

Are Pornography Users More Likely to Experience a Romantic Breakup? Evidence from Longitudinal Data

Samuel L. Perry¹ · Joshua T. Davis¹

Published online: 23 May 2017
© Springer Science+Business Media New York 2017

Abstract Previous research suggests that pornography use, under certain circumstances, may negatively influence the quality of romantic relationships. Yet we still know relatively little about whether watching pornography is associated with the stability of romantic relationships later on. This study examined whether Americans who use pornography, either at all or more frequently, are more prone to report experiencing a romantic breakup over time. Longitudinal data were taken from the 2006 and 2012 waves of the nationally representative Portraits of American Life Study (N = 969). Binary logistic regression analyses demonstrated that Americans who viewed pornography at all in 2006 were nearly twice as likely as those who never viewed pornography to report experiencing a romantic breakup by 2012, even after controlling for relevant factors such as 2006 relationship status and other sociodemographic correlates. This association was considerably stronger for men than for women and for unmarried Americans than for married Americans. Analyses also showed a linear relationship between how frequently Americans viewed pornography in 2006 and their odds of experiencing a breakup by 2012. The findings affirm that earlier pornography use is associated with lower stability within Americans' romantic relationships, especially for men and the unmarried. Data limitations and implications for future research are discussed.

All data for replication are available from The ARDA. Coding specifications are available from the corresponding author upon request.

✉ Samuel L. Perry
samperry@ou.edu

Joshua T. Davis
jdavis@ou.edu

¹ Department of Sociology, University of Oklahoma, 780 Van Vleet Oval, Kaufman Hall 335A, Norman, OK 73019, USA

Keywords Pornography · Romantic relationships · Marriage · Breakup

Introduction

Watching sexually explicit material or “pornography” has become increasingly commonplace in the United States (Carroll et al. 2008; Lykke and Cohen 2015; Price et al. 2016).¹ Recent studies show that around 60–70% of men and 30–40% of women below age 40 report viewing pornography in a year and about 45% of men and 15% of women under 40 view pornography in a given week (Regnerus et al. 2016). As pornography use has continued to increase, and especially among younger cohorts of Americans, a burgeoning literature has sought to better understand its potential consequences for sexuality and committed romantic relationships (for reviews, see Campbell and Kohut 2017; Doring 2009; Manning 2006). Though the findings are nuanced by several important factors such as whether couples are viewing porn in isolation or together (Willoughby et al. 2016; Maddox et al. 2011), studies most often show that pornography use is negatively associated with various measures of relationship quality, for both dating and married couples (Bridges and Morokoff 2011; Campbell and Kohut 2017; Doran and Price 2014; Lambert et al. 2012; Muusses et al. 2015; Perry 2016, 2017a; Perry and Schleifer 2017; Poulsen et al. 2013; Stewart and Szymanski 2012; Sun et al. 2016; Yucel and Gassanov 2010).

An important limitation of previous research is that comparatively little attention has been given to the relationship between pornography use and relational *stability*. While some research finds that measures of pornography consumption are correlated with experiencing divorce at some point (Daines and Shumway 2011; Doran and Price 2014; Perry and Schleifer 2017), studies have yet to definitively show whether an individual’s earlier pornography use, either at all or in greater amounts, predicts a higher likelihood of experiencing relational disruption later on. This is a significant gap, since breakup arguably represents the most objective and conclusive measure of relationship quality and, consequently, its connection to earlier porn use would augur more direct, tangible consequences for individuals, couples, and families in the future. The current study sought to fill this gap by using nationally representative, longitudinal data to examine whether Americans who use pornography, either at all or more frequently, are more prone to experiencing a romantic breakup over time.

¹ Though the term “pornography” often carries negative moral connotations, the current study employs the term because it is still frequently used in studies and national surveys, including the survey used in this study. Throughout the remainder of this study, the term pornography will refer to any sexually explicit visual material (websites, videos, magazines) created with the intention of stimulating sexual arousal.

