss.norc.org/About-The-GSS
- Thomas, J. N. (2013). Outsourcing moral authority: The internal secularization of evangelicals' anti-pornography narratives. *Journal for the Scientific Study of Religion, 52*(3), 457–475. <https://doi.org/10.1111/jssr.12052>
- Tokunaga, R. S., Wright, P. J., & Roskos, J. E. (2019). Pornography and impersonal sex. *Human Communication Research, 45*(1), 78–118. <https://doi.org/10.1093/hcr/hqy014>
- Tokunaga, R. S., Wright, P. J., & Vangeel, L. (2020). Is pornography consumption a risk factor for condomless sex? *Human Communication Research, 46*(2–3), 273–299. <https://doi.org/10.1093/hcr/hqaa005>
- Tomaszewska, P., & Krahe, B. (2018). Predictors of sexual aggression victimization and perpetration among Polish university students: A longitudinal study. *Archives of Sexual Behavior, 47*(2), 493–505. <https://doi.org/10.1007/s10508-016-0823-2>
- Treas, J. (2002). How cohorts, education, and ideology shaped a new sexual revolution on American attitudes toward nonmarital sex, 1972–1998. *Sociological Perspectives, 45*(3), 267–283. <https://doi.org/10.1525/sop.2002.45.3.267>
- Tsuria, R. (2017). Digital Judaism and pornography. *Journal of Media and Religion, 16*(4), 117–128. <https://doi.org/10.1080/15348423.2017.1401407>
- Vandenbosch, L., van Oosten, J. M., & Peter, J. (2018). Sexually explicit Internet material and adolescents' sexual performance orientation: The mediating roles of enjoyment and perceived utility. *Media Psychology, 21*(1), 50–74. <https://doi.org/10.1080/15213269.2017.1361842>
- Vannier, S. A., Currie, A. B., & O'Sullivan, L. F. (2014). Schoolgirls and soccer Moms: A content analysis of free “Teen” and “MILF” online pornography. *Journal of Sex Research, 51*(3), 253–264. <https://doi.org/10.1080/00224499.2013.829795>
- Ward, L. M., Lippman, J., Erickson, S., & Giaccardi, S. (2016). Sexual media content and effects. In J. F. Nussbaum (Ed.), *Oxford research encyclopedia of communication* (pp. 1–39). Oxford University Press.
- Wright, P. J. (2011). Mass media effects on youth sexual behavior. *Annals of the International Communication Association, 35*(1), 343–386. <https://doi.org/10.1080/23808985.2011.11679121>
- Wright, P. J. (2012). A longitudinal analysis of US adults' pornography exposure: Sexual socialization, selective exposure, and the moderating role of unhappiness. *Journal of Media Psychology, 24*(1), 67–76. <https://doi.org/10.1027/1864-1105/a000063>
- Wright, P. J. (2013). US males and pornography, 1973–2010: Consumption, predictors, correlates. *Journal of Sex Research, 50*(1), 60–71. <https://doi.org/10.1080/00224499.2011.628132>
- Wright, P. J. (2015). Americans' attitudes toward premarital sex and pornography consumption: A national panel analysis. *Archives of Sexual Behavior, 44*(1), 89–97. <https://doi.org/10.1007/s10508-014-0353-8>
- Wright, P. J. (2019). Dysregulated pornography use and the possibility of a unipathway approach. *Archives of Sexual Behavior, 48*(2), 455–460. <https://doi.org/10.1007/s10508-018-1277-5>
- Wright, P. J. (2020). Media and sexuality. In M. B. Oliver, A. Raney, & J. Bryant (Eds.), *Media effects: Advances in theory and research* (pp. 227–242). Routledge.
- Wright, P. J. (2021a). Overcontrol in pornography research: Let it go, let it go... [Letter to the Editor]. *Archives of Sexual Behavior, 50*(2), 387–392. <https://doi.org/10.1007/s10508-020-01902-9>
- Wright, P. J. (2021b). Pornographic socialization as “selective-exposure”: Let it go, let it go II [Letter to the Editor]. *Archives of Sexual Behavior, 50*(2), 393–399. <https://doi.org/10.1007/s10508-021-01922-z>
- Wright, P. J., & Bae, S. (2013). Pornography consumption and attitudes toward homosexuality: A national longitudinal study. *Human Communication Research, 39*(4), 492–513. <https://doi.org/10.1111/hcre.12009>
- Wright, P. J., Bae, S., & Funk, M. (2013). United States women and pornography through four decades: Exposure, attitudes, behaviors, individual differences. *Archives of Sexual Behavior, 42*, 1131–1144. <https://doi.org/10.1007/s10508-013-0116-y>

- Wright, P. J., Bridges, A. J., Sun, C., Ezzell, M. B., & Johnson, J. A. (2018). Personal pornography viewing and sexual satisfaction: A quadratic analysis. *Journal of Sex & Marital Therapy*, *44*(3), 308–315. <https://doi.org/10.1080/0092623X.2017.1377131>
- Wright, P. J., Paul, B., Herbenick, D., & Tokunaga, R. S. (2021). Pornography and sexual dissatisfaction: The role of pornographic arousal, upward pornographic comparisons, and preference for pornographic masturbation. *Human Communication Research*, *47*(2), 192–214. <https://doi.org/10.1093/hcr/hqab001>
- Wright, P. J., Sun, C., Steffen, N. J., & Tokunaga, R. S. (2019). Associative pathways between pornography consumption and reduced sexual satisfaction. *Sexual and Relationship Therapy*, *34*(4), 422–439. <https://doi.org/10.1080/14681994.2017.1323076>
- Wright, P. J., Tokunaga, R. S., & Bae, S. (2014). More than a dalliance? Pornography consumption and extramarital sex attitudes among married US adults. *Psychology of Popular Media*, *3*(2), 97–109. <https://doi.org/10.1037/ppm0000024>
- Wright, P. J., Tokunaga, R. S., & Kraus, A. (2016). A meta-analysis of pornography consumption and actual acts of sexual aggression in general population studies. *Journal of Communication*, *66*(1), 183–205. <https://doi.org/10.1111/jcom.12201>
- Wright, P. J., Tokunaga, R. S., Kraus, A., & Klann, E. (2017). Pornography consumption and satisfaction: A meta-analysis. *Human Communication Research*, *43*(3), 315–343. <https://doi.org/10.1111/hcre.12108>
- Zhong, C. B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, *313*(5792), 1451–1452. <https://doi.org/10.1126/science.1130726>
- Zhong, C. B., Liljenquist, K., & Cain, D. M. (2009). Moral self-regulation: Licensing and compensation. In D. De Cremer (Ed.), *Psychological perspectives on ethical behavior and decision making* (pp. 75–89). Information Age Publishing Inc.
- Zillmann, D. (2000). Influence of unrestrained access to erotica. *Journal of Adolescent Health*, *27*(2), 41–44. [https://doi.org/10.1016/S1054-139X\(00\)00137-3](https://doi.org/10.1016/S1054-139X(00)00137-3)
- Zillmann, D., & Bryant, J. (1982). Pornography, sexual callousness, and the trivialization of rape. *Journal of Communication*, *32*(4), 10–21. <https://doi.org/10.1111/j.1460-2466.1982.tb02514.x>
- Zillmann, D., & Bryant, J. (1988). Pornography's impact on sexual satisfaction. *Journal of Applied Social Psychology*, *18*, 438–453. <https://doi.org/10.1111/j.1559-1816.1988.tb00027.x>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.