

Pornography Consumption and US Adults' Attitudes toward Gay Individuals' Civil Liberties, Moral Judgments of Homosexuality, and Support for Same-Sex Marriage: Mediating and Moderating Factors

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This study compared views on homosexuality among US adults who varied in their consumption of pornography. Nationally representative cross-sectional data generated by the General Social Survey (GSS) between 2000 and 2012 were employed. Pornography consumers expressed more positive attitudes toward gay individuals' civil liberties, more moral acceptance of homosexuality, and more support for same-sex marriage. Moderation analyses indicated the importance of consumers' views on personal freedom and morality. Associations between pornography consumption and positive views on homosexuality were strongest when consumers placed a premium on personal freedom and adopted a relativistic perspective on morality. Mediation analyses indicated that pornography consumption indirectly predicted more positive views on homosexuality through a nontraditional attitude toward sex. Supplementary analysis of nationally representative three-wave GSS panel data confirmed the temporal sequencing of these links. Prior pornography consumption predicted a more positive subsequent attitude toward nontraditional sex, which in turn predicted more positive subsequent views on homosexuality.

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Due to debate about topics such as same-sex marriage and gay people serving in the military, attitudes toward homosexuality have been at the forefront of social and political discussion in the United States in recent years. Recent public opinion studies have primarily focused on demographic predictors, but demographic differences do not fully account for views on homosexuality (Andersen & Fetner, 2008; Baunach, 2011; Loftus, 2001; Treas, 2002). As Calzo and Ward (2009) point out, attitudes toward homosexuality are a result of socialization, not demographic determinism.

A number of researchers have suggested that media may serve as an important informant of views on homosexuality (Baunach, 2011; Kozloski, 2010; Loftus, 2001). Opinions about homosexuality and gay individuals' civil rights appear to hinge on the perceived appropriateness of same-sex sexual relations (Dimock & Doherty, 2013). The category of media that has received the most attention as a potential influence on perceptions of appropriate sexual behavior is pornography (i.e., media depicting nudity and explicit sexual acts; Wright, Malamuth, & Donnerstein, 2012). Despite this, few studies have explored associations between pornography consumption and views on homosexuality.

The present study hypothesizes that heterosexual US adults who consume pornography have more positive views on homosexuality than their peers who do not consume pornography. Attitudes toward gay individuals' civil liberties, moral acceptance of homosexuality, and support for same-sex marriage are evaluated. Mediation analyses are undertaken to explore the possibility that viewing pornography affects consumers' views on homosexuality via a more positive attitude toward nontraditional sex. Moderation analyses are carried out to explore whether associations between pornography consumption and positive views on homosexuality are strongest when consumers place a premium on personal freedom and adopt a relativistic perspective on morality. Nationally representative cross-sectional General Social Survey (GSS) data (Smith, Marsden, Hout, & Kim, 2012) gathered from independent samples in 2000, 2002, 2004, 2006, 2008, 2010, and 2012 are utilized to address these questions.

Media Sexual Socialization Theory

Wright's (2011) script acquisition, activation, application model ($_3$ AM) of sexual media socialization provides a theoretical rationale for why viewing sex in the media can lead to shifts in attitudes for some consumers (see also Wright et al., 2012). The $_3$ AM has served as a theoretical referent in sexual media studies exploring a wide range of outcomes (Hald, Malamuth, & Lange, 2013; Hald & Mulya, 2013; O'Hara, Gibbons, Gerrard, Li, & Sargent, 2012; Ragsdale et al., 2013; Wright, Bae, & Funk, 2013; Wright & Funk, 2013). Recently, the $_3$ AM has been used to inform research on

pornography consumption and attitudes toward homosexuality (Wright & Bae, 2013; Wright & Randall, 2013).

The $_3$ AM maintains that sexual media exert their influence through the provision of sexual scripts. Sexual scripts are cultural constructions that address the questions of with whom it is permissible to have sex, the type of relationship within which sex should occur, and the consequences of various sex acts and relationships. According to the $_3$ AM, pornography can provide consumers with scripts they were unaware of (acquisition), prime already acquired but currently dormant scripts (activation), and encourage the utilization of scripts (application) by portraying particular sexual behaviors or relationships as normative, appropriate, and rewarding for the characters involved. Consumers can apply scripts to their own behavior (i.e., using scripts to inform personal behavioral decisions) or the behavior of others (i.e., using scripts to inform judgments about the behavior of others). In the present study, script application would occur at the level of the other (i.e., heterosexual persons using pornographic scripts to inform judgments about gay individuals).

In alignment with Bandura (2001) and Huesmann (1986), the $_3$ AM contends that scripting effects can be specific or abstract. A specific scripting effect takes place when observing a particular behavior affects judgments of that particular behavior. The observation of pleasurable same-sex relations leading to increased acceptance of same-sex sex would be an example of specific scripting. An abstract scripting effect takes place when consumers infer the general principle underlying the sexual depiction. This higher-order script abstraction allows observers to apply the principle to a wider range of behaviors than those depicted. An example of abstract scripting would be deducing the principle of tolerance for departures from the heterosexual norm from observing pleasurable same-sex relations and then applying this principle to judgments of gay individuals' civil liberties.

Many pornography studies suggest specific scripting effects. As one example, extramarital sex is commonly depicted in pornography (Wright, 2013a). Correspondingly, studies find that pornography consumers have more positive attitudes toward extramarital sex (Carroll et al., 2008; Omori, Zhang, Allen, Ota, & Imamura, 2011). As another example, condoms are infrequently used in pornography (Sun, Bridges, Wosnitzer, Scharrer, & Liberman, 2008). Correspondingly, several studies have found that pornography consumers are less likely to use condoms (Luder et al., 2011; Peter & Valkenburg, 2011a). Research that speaks to the idea of abstract scripting is rarer, but a few studies have generated data consistent with this concept (Wright & Funk, 2013). To illustrate, Zillmann and Bryant (1982) found that experimental exposure to pornography changed consumers' perceptions about topics as varied as the emotional and physical effects of sexual repression, the future of marriage as an institution, and the degree to which humans are innately untrustworthy.

Pornographic Scripts and Views on Homosexuality

The traditional sexual script confines sexual relations to married, monogamous adult heterosexuals who are willing to procreate (Linz & Malamuth, 1993; Treas, 2002).

Sexual depictions and themes in popular pornography diverge from each component of the traditional sexual script. Casual, nonmarital sex is customary (Monk-Turner & Purcell, 1999). Extramarital sex and sex with multiple partners is common (Wright, 2013a; Wright & Arroyo, 2013). The adolescence of actors is often highlighted (Jensen, 2010). Sex occurs between people of the same sex (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010; Sun et al., 2008). Procreation is not a sexual motive (Zillmann & Bryant, 1988).

Wright and Randall (2013) and Wright and Bae (2013) reasoned that pornography could affect heterosexuals' views on homosexuality via its positive portrayal of nontraditional heterosexual sex and same-sex sex. Using data from the first-ever GSS panel study, Wright and Randall studied heterosexual men and found that prior pornography consumption predicted subsequent support for same-sex marriage. Using longitudinal data from the next GSS panel study, Wright and Bae studied men and women and found that prior pornography consumption predicted subsequent moral acceptance of homosexuality and support for same-sex marriage among some consumers. Importantly, neither study found evidence of reverse causality. Prior attitudes toward homosexuality were not predictive of subsequent pornography consumption.

Another study of pornography exposure and attitudes toward homosexuality was carried out by Golom and Mohr (2011). This experimental study found that viewing pornography depicting male-male sex led some heterosexual collegiate males to have more favorable attitudes toward gay men. To conclude, although few studies have been conducted, the evidence available suggests that exposure to pornography may lead to more favorable attitudes toward homosexuality for some heterosexual individuals.

Contributions of the Present Study

The present study makes several novel contributions to the literature on pornography, socialization, and views on homosexuality. The present study's first contribution involves the assessment of indirect and direct associations between pornography consumption and views on homosexuality. Drawing on the ₃AM and research on pornography and nontraditional sexual attitudes (e.g., Carroll et al., 2008; Lo & Wei, 2005; Treas, 2002), Wright and Randall (2013) speculated that viewing positive depictions of nontraditional heterosexual sex leads to more positive attitudes toward nontraditional heterosexual sex, which in turn affects attitudes toward nontraditional sex in general including same-sex sex (i.e., viewing positive portrayals of nontraditional heterosexual sex → more positive attitudes toward nontraditional heterosexual sex → more positive attitudes toward nontraditional sex in general including same-sex sex). Drawing on the ₃AM, research indicating that same-sex encounters are not uncommon in popular pornography (Sun et al., 2008), and research indicating that same-sex encounters are viewed by heterosexual pornography consumers (Paul, 2009), Wright and Bae (2013) speculated that viewing pornography might also directly affect

heterosexuals' attitudes toward homosexuality (i.e., viewing positive portrayals of same-sex sex → more positive attitudes toward same-sex sex).

Neither study, however, tested whether pornography consumption indirectly predicted heterosexuals' views on homosexuality via a nontraditional attitude toward sex and directly predicted heterosexuals' views on homosexuality in a structural model. Associations between pornography consumption, nontraditional sexual attitudes, and views on homosexuality were not explored, as neither study included an assessment of nontraditional sexual attitudes. The $_3AM$ would predict both direct and indirect associations. Consequently, an examination of paths between pornography consumption, nontraditional sexual attitudes, and views on homosexuality represents an important, yet untested, application of the $_3AM$ to sexual media and attitudes toward homosexuality.

The present study's second contribution involves analysis of whether pornography consumption correlates with attitudes toward gay individuals' civil liberties, such as the right to make a public speech or the right to teach at a university. If pornography consumption affects these types of attitudes it is likely due to an abstract scripting effect, as these civil liberties are not foci of pornography. Abstract scripting is a central tenet of Bandura's (2001) social cognitive theory of behavior (see also Huesmann, 1986). Media studies typically reference social cognitive theory to explain behavioral effects (Harris & Sanborn, 2014). This is particularly true of media sex studies (Collins et al., 2004; Peter & Valkenburg, 2011a; Ybarra, Mitchell, Hamburger, Diener-West, & Leaf, 2011).

The $_3AM$ contends that abstract scripting dynamics affect attitudes as well as behavior. Specifically, the model asserts that sexual media activate abstract scripts for social behavior, which may be applied to appraisals that extend beyond the specific interaction patterns depicted (e.g., Wright & Funk, 2013). Wright and Randall (2013) interpreted their finding of a prospective association between pornography consumption and support for same-sex marriage in terms of abstract scripting. Since married partners are assumed to have sex (Borten, 2002), though, this association may have been more indicative of specific scripting (i.e., an effect of viewing nontraditional sex in pornography on a judgment of nontraditional sex). Behaviors such as speechmaking or teaching are asexual, and therefore provide a stronger test of abstract scripting. Given that abstract scripting is a central tenet of social cognitive theory and that the extension of abstract scripting to attitudes is a central tenet of the $_3AM$, the exploration of pornography's association with attitudes toward gay individuals' civil liberties is a test with important theoretical implications.

Identifying predictors of support for gay individuals' civil liberties is also of applied importance. Consistent with past research (Wright & Bae, 2013), the present study assesses moral condemnation of homosexuality. Gay individuals' lives are affected by both moral denunciation and restriction of civil liberties, however (Herek, 2006, 2007). In sum, it is both theoretically and pragmatically important to evaluate associations between pornography consumption and attitudes toward gay individuals' civil liberties.

According to Linz and Malamuth's (1993) theory of pornography and society, there are two philosophical orientations that explain individuals' reactions to

pornography: valuation of personal freedom and moral relativism. No study, however, appears to have directly tested whether associations between pornography consumption and sociosexual attitudes are contingent upon these perspectives. Thus, the present study's third contribution is its assessment of whether associations between pornography consumption and positive views on homosexuality depend on consumers' valuation of personal freedom and moral relativism.

Valuers of personal freedom privilege individual choice and autonomy over social conformity and order (Linz & Malamuth, 1993). A valuer of personal freedom may disagree with a particular view or behavior but will defend the right of others to hold that view or engage in that behavior. In accordance with Linz and Malamuth's theory, a belief in the importance of each individual's right to personal freedom is associated with a less punitive view of nontraditional sex (Treas, 2002).

Moral relativists believe that moral truths are fluid and contingent on context, circumstance, time, and place (Linz & Malamuth, 1993). For moral relativists, traditional prohibitions against behaviors such as same-sex sex are not immutable truths; they are social constructions that should be open to ongoing evaluation. In alignment with Linz and Malamuth's theory, moral relativists are more accepting of nontraditional sex than moral absolutists (Rigney & Kearl, 1994).

The $\text{}_3\text{AM}$ states explicitly that attitudinal shifts from viewing sexual media are most likely in the absence of incompatibility between consumers' moral views and media scripts (Wright, 2011; Wright & Bae, 2013). As moral relativists are more accepting of nontraditional sex than moral absolutists, an expectation that associations between pornography consumption and positive views on homosexuality will be more likely for the former than the latter follows directly from the $\text{}_3\text{AM}$. The $\text{}_3\text{AM}$ also suggests, however, that any incompatibility between consumers' preexisting beliefs and media scripts should inhibit attitude change (e.g., Wright, 2013a; Wright et al., 2013). As a belief in the importance of each individual's right to personal freedom is associated with more acceptance of nontraditional sex (Treas, 2002), an expectation that associations between pornography consumption and positive views on homosexuality should be strongest among those who place a premium on personal freedom also follows from the $\text{}_3\text{AM}$.

To conclude, Linz and Malamuth (1993) posit that moral relativists and people who place a higher value on personal freedom will react less negatively to depictions of nontraditional sex than moral absolutists and people who place a lower value on personal freedom. The $\text{}_3\text{AM}$ contends that a lack of incongruence between scripts in sexual media and consumers' preexisting beliefs increases the likelihood that consumers will use sexual media scripts to inform their judgments. Consequently, investigating whether valuations of personal freedom and moral relativism interact with pornography consumption to predict views on homosexuality has implications for Linz and Malamuth's theory and provides an important test of Wright's theory.

Two additional contributions are noteworthy. First, the present study adds nationally representative data to the pornography literature, a literature that is dominated by convenience sampling (Wright, 2012a). Second, the present study provides data on older adults' pornography consumption and attitudes, extending the

media sex research domain beyond its usual focus on adolescents and emerging adults. Studies by Peter and Valkenburg (2011a, 2011b) have recently highlighted the importance of nationally representative data and data on older adults' pornography consumption.

Hypotheses

To summarize, theory and prior research indicate that pornography consumers should express more positive views on homosexuality than nonconsumers across a range of contexts. A nontraditional attitude toward sex should mediate links between pornography consumption and positive views on homosexuality. Additionally, associations between pornography consumption and positive attitudes toward homosexuality should be strongest when consumers are morally relativistic or place a high premium on personal freedom. The following hypotheses are proposed in correspondence with these positions:

Hypothesis 1: Associations between pornography consumption and (a) attitudes toward civil liberties for gay individuals, (b) moral acceptance of homosexuality, and (c) support for same-sex marriage are mediated by a nontraditional attitude toward sex.

Hypothesis 2: There is also a direct association between pornography consumption and (a) attitudes toward civil liberties for gay individuals, (b) moral acceptance of homosexuality, and (c) support for same-sex marriage.

Hypothesis 3: Associations between pornography consumption and (a) attitudes toward civil liberties for gay individuals and (b) moral acceptance of homosexuality are moderated by the importance placed on personal freedom (analysis of support for same-sex marriage was not possible, as importance of personal freedom was assessed in GSS 2000 only and support for same-sex marriage was not assessed in GSS 2000).

Hypothesis 4: Associations between pornography consumption and (a) attitudes toward civil liberties for gay individuals, (b) moral acceptance of homosexuality, and (c) support for same-sex marriage are moderated by moral relativism.

Method

Data Source

The present study utilized data from seven nationally representative cross-sectional surveys. Data were gathered from different samples of respondents in 2000, 2002, 2004, 2006, 2008, 2010, and 2012. Data were generated by the GSS. Funded by the National Science Foundation, the GSS is the only ongoing, national, full-probability personal interview survey examining adults' social beliefs and behaviors currently carried out in the United States (The National Data Program for the Social Sciences, 2012). The GSS surveys residence-inhabiting adults age 18 or older. All residences in the United States have an equal chance of being selected. Adults within each residence have an equal

probability of being interviewed. GSS samples mirror distributions reported in the Census and other respected sources (GSS Codebook, 2012). Weight variable WTSSALL was applied, in accordance with GSS directives (GSS Codebook, 2012).

Participants

To allow for the inclusion of more questions and to avoid participant fatigue, not all GSS questions are asked of all participants in each survey. For example, not all participants in each survey are asked about their pornography consumption. Similarly, the GSS asks certain core questions in each survey, but asks other questions in only certain surveys. To illustrate, importance of personal freedom has so far been assessed only in GSS 2000. Additionally, the GSS adds new questions to its surveys over time. For instance, the GSS did not ask participants about their attitude toward same-sex marriage until 2004.

An attempt was made to limit the present study to participants with a heterosexual orientation. In all GSSs conducted between 2000 and 2012, a question was included assessing the sex of individuals' sexual partners over the last five years. Participants who had at least one sex partner in the last five years ($n = 7,010$) indicated whether they had sex exclusively with women, exclusively with men, or with both men and women. Participants were coded as either having a heterosexual orientation or a homosexual/bisexual orientation based on these responses. Results indicated a heterosexual orientation among 95.76% of participants ($n = 6,713$). Only participants whose sexual history indicated a heterosexual orientation were retained in the present study. In sum, the statistics to follow reflect participants who were asked about their pornography consumption and whose sexual history indicated a heterosexual orientation.

Demographics

The following demographic characteristics were assessed in all 2000–2012 GSSs. Women comprised a slight majority of participants, at 52.1% (men were coded 0, women were coded 1; $n = 6,713$). Whites comprised a majority of participants, at 79.0% (Whites were coded 0, ethnic minorities were coded 1; $n = 6,713$). Participants ranged in age from 18 to 89 years and were 43.49 years old, on average ($SD = 15.38$; $n = 6,699$). Participants had completed 13.69 years of education, on average ($SD = 2.85$; $n = 6,701$). Participants attended religious services once a month, on average (scale range: 0 = *never attend religious services*, 8 = *attend religious services more than once a week*; $M = 3.51$, $SD = 2.71$; $n = 6,665$). Participants identified as politically “moderate,” on average (scale range: 1 = *extremely liberal*, 7 = *extremely conservative*; $M = 4.16$, $SD = 1.41$; $n = 6,495$).

Predictor Variable

Pornography consumption. Participants were asked if they had viewed a pornographic movie in the prior year (0 = *no*, 1 = *yes*) in all 2000–2012 GSSs ($n = 6,713$),

to which 26.5% of participants answered affirmatively. Pornographic movie viewing has been used as a predictor of sexual attitudes in many studies (Brown & L'Engle, 2009; Carroll et al., 2008; Lo & Wei, 2005; Wingood et al., 2001). Prior research and theory suggest that women (Paul, 2009) and the more conservative (Linz & Malamuth, 1993) should be less likely to consume pornography. Correspondingly, sex ($r = -.21, p < .001; n = 6,713$) and political orientation ($r = -.13, p < .001; n = 6,495$) were negatively associated with pornography consumption.

Criterion Variables

Attitudes toward civil liberties for gay individuals. Attitudes toward civil liberties for gay individuals were assessed by summing three dichotomous items measured in all 2000–2012 GSSs with the exception of the structural equation models (SEMs) in which the individual items were treated as indicators of a latent factor. Higher scores equate to more support for gay individuals' civil liberties. Participants were asked whether gay individuals should be able to teach at universities (0 = *not allowed*, 1 = *allowed*), whether books supportive of gay individuals should be removed from public libraries (0 = *removed*, 1 = *not removed*), and whether gay individuals should be allowed to make public speeches (0 = *not allowed*, 1 = *allowed*) (scale range: 0–3; $M = 2.51, SD = 0.92; n = 3,262$). Principal axis factor analysis using the Kaiser's eigenvalue > 1 criterion for extraction indicated a one-factor solution (variance accounted for = 69.62%; Cronbach's alpha = .78). These items have been utilized in many studies (Brace, Sims-Butler, Arceneaux, & Johnson, 2002; Kenneavy, 2012; Tuntiya, 2005). Prior research suggests that conservatives should express less support for gay individuals' civil liberties, whereas the educated should express more support (Kenneavy, 2012). Correspondingly, political orientation was negatively associated ($r = -.12, p < .001; n = 3,165$) and education was positively associated ($r = .29, p < .001; n = 3,259$) with attitudes toward civil liberties for gay individuals.

Moral acceptance of homosexuality. Participants were asked if they thought it was wrong for two adults of the same sex to have sexual relations in all 2000–2012 GSSs (scale range: 1 = *always wrong*, 4 = *not wrong at all*; $M = 2.33, SD = 1.41; n = 3,177$). This item has been employed in many studies (Kozloski, 2010; Petersen & Hyde, 2010; Wright & Bae, 2013). Prior research suggests that the less educated and older persons should express less moral acceptance of homosexuality (Kozloski, 2010). Correspondingly, education was positively associated ($r = .24, p < .001; n = 3,177$) and age negatively associated ($r = -.14, p < .001; n = 3,170$) with moral acceptance of homosexuality.

Support for same-sex marriage. In GSSs 2006–2012, participants who were asked about their pornography consumption were also asked if they agreed that same-sex couples should have the right to marry (support for same-sex marriage was assessed in GSS 2004, but not among participants who were asked about their pornography consumption) (scale range: 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.96, SD = 1.50; n = 2,088$). This item has been employed in several studies (Baunach,

2012; Sherkat, De Vries, & Creek, 2010; Wright & Randall, 2013). Prior research suggests that women (Kite & Whitley, 1996) and the more liberal (Wright & Randall, 2013) should express more support for same-sex marriage. Correspondingly, sex was positively associated ($r = .12, p < .001; n = 2,088$) and political orientation was negatively associated ($r = -.41, p < .001; n = 2,022$) with support for same-sex marriage.

Mediator Variable

Nontraditional attitude toward sex. The traditional sexual script limits sexual relations to (1) adults, (2) who are married, (3) monogamous, (4) willing to procreate, and (5) heterosexual (Linz & Malamuth, 1993; Treas, 2002). As indicated in the “Criterion Variables” subsection, the GSS includes several attitude items relevant to condition “5” (i.e., relevant to the condition prohibiting same-sex sex). The GSS also includes several attitude items relevant to the conditions required for heterosexual sex (i.e., items relevant to conditions “1” through “4”). Relevant to conditions “1” and “2,” the GSS asks about the appropriateness of teenage sex and adult premarital sex (scale range for each item: 1 = *always wrong*, 4 = *not wrong at all*). Relevant to conditions “2” and “3,” the GSS asks about the appropriateness of married people having sex with somebody other than their spouse (scale range: 1 = *always wrong*, 4 = *not wrong at all*). Relevant to conditions “1” and “4,” the GSS asks about agreement with the position that adolescents should have access to birth control (scale range: 1 = *strongly disagree*, 4 = *strongly agree*).

In GSSs 2000–2012, participants who were asked about their pornography consumption and views on homosexuality were not asked about their attitudes toward teenage sex, adult premarital sex, or adolescents having access to birth control. Consequently, these items could not be used as indicators of a nontraditional attitude toward sex in mediation analyses. Conversely, participants who were asked about their pornography consumption and views on homosexuality were asked about their attitude toward extramarital sex ($M = 1.31, SD = 0.66; n = 3,297$). Thus, attitude toward extramarital sex could be used as an indicator of a nontraditional approach to sex in mediation analyses.

Some participants in GSSs 2000–2012 were asked about their attitudes toward extramarital sex, teenage sex, adult premarital sex, and adolescent access to birth control. Among these participants, expression of a more nontraditional attitude toward extramarital sex was associated with a more nontraditional attitude on the other indicators: teenage sex $r = .30, p < .001, n = 3,344$; adult premarital sex $r = .23, p < .001, n = 3,281$; adolescent access to birth control $r = .14, p < .001, n = 3,064$. Principal axis factor analysis using standardized items and the Kaiser’s eigenvalue > 1 criterion for extraction indicated that attitude toward extramarital sex, attitude toward teenage sex, attitude toward adult premarital sex, and attitude toward birth control for adolescents loaded onto a single factor (Eigenvalue = 1.80, variance explained = 44.86%).

Attitudes toward extramarital sex have been used to indicate nontraditional sexual attitudes in many studies (Carroll et al., 2008; Lo & Wei, 2005; Omori et al., 2011; Strickler & Danigelis, 2002; Treas, 2002; Wright, 2012b). For example, in their experimental study of pornography exposure and nontraditional sexual attitudes, Zillmann and Bryant (1988) combined questions about premarital sex and extramarital sex into a composite index of nontraditional sexual attitudes and combined questions about extramarital sex, extrarelational sex, and sex with multiple partners into a second composite index of nontraditional sexual attitudes. Pornography exposure led to more positive attitudes on both scales.

Additionally, prior research and theory suggest that the more religious (Linz & Malamuth, 1993) and the more conservative (Wright, 2013a) should have more negative attitudes toward nontraditional sex. Correspondingly, attendance at religious services ($r = -.19, p < .001; n = 3,269$) and political orientation ($r = -.18, p < .001; n = 3,194$) were negatively associated with attitude toward extramarital sex among the present study's participants. Attitude toward extramarital sex was thus deemed an acceptable indicator of a nontraditional perspective on sex, and was employed in mediation analyses.

Moderator Variables

Importance of personal freedom. Importance of personal freedom was assessed by summing and averaging four items measured in GSS 2000. Participants were asked the importance they placed on the ability to choose what one wants to do in life; the ability to express unpopular ideas; being left alone to do as one pleases; and being unfettered by governmental interference (scale range: 1 = *not too important*, 6 = *one of the most important*; $M = 4.80, SD = 0.77; n = 626$). Principal axis factor analysis using the Kaiser's eigenvalue > 1 criterion for extraction indicated a one-factor solution (variance accounted for = 50.46%; Cronbach's alpha = .67). These items have been employed in prior research (Greeley & Hout, 2006; Robinson, Neustadt, & Kestnbaum, 2002). Sociological theorizing suggests that individuals who value personal freedom also value civil rights (Davis & Silver, 2004). Correspondingly, higher valuation of personal freedom was associated with more positive attitudes toward civil liberties for gay individuals ($r = .17, p < .01; n = 314$).

Moral relativism. In GSSs 2006–2010, participants were asked if they agreed that right and wrong are not a simple matter of black and white—there are many shades of gray (scale range: 1 = *disagree strongly*, 4 = *agree strongly*; $M = 3.23, SD = 0.87; n = 3,238$). This item has been used to assess moral relativism in many studies (Peterson, Smith, Tannenbaum, & Shaw, 2009; Rigney & Kearl, 1994; Sherkat & Ellison, 1997). Peterson et al. (2009) suggest that conservatives and the religious are less likely to hold relativistic views on morality. Correspondingly, political orientation ($r = -.23, p < .001; n = 3,157$) and attendance at religious services ($r = -.20, p < .001; n = 3,235$) were negatively associated with moral relativism.

Results

Analysis Plan

Hypothesis 1 predicted that a nontraditional attitude toward sex mediates the relationship between pornography consumption and views on homosexuality. Structural equation modeling (SEM) was used to concurrently estimate the relationships of this mediation. SEM provides both a metric for goodness-of-fit of the global model and parameter estimates of the local relationships. Because the hypothesized mediated associations between pornography consumption and civil liberties for gay individuals, moral acceptance of homosexuality, and support for same-sex marriage are of interest independently, three models were tested.

The SEMs were conventional in their construction with noteworthy exceptions. Weight variable WTSSALL was applied in estimating the models (GSS Codebook, 2012). The models that measure the mediated association between pornography consumption and moral acceptance of homosexuality and support for same-sex marriage were estimated using the maximum likelihood method; however, the model with attitudes toward civil liberties for gay individuals was estimated using the weighted least squares method given that the civil liberties latent factor is measured by three categorical indicators. Single-item measures were treated as latent factors in structural models to attenuate measurement error, with the paths constrained to 1.0. Some covariances between covariates (e.g., sex-age, sex-race) were constrained to zero because they were not theoretically supported and freed degrees of freedom necessary for model identification. Model fit was evaluated using Hu and Bentler's (1999) dual criteria of a comparative fit index (CFI) greater than or equal to .96 and a standardized root mean square residual (SRMR) of less than or equal to .10.

SEMs estimate the proposed interrelationships at a given cross-section of time but do not necessarily provide a robust test of mediation. This is because the product of the path coefficients, a test of mediation, is non-normally distributed despite bivariate normality. Confidence intervals (CIs) around products of coefficients are likely to be biased when based on normal theory (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). To overcome this limitation, a bias-corrected bootstrapping procedure was used to supplement the findings of the SEMs. Bootstrapping is an asymptotic iterative resampling method that estimates the indirect effect (IE) coefficient and, more importantly, models its unique distribution. Distributional information can then be applied to construct asymmetric CIs around the IE coefficient. The coefficient is considered statistically significant at a given alpha level if its CI does not include zero.

Control variables were included in the SEMs and bootstrapped regressions. Age, education, ethnicity, sex, political orientation, and religiosity were modeled as covariates in the independent variable-to-mediator and the mediator-to-dependent variable relationships. The control variables, selected from theory and prior research (e.g., Linz & Malamuth, 1993; Malamuth, 1996; Stack, Wasserman, & Kern, 2004; Wright, 2013b; Wright & Bae, 2013), were included to rule out possible spurious explanations. The distribution of the mediator, a nontraditional attitude toward sex,

was skewed (skewness = 2.31) and leptokurtic (kurtosis = 4.78); a natural log-transformed form of the variable—which normalized its distribution (skewness = 1.83, kurtosis = 1.94)—was used in the tests.

Hypothesis 2 predicted a direct association between pornography consumption and views on homosexuality. A direct path was included in the models that tested Hypothesis 1 in order to test Hypothesis 2. The contribution of the direct path to model fit and statistics based on normal theory were used to determine whether Hypothesis 2 was supported.

The goal of Hypotheses 3 and 4 was to examine whether views on personal freedom and views on morality moderated associations between pornography consumption and views on homosexuality. Hierarchical multiple regression analyses with product terms were employed to test Hypotheses 3 and 4. Controls (age, education, ethnicity, sex, political orientation, religiosity) were entered in the first step, pornography consumption and the moderator under examination in the second step (importance of personal freedom or moral relativism), and the product term under examination in the third step (pornography consumption \times importance of personal freedom or pornography consumption \times moral relativism). Interval variables were mean-centered. Dichotomous variables' low value was zero. Significant interactions were probed using simple slope (SL) tests, as prescribed by Aiken and West (1991). SLS represent the association between the predictor and the criterion at a particular level of the moderator.

Results are presented in the order in which the hypotheses were outlined. [Table 1](#) displays zero-order correlations between pornography consumption and views on homosexuality.

Mediation Hypotheses

Hypothesis 1a was supported by the findings of the SEMs. The initial model tested the relationships between pornography consumption, a nontraditional attitude toward sex, and attitudes toward civil liberties for gay individuals. The fit indices suggest that the proposed mediation was consistent with the data, $\chi^2(df = 21, N = 2,999) = 88.56, p < .001$, CFI = .98, root mean square error of approximation (RMSEA) = .033, 90% CI [.026, .040], SRMR = .02. The path coefficients of this model, displayed in [Table 2](#), indicate that pornography consumption predicted a nontraditional attitude toward sex ($\beta = .11, SE = 0.02, p < .001$), which in turn predicted attitudes toward civil liberties for gay individuals ($\beta = .06, SE = 0.02, p < .001$). The bootstrapping procedure used to estimate the standard errors of the IE estimate supported the hypothesized mediation. CIs of the 1,000-bootstrap resamples procedure around the bias-corrected IE coefficient did not include zero (IE coefficient = .009, SE = 0.004, 95% CI [.002, .017], $N = 2,999$).

Hypothesis 1b was also supported. The fit indices find that the proposed model fits the data well, $\chi^2(df = 5, N = 2,945) = 14.59, p = .01$, CFI > .99, RMSEA = .026, 90% CI [.011, .041], SRMR = .01. Path estimates are presented in [Table 3](#). The path coefficient between pornography consumption and a nontraditional attitude toward

Table 1 Zero-order correlations between pornography consumption and views on homosexuality.

Variable	1	2	3	4
1. Pornography consumption	–	.11*** (<i>n</i> = 3,262)	.12*** (<i>n</i> = 3,177)	.14*** (<i>n</i> = 2,088)
2. Civil liberties for gay individuals		–	.40*** (<i>n</i> = 3,100)	.40*** (<i>n</i> = 2,039)
3. Moral acceptance of homosexuality			–	.67*** (<i>n</i> = 2,004)
4. Support for same-sex marriage				–

****p* < .001.

sex was significant ($\beta = .11$, $SE = 0.02$, $p < .001$); likewise, the path between a nontraditional sexual attitude and moral acceptance of homosexuality was also significant ($\beta = .13$, $SE = 0.02$, $p < .001$). CIs around the product of coefficients did not include zero, supporting the proposed mediation (IE coefficient = .044, $SE = .010$, 95% CI [.026, .067], $N = 2,945$).

Hypothesis 1c was also supported. The fit indices indicate that the proposed mediation model was consistent with the data, $\chi^2(df = 5, N = 1,934) = 14.63$, $p = .01$, CFI > .99, RMSEA = .031, 90% CI [.014, .051], SRMR = .01. Path estimates are displayed in Table 4. In this model, pornography consumption was associated with a nontraditional attitude toward sex ($\beta = .11$, $SE = 0.02$, $p < .001$), which consequently was associated with support for same-sex marriage ($\beta = .09$, $SE = 0.02$, $p < .001$). Findings from the bootstrapped mediator model support the hypothesized mediation (IE coefficient = 0.029, $SE = 0.010$, 95% CI [.013, .052], $N = 1,934$).

Hypothesis 2a was also supported. The first model tested the direct association between pornography consumption and positive attitudes toward civil liberties for

Table 2 Path coefficients from mediation analysis of pornography consumption on civil liberties for gay individuals through a nontraditional attitude toward sex.

	Nontraditional attitude toward sex (mediator)		Civil liberties for gay individuals (DV)	
	β	SE	β	SE
Age	.082***	0.018	–.126***	0.021
Education	.144***	0.019	.289***	0.018
Ethnicity	.035	0.019	–.060**	0.021
Gender	–.013	0.018	.056**	0.018
Political orientation	–.133***	0.019	–.074***	0.020
Religiosity	–.168***	0.017	–.167***	0.022
Pornography consumption	.107***	0.021	–	–
Nontraditional attitude toward sex	–	–	.058***	0.017

 $N = 2,999$.***p* < .01; ****p* < .001.

Table 3 Path coefficients from mediation analysis of pornography consumption on moral acceptance of homosexuality through a nontraditional attitude toward sex.

	Nontraditional attitude toward sex (mediator)		Moral acceptance of homosexuality	
	β	SE	β	SE
Age	.082***	0.018	-.087***	0.016
Education	.143***	0.019	.211***	0.016
Ethnicity	.034	0.019	-.102***	0.016
Gender	-.013	0.018	.139***	0.016
Political orientation	-.133***	0.019	-.229***	0.016
Religiosity	-.169***	0.017	-.269***	0.016
Pornography consumption	-.106***	0.021	–	–
Nontraditional attitude toward sex	–	–	.132***	0.016

$N = 2,945$.

*** $p < .001$.

gay individuals. The fit of the model improved with the addition of the direct path as indicated by significant change in model chi-square, $\Delta\chi^2(1) = 10.22$, $p = .001$. The paths in the model representing the IE were significant, and the direct path tested under normal theory was also significant ($\beta = .060$, $SE = 0.064$, $p < .01$).

Hypothesis 2b was also supported. The second model tested the direct association between pornography consumption and moral acceptance of homosexuality. Including the direct association improved model fit, $\Delta\chi^2(1) = 7.48$, $p = .01$. The path coefficient indicated that consumption of pornography was positively associated with moral acceptance of homosexuality ($\beta = .047$, $SE = 0.017$, $p < .01$).

Hypothesis 2c was also supported. The third structural model evaluated the direct association between pornography consumption and support for same-sex marriage. The model fit improved with the inclusion of the direct path, $\Delta\chi^2(1) = 4.85$, $p = .03$.

Table 4 Path coefficients from mediation analysis of pornography consumption on support for same-sex marriage through a nontraditional attitude toward sex.

	Nontraditional attitude toward sex (mediator)		Support for same-sex marriage (DV)	
	β	SE	β	SE
Age	.081***	0.023	-.132***	0.020
Education	.125***	0.022	.123***	0.019
Ethnicity	.058**	0.022	-.042*	0.020
Gender	-.024	0.023	.129***	0.019
Political orientation	-.137***	0.023	-.313***	0.019
Religiosity	-.156***	0.023	-.256***	0.020
Pornography consumption	.107***	0.024	–	–
Nontraditional attitude toward sex	–	–	.087***	0.020

$N = 1,934$.

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

Consumption of pornography predicted support for same-sex marriage above and beyond the modeled IE ($\beta = .047$, $SE = 0.021$, $p < .05$).

Verification of temporal sequencing. The SEMs of cross-sectional GSS data gathered between 2000 and 2012 indicate that pornography consumption predicts a more nontraditional attitude toward sex, which predicts more positive views on homosexuality. To verify the temporal sequencing of these associations, the GSS's 2006 panel study (T1: 2006, T2: 2008, T3: 2010) and the GSS's 2008 panel study (T1: 2008, T2: 2010, T3: 2012) were examined. Wright and Randall (2013) and Wright and Bae (2013) found in these panels that prior pornography consumption predicted subsequent moral acceptance of homosexuality and support for same-sex marriage, but assessed neither the mediating effect of a nontraditional attitude toward sex nor attitudes toward gay individuals' civil liberties.

In accordance with the procedure used to analyze the multiple cross-sectional samples (i.e., the combining of GSSs 2000, 2002, 2004, 2006, 2008, 2010, and 2012 into one composite cross-sectional sample), the 2006 and 2008 GSS panel samples were collapsed into one three-wave sample to increase statistical power. Weight variable WTPANNR123 was applied, following GSS directives (GSS Panel Release Notes, 2011). Three structural models were constructed, with pornography consumption at Time 1 (T1) predicting a nontraditional attitude toward sex at Time 2 (T2), which in turn predicted a more positive attitude toward civil liberties for gay individuals, moral acceptance of homosexuality, or support for same-sex marriage at Time 3 (T3). The autoregressive effects for the mediating and dependent variables at prior time points (T1 for the mediator, T2 for the dependent variables) were also estimated in the model. The inclusion of previous levels of the mediating and dependent variables provides a stringent test of temporal sequencing among the variables (Cole & Maxwell, 2003). Covariances were modeled between the error variances of time-varying constructs.

The initial model, with attitudes toward civil liberties for gay individuals as the dependent variable, demonstrated a good fit to the data, $\chi^2(20) = 36.21$, $p = .01$, CFI = .93, RMSEA = .04, 90% CI [.02, .05], SRMR = .01. Pornography consumption (T1) accounted for significant variance in nontraditional attitudes toward sex (T2) ($\beta = .10$, $SE = .04$, $p = .01$) above and beyond the autoregressive effect of earlier nontraditional sexual attitudes ($\beta = .50$, $SE = .05$, $p < .001$). Likewise, the association between a nontraditional attitude toward sex (T2) and positive attitudes toward gay individuals' civil liberties (T3) was significant ($\beta = .05$, $SE = .02$, $p = .03$) even after the effect of earlier attitudes toward gay individuals' civil liberties was accounted for ($\beta = .80$, $SE = .04$, $p < .001$).

The second proposed model, which included moral acceptance of gay individuals as the dependent variable, fit the data well, $\chi^2(3) = 9.63$, $p = .02$, CFI > .99, RMSEA = .06, 90% CI [.02, .10], SRMR = .03. Pornography consumption (T1) predicted variance in a nontraditional attitude toward sex (T2) ($\beta = .13$, $SE = .04$, $p < .001$), which in turn, explained significant variance in moral acceptance of homosexuality (T3) ($\beta = .06$, $SE = .02$, $p = .02$). The substantiated mediation accounted for variance

above and beyond the autoregressive effect for the mediator ($\beta = .44$, $SE = .05$, $p < .001$) and the dependent variable ($\beta = .78$, $SE = .02$, $p < .001$).

The third model, with support for same-sex marriage as the dependent variable, showed good fit to the data, $\chi^2(3) = 5.00$, $p = .17$, $CFI > .99$, $RMSEA = .03$, 90% CI [.00, .08], $SRMR = .02$. Although the autoregressive effects for support for same-sex marriage ($\beta = .79$, $SE = .02$, $p < .001$) and a nontraditional attitude toward sex ($\beta = .44$, $SE = .03$, $p < .001$) were demonstrably large, pornography consumption (T1) still predicted a nontraditional attitude toward sex (T2) ($\beta = .10$, $SE = .03$, $p = .01$), which still predicted support for same-sex marriage (T3) ($\beta = .05$, $SE = .02$, $p = .04$) beyond the autoregressive effects.

To conclude, the panel SEMs verify the chronology of the proposed models in the present study. In these corroboratory analyses, prior pornography consumption predicted a more positive subsequent attitude toward nontraditional sex, which in turn predicted more positive subsequent views of homosexuality. That these associations were significant above and beyond the effects of earlier attitudes toward nontraditional sex and earlier views on homosexuality excludes reverse-causality as an alternative explanation (Collins et al., 2004; Gentile, Saleem, & Anderson, 2007).

Moderation Hypotheses

Hypothesis 3 predicted that associations between pornography consumption and attitudes toward civil liberties for gay individuals (Hypothesis 3a) and moral acceptance of homosexuality (Hypothesis 3b) would be moderated by the importance placed on personal freedom (given that importance of personal freedom was assessed in GSS 2000 only, analysis of support for same-sex marriage was not possible). Hypothesis 3 was partially supported (see Table 5). Pornography consumption did not interact with importance of personal freedom to predict attitudes toward civil liberties for gay individuals, $\beta = -.05$, $t(291) = -0.81$, $p = .42$, but did interact with importance of personal freedom to predict moral acceptance of homosexuality, $\beta = .19$, $t(276) = 3.13$, $p = .002$. As predicted, pornography consumption was most strongly associated with moral acceptance of homosexuality when consumers placed a high value on personal freedom: SL not too important: $\beta = -.64$, $p = .02$; SL somewhat important: $\beta = -.42$, $p = .04$; SL moderately important: $\beta = -.21$, $p = .15$; SL very important: $\beta = .00$, $p = .96$; SL extremely important: $\beta = .22$, $p < .001$; SL one of the most important: $\beta = .43$, $p < .001$). Figure 1 illustrates visually the nature of this interaction.

Hypothesis 4 predicted that associations between pornography consumption and attitudes toward civil liberties for gay individuals (Hypothesis 4a), moral acceptance of homosexuality (Hypothesis 4b), and support for same-sex marriage (Hypothesis 4c) would be moderated by moral relativism. Hypothesis 4 was partially supported (see Table 6). Pornography consumption did not interact with moral relativism to predict attitudes toward civil liberties for gay individuals, $\beta = -.01$, $t(1,506) = -0.51$, $p = .61$, or moral acceptance of homosexuality, $\beta = .00$, $t(1,472) = 0.06$, $p = .95$. Pornography consumption did interact with moral relativism to predict support for

Table 5 Hierarchical multiple regression analyses assessing the moderating role of importance of personal freedom.

	Views on homosexuality					
	Civil liberties ^a			Moral acceptance ^b		
	<i>R</i> ² change	β	SE	<i>R</i> ² change	β	SE
Step 1	.13***			.21***		
Age		-.16**	0.00		-.13*	0.01
Education		.26***	0.02		.22***	0.03
Ethnicity		-.08	0.13		-.18**	0.18
Sex		-.10	0.10		.09	0.15
Political orientation		-.06	0.04		-.25***	0.05
Religiosity		-.10	0.02		-.17**	0.03
Step 2	.04**			.05***		
Importance of personal freedom		.13*	0.07		.07	0.09
Pornography consumption		.14*	0.12		.21***	0.18
Step 3	.00			.03**		
Importance of personal freedom \times pornography consumption		-.05	0.16		.19**	0.22

^a*N* = 301; ^b*N* = 286.**p* < .05; ***p* < .01; ****p* < .001.

same-sex marriage, however, $\beta = .06$, $t(1,530) = 2.42$, $p = .02$. As predicted, pornography consumption was associated with support for same-sex marriage only when consumers were more relativistic: SL disagree strongly: $\beta = -.09$, $p = .13$; SL disagree somewhat: $\beta = -.03$, $p = .41$; SL agree somewhat: $\beta = .03$, $p = .25$; SL agree strongly: $\beta = .09$, $p = .002$. Figure 2 illustrates visually the nature of this interaction.

Discussion

The present study explored whether heterosexual US adults' attitudes toward civil liberties for gay individuals, moral acceptance of homosexuality, and support for same-sex marriage varied as a function of their pornography consumption. Data were gathered from independent samples by the GSS in 2000, 2002, 2004, 2006, 2008, 2010, and 2012. Pornography consumers were more likely than nonconsumers to express positive attitudes toward gay individuals' civil liberties, moral acceptance of homosexuality, and support for same-sex marriage at the bivariate level and after controlling for age, education, ethnicity, sex, political orientation, and religiosity.

These results suggest that pornography consumption is associated with more positive views on homosexuality for the average adult American. They also provide additional support for the position that scripts activated by sexual media may be used as evaluative filters for a wider array of behaviors than were portrayed (Wright, 2011; Wright & Funk, 2013; see also Bandura, 2001; Huesmann, 1986). Content analyses indicate that same-sex encounters are depicted explicitly in pornography (Bridges

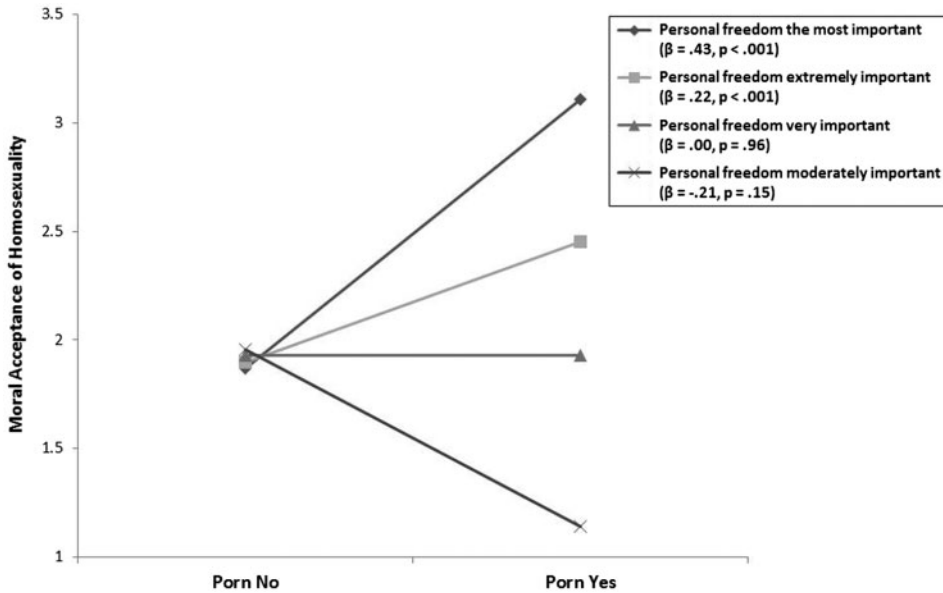


Figure 1 Interaction of pornography consumption and importance of personal freedom on moral acceptance of homosexuality..

Table 6 Hierarchical multiple regression analyses assessing the moderating role of moral relativism.

	Views on homosexuality								
	Civil liberties ^a			Moral acceptance ^b			Same-sex marriage ^c		
	<i>R</i> ² change	β	SE	<i>R</i> ² change	β	SE	<i>R</i> ² change	β	SE
Step 1	.15***			.31***			.32***		
Age		-.10***	0.00		-.10***	0.00		-.16***	0.00
Education		.30***	0.01		.22***	0.01		.12***	0.01
Ethnicity		-.09***	0.06		-.13***	0.08		-.08***	0.08
Sex		.05*	0.04		.14***	0.06		.12***	0.06
Political orientation		-.07**	0.02		-.27***	0.02		-.35***	0.02
Religiosity		-.17***	0.01		-.31***	0.01		-.26***	0.01
Step 2	.01**			.01***			.01***		
Moral relativism		.06*	0.03		.09***	0.04		.11***	0.04
Pornography consumption		.07**	0.05		.06*	0.08		.05 [†]	0.08
Step 3	.00			.00			.003*		
Moral relativism × pornography consumption		-.01	0.06		.00	0.08		.06*	0.08

^a*N* = 1,516; ^b*N* = 1,423; ^c*N* = 1,540.

[†]*p* = .05; **p* < .05; ***p* < .01; ****p* < .001.

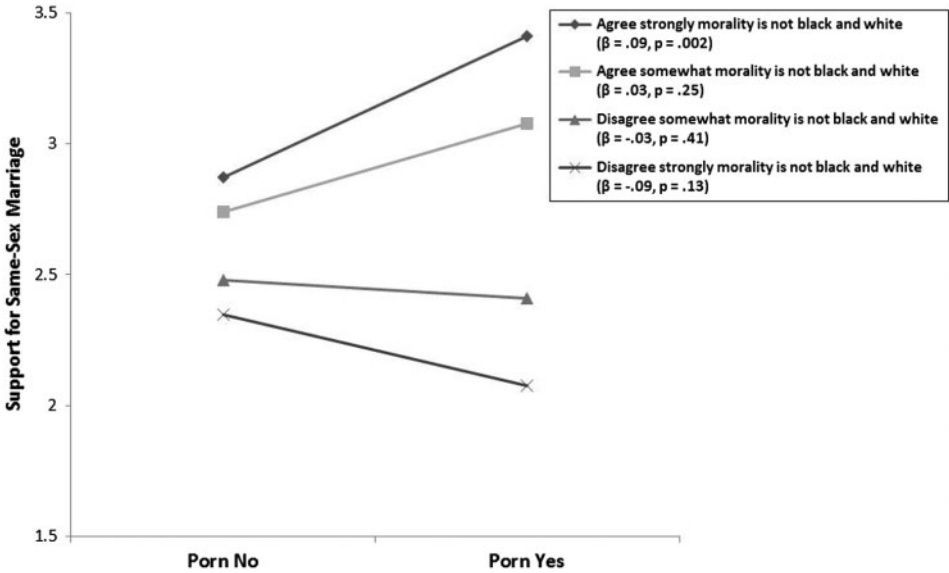


Figure 2 Interaction of pornography consumption and moral relativism on support for same-sex marriage..

et al., 2010; Sun et al., 2008). Consequently, the finding that an attitude such as moral acceptance of homosexuality correlates with pornography consumption follows from a straightforward “behavior positively depicted → attitude toward behavior changed” account of social learning (Baran & Davis, 2009). On the other hand, reports of pornography enacting scenes supporting gay individuals’ right to teach at universities or make public speeches are difficult to locate. If pornography affects such attitudes, it is likely through the abstract application of pornography’s sociosexual scripts.

Mediation analyses suggested a direct link between pornography consumption and more positive views on homosexuality and an indirect link through a nontraditional attitude toward sex. These results are consistent with Wright and Bae’s (2013) thoughts on why pornography consumption might affect heterosexuals’ views on homosexuality. First, viewing positive depictions of same-sex sex (e.g., lesbian sex; Bridges et al., 2010; Sun et al., 2008) may lead directly to more positive views of homosexuality. Second, viewing positive depictions of nontraditional heterosexual sex (e.g., extramarital sex, a common feature of heterosexual pornography and the indicator of nontraditional sexual attitudes employed in this study; see Wright, 2013a) may lead to more favorable attitudes toward nontraditional heterosexual sex. These attitudes, in turn, may lead to shifts in attitudes toward same-sex sex, a particular type of nontraditional sex. This perspective aligns with that of Loftus (2001), who argued that “attitudes toward homosexuality are embedded within other attitude beliefs, such as attitudes toward sexuality generally...liberalization of attitudes toward homosexuality would be a function of changes in other attitudes” (p. 762). That pornography consumption precedes a nontraditional attitude toward

sex, and that a nontraditional attitude toward sex precedes more positive views on homosexuality, was verified using GSS panel data.

Interaction analyses suggested the moderating importance of both pornography consumers' valuation of personal freedom and moral views, although results deviated partially from expectations. As predicted, the association between pornography consumption and moral acceptance of homosexuality was positive only when consumers placed a high value on personal freedom. Contrary to expectations, the positive association between pornography consumption and approval of civil liberties for gay individuals did not depend on consumers' valuation of personal freedom. Lower valuations of personal freedom are associated with reduced moral acceptance of homosexuality (Treas, 2002). But Americans are more likely to morally condemn homosexuality than to believe that gay individuals' civil liberties should be restricted (Loftus, 2001). Thus, pornographic depictions may more readily disinhibit acceptance of civil liberties for gay individuals among low freedom evaluators than moral acceptance of homosexuality.

A similar dynamic may explain why the association between pornography consumption and support for same-sex marriage was moderated by moral relativism while the association between pornography consumption and approval of civil liberties for gay individuals did not depend on consumers' moral views. Moral absolutists may be hesitant to support same-sex marriage despite being exposed to pornographic depictions, as moral absolutism is associated with less moral approval of homosexuality and same-sex marriage is seen by opponents as an issue of sexual morality (Kozloski, 2010; Rigney & Kearl, 1994). Being reminded by pornography of the right to expression may boost endorsement of civil rights for gay individuals even among those who subscribe to moral absolutism, however, consistent with the American tradition of separating morality from civil rights.

The most perplexing result was that moral relativism moderated the association between pornography consumption and support for same-sex marriage but not moral acceptance of homosexuality. Given that moral relativism did moderate the association between pornography consumption and support for same-sex marriage, and that prior studies have found that moral views or indicators thereof moderate associations between pornography consumption and nontraditional sexual attitudes and behavior (Wright, 2013a, 2013c; Wright & Bae, 2013; Wright et al., 2013), it seems best to reserve speculation about this null interaction until further replication.

Limitations and Future Directions

Limitations of the GSS suggest possibilities for expansion in the areas of measurement, procedure, and sampling (Wright & Bae, 2013; Wright & Randall, 2013). Areas for measurement expansion are as follows.

The first measurement limitation is the dichotomous classification of participants as pornography consumers or nonconsumers. It is true that classifying participants as pornography consumers or nonconsumers is a frequent tactic in survey studies (Daneback, Træen, & Månsson, 2009; Johansson & Hammaré, 2007; Kjellgren,

Priebe, Svedin, & Langstrom, 2010; Lou et al., 2012; Rogala & Tyden, 2003; Weber, Quiring, & Daschmann, 2012; Wingood et al., 2001; Ybarra et al., 2011). It is also true that survey studies have found that sexual attitudes and behaviors vary in theoretically predictable ways as a function of whether or not individuals report consuming pornography (Kjellgren et al., 2010; Wingood et al., 2001; Wright, 2013b; Wright et al., 2013; Ybarra et al., 2011). Furthermore, it is true that experimental pornography studies have found theoretically predictable differences between those who have and have not viewed pornography (Mundorf, Allen, D'Alessio, & Emmers-Sommer, 2007; Oddone-Paolucci, Genuis, & Violato, 2000). And, consistent with the position that the relationship between frequency of pornography consumption and attitudes is linear (a position adopted by virtually all studies), the standardized coefficients for pornography consumption and views on homosexuality in the present study were similar to several studies which have employed interval-level pornography consumption assessments and explored other nontraditional sexual attitudes (Brown & L'Engle, 2009; Lo & Wei, 2005; Peter & Valkenburg, 2006, 2010; Stulhofer, Busko, & Schmidt, 2012). However, although regression coefficients are relatively unaffected by restrictions of range when associations are linear, correlation coefficients may be attenuated (Cohen & Cohen, 1983). Thus, to maximize the amount of variability in attitudes explained by pornography consumption, primary data analysts should employ interval-level pornography consumption assessments. Interval-level pornography consumption measures that have evidenced both validity and reliability are reported in Lo and Wei (2005) and Peter and Valkenburg (2010).

Second, future studies should engage in more encompassing assessments of nontraditional sexual attitudes. The GSS assesses attitudes toward extramarital sex, teenage sex, adult premarital sex, and adolescents having access to birth control. Unfortunately, the latter three items were not presented to individuals who were queried about their pornography consumption and views on homosexuality in GSSs 2000–2012. Correlation and factor analysis of participants who were asked all four questions suggested the legitimacy of using attitude toward extramarital sex to approximate a nontraditional approach to sex. However, future studies should enhance content validity by using multiple indicators of a nontraditional attitude toward sex. Multiple-item assessments of nontraditional sexual attitudes are reported by Braun-Courville and Rojas (2009) and Omori, Zhang, Allen, Ota, and Imamura (2011).

Third, the present study employed several single-item measures. Large-scale, representative surveys such as the GSS use single-item assessments to increase response rate, expand the number of variables that can be assessed, and reduce cost (Bergkvist & Rossiter, 2007; Fuchs & Diamantopoulos, 2009; Robins, Hendin, & Trzesniewski, 2001). Brevity is important for studies that require large samples, as participants are more likely to agree to shorter interviews. Once consented, the repeated posing of only slightly modified questions can increase participant disinterest, fatigue, frustration, and randomness of response. The lengthier the instrument, the more expensive it is to gather, clean, and code the data. In sum, there are a number of practical and scientific reasons for the GSS's use of single-items.

Nevertheless, single-item measures are often the target of critique (Wanous, Reichers, & Hudy, 1997). Rather than assuming that single-item measures are flawed, Fuchs and Diamantopoulos (2009) recommend that single-items be evaluated empirically. Bergkvist and Rossiter (2007) state that, the most important empirical quality of any measure, whether single- or multiple-item, is its ability to predict scores on other measures in ways consistent with theory and past research. The predictor, criterion, mediator, and moderator variables in the present study all met this standard.

Questions of measurement reliability are frequently raised in relation to single-item measures. Harkening back to the paramount criterion of predictive validity, Bergkvist and Rossiter (2007) remind that Cronbach (1961, p. 128) himself stated that “if predictive validity is satisfactory, low reliability does not discourage us from using the test.” However, because higher reliability may increase association size (Cohen & Cohen, 1983), it is important to consider the reliability of single-item measures. Two common tests of reliability are test–retest and internal consistency (DeVellis, 1991). Many of the single-items in the present study (e.g., attitude toward extramarital sex, moral acceptance of homosexuality, political orientation, pornography consumption, religiosity, support for same-sex marriage) have been subjected to tests of—and have shown—test–retest reliability (Wright, 2013a; Wright & Bae, 2013). However, in lieu of a comparative multiple-item scale, tests of internal consistency cannot be conducted on single-items (Fuchs & Diamantopoulos, 2009). This is a limitation (Loo, 2002).

Additionally, multiple-item measures may yield more response variability (Bergkvist & Rossiter, 2007) and tap more dimensions of the construct of interest (Woods & Hampson, 2005) than single-item measures. To conclude, although a large number of studies across a variety of domains have shown that single-item measures often evince validity and reliability comparable to multiple-item measures (Bergkvist & Rossiter, 2007; Fuchs & Diamantopoulos, 2009; Robins et al., 2001; Wanous et al., 1997; Woods & Hampson, 2005), it is recommended that primary data analysts interested in furthering the findings of the present study use multiple-item measures.

Several recommendations can be made at the procedural level. First, experimental research is needed to definitively rule out the possibility that a third-variable explains associations between pornography consumption and views on homosexuality (see Golom & Mohr, 2011, for an example of an experimental study). Second, whether at the level of experimental manipulation or self-report, future studies should assess various genres of pornography. Wright and Randall (2013) observe that two themes are constant in popular pornography: nontraditional sexual behavior and macho, hypermasculine men. As indicated by the present study, a nontraditional attitude toward sex is associated with more positive attitudes toward homosexuality. Conversely, traditional gender-role attitudes are associated with less positive attitudes toward homosexuality (Keiller, 2010; Kite & Whitley, 1996). Pornography sans machoism is produced (e.g., <http://www.erosexotica.com>). It would be valuable to compare views on homosexuality as a function of exposure to gendered and non-gendered depictions of nontraditional sex. It would also be of value to assess the

differential impact of male-male pornography and female-female pornography on male and female consumers, since the sex of the actors/actresses may interact with the sex of the consumer to affect attitudes (Golom & Mohr, 2011; Wright & Bae, 2013).

Two recommendations can be suggested at the level of sampling. First, whereas pornography consumption appears to be a cultural universal (Diamond, Jozifkova, & Weiss, 2011; Hald & Mulya, 2013; Lam & Chan, 2007; Lo & Wei, 2005; McKee, 2007; Omori et al., 2011; Peter & Valkenburg, 2010; Rogala & Tyden, 2003; Romito & Beltramini, 2011; Shaughnessy, Byers, & Walsh, 2011; Stulhofer, Busko, & Landripet, 2010; Velezmore, Negy, & Livia, 2011), attitudes toward homosexuality vary significantly across cultures (Adamczyk & Pitt, 2009). From the perspective of the 3AM, associations between pornography consumption and positive views on homosexuality should be strongest in cultures that are more supportive of gay individuals. Future studies should sample respondents from an array of cultures. Second, studies of adolescents' pornography consumption and attitudes toward homosexuality are needed. Numerous studies have found that adolescent pornography consumers express more positive attitudes toward nontraditional sex (Braun-Courville & Rojas, 2009; Brown & L'Engle, 2009; Lo & Wei, 2005; Peter & Valkenburg, 2010), but no study appears to have assessed adolescents' pornography consumption and attitudes toward homosexuality. As youth is associated with support for homosexuality (Treas, 2002), associations between pornography consumption and positive homosexuality attitudes may be particularly pronounced among adolescents.

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