Background

Pornography Use and Romantic Relationships

While the majority of studies find that pornography use, on the whole, is negatively associated with relationship quality (Campbell and Kohut 2017; Perry 2017a), it is important to acknowledge that some research using self-report data identifies perceived relational benefits associated with viewing pornography, particularly when couples view it together (Daneback et al. 2009; Grov et al. 2011; Maddox et al. 2011; Olmstead et al. 2013; Willoughby et al. 2016). This purpose for pornography, however, appears to be less often the case than one (most often male) partner or spouse viewing pornography alone (Doring 2009; Maddox et al. 2011; Manning 2006; Paul 2005; Traeen et al. 2006). Maddox et al. (2011), for example, in their study of porn use among unmarried couples, found that men were almost 2.5 times as likely as women to report using pornography alone as opposed to viewing it together. Keeping the possibility in mind that viewing pornography may also benefit romantic relationships in some ways, the potentially negative influence of pornography use on romantic relationships is largely theorized to flow through two central pathways, namely, pornography's influence on the consumer and/or the dynamic of the relationship itself (Doran and Price 2014; Yucel and Gassanov 2010).

Focusing on the consumer, social learning and scripting theories suggest that pornography use, most typically among men, shapes their conscious or unconscious expectations of body image and sexual relationships in ways that might shape their future behavior and commitment within romantic relationships (Braithwaite et al. 2015; Gagnon and Simon 1973; Sun et al. 2016; Weinberg et al. 2010; Wright 2013; Wright et al. 2013, 2014; Zillmann and Bryant 1988). In early experimental studies with undergraduates, Zillmann and Bryant (1988) found that exposure to pornography lowered participants' evaluation of marriage, making it seem less important or viable in the future. The authors also found that pornography exposure predicted a greater tolerance of extramarital sex and nonexclusive sexual access to others, while also promoting the belief that promiscuity is natural. Relatedly, in two longitudinal studies, Wright et al. (2014) found that married Americans who used pornography were more likely to hold positive attitudes toward extramarital sex later on. And other studies using aggregated General Social Survey (GSS) data have shown that Americans who viewed Internet porn (Stack et al. 2004) or X-rated movies (Doran and Price 2014) were more likely to have actually had an extramarital affair. Lastly, in a series of experimental and qualitative studies, Lambert et al. (2012) found that pornography use led to lower levels of relationship commitment and satisfaction with characteristics of one's romantic partner, including their affection, physical appearance, sexual curiosity, and sexual performance. Other cross-sectional and longitudinal studies have also linked consistent pornography use to men's lower sexual satisfaction (Bridges and Morokoff 2011; Grov et al. 2011; Sun et al. 2016; Yucel and Gassanov 2010) or

overall satisfaction (Muusses et al. 2015; Perry 2016, 2017a) in their romantic relationships.

Beyond the social learning or scripting explanation, pornography use could also weaken relationships by influencing consumers in a more practical way. Economists Malcolm and Naufal (2016), for example, analyze aggregated GSS data using an instrumental variable approach to show that Internet pornography is negatively associated with marriage rates for American men, possibly because free and unlimited pornography provides a disincentive for men to commit to a long-term, monogamous relationship in the first place (see also Regnerus 2017). Under this reasoning, pornography use might also provide a disincentive to stay in a committed relationship, since sexual activity can be found elsewhere.

Regarding pornography's influence on relational interaction, studies focusing on women in heterosexual relationships suggest that male partners' private pornography use can create feelings of inadequacy or jealousy for female partners, consequently decreasing their sexual desire as well as their own feelings of intimacy or sexual attraction to the partner, damaging their self-esteem, and generally undermining relationship quality (Bergner and Bridges 2002; Bridges et al. 2003; Daneback et al. 2009; Grov et al. 2011; Schneider 2000; Stewart and Szymanski 2012; Zitzman and Butler 2009). Other studies highlight gender differences in relationship outcomes primarily on the basis of differing patterns of porn consumption. Poulsen et al. (2013), for example, found in their study of married or cohabitating couples that men's pornography use was negatively associated with both partners' sexual quality, while women's porn viewing was positively associated with their own sexual quality. This positive effect for females was associated with their using pornography together as a couple rather than alone. Thus, complementing the scripting perspective, isolated pornography use may have a stronger, negative influence on men's sexual scripts, expectations, and evaluations of their own sex lives, whereas pornography consumption for women, particularly if it is more likely to be done with their partner (Bridges and Morokoff 2011; Maddox et al. 2011; Poulsen et al. 2013), might help them better understand their own bodies and sexual tastes (Grov et al. 2011; Olmstead et al. 2013; Weinberg et al. 2010).

Though concrete data are limited, anecdotal evidence is often offered for pornography's connection to relational disruption. In Schneider's (2000) sample of primarily women, more than 1 out of 5 had become divorced or separated after discovering their partner's online sexual activities. Similarly, a national news poll conducted in 2004 showed that 1 out of 4 divorced respondents indicated that online pornography and cybersex had contributed to their breakup (Paul 2005). Using more reliable data, some social scientific studies have also identified potential connections between pornography viewing and relational disruption. Doran and Price's (2014) analysis of aggregated GSS data found that Americans who reported viewing an X-rated movie in the previous year were more likely to have been divorced at some point. Yet because of the cross-sectional nature of the GSS, directionality could not be definitively determined. Remedying this problem with longitudinal data, Perry and Schleifer (2017) analyze GSS panel data and find that beginning pornography use between survey waves predicted a higher likelihood of divorce by wave 2. Their analysis, however, was limited by the GSS (yes/no) question about viewing an

X-rated movie and the possibility that divorce *may* have temporally preceded the porn use between waves. Looking at state-level data, Daines and Shumway (2011) found that Playboy sales were strongly associated with divorce rates in the United States. Though they include a longitudinal component, Daines and Shumway unfortunately cannot disaggregate the data to look at individual Americans, and thus, risk making an ecological fallacy.

Summary and Hypotheses

While data limitations have precluded a direct test of whether earlier pornography use predicts a greater chance of experiencing a romantic breakup, in light of the majority of studies suggesting that pornography use is, on the whole, most often associated with lower relationship quality, it is expected that:

Hypothesis 1 Viewing pornography at all earlier on will predict a greater likelihood of experiencing romantic breakup later on.

It is also worth exploring whether the potential connection between viewing pornography and experiencing a romantic breakup is due to mere presence of pornography in someone's life or may in fact be strengthened as pornography use becomes more habitual. In other words, if pornography use negatively influences Americans' attachments to romantic relationships or the relationships themselves, it would be reasonable to expect that greater amounts of pornography use would be associated with higher likelihoods of relational disruption later on. Stated more formally, it is predicted that:

Hypothesis 2 Increases in the frequency of pornography use earlier on will correspond to increases in the likelihood of experiencing romantic breakup later on.

Next, most studies of pornography use and heterosexual romantic relationships find that the associations are gendered, most likely owing to different use patterns between men and women. Men are more likely to view pornography more often than women and are more likely to do so alone for the purposes of solo-masturbation, while women are more likely to view pornography within the context of a romantic relationship as a part of lovemaking (Bridges and Morokoff 2011; Maddox et al. 2011; Poulsen et al. 2013). Consequently, researchers often find that it is men's committed relationships that tend to be more strongly and negatively associated with their relationship quality than women, whose pornography use is often unrelated (Doran and Price 2014; Perry 2016; Yucel and Gassanov 2010) or even positively related (Bridges and Morokoff 2011; Daneback et al. 2009; Perry 2017a; Poulsen et al. 2013) to their relationship quality. Men's attachment to romantic relationships or their value of sexual fidelity is also more strongly associated with porn use compared to women (Doran and Price 2014; Muusses et al. 2015). In light of this research, it is expected that:

Hypothesis 3 The association between pornography use and experiencing a romantic breakup will be stronger for men than for women.

Lastly, the connection between pornography use and relational disruption will almost certainly differ by the relational status of an individual. Because marriage is a relationship that is supported by legal, social, and cultural factors, it is consequently more stable than dating or even cohabiting relationships (Rosenfeld 2014). It is therefore less likely to be susceptible to any negative influences that pornography use may have on relationships. Conversely, persons who are single, cohabiting, or otherwise in some other non-marital relationship status are more likely to experience relational disruptions than married persons, owing to a variety of factors which could potentially include pornography use. In light of this theory, it is predicted that:

Hypothesis 4 The association between pornography use and experiencing a romantic breakup over time will be stronger for Americans who are unmarried at the beginning of observation than for Americans who are already married.

Method

Participants

Data for this study are drawn from two waves of the Portraits of American Life Study (PALS), which was fielded in 2006 and 2012 (Emerson and Sikkink 2006–2012). PALS is a nationally representative panel survey with questions focusing on a variety of topics including social networks, moral and political attitudes, and religious life. The original PALS sampling frame includes the civilian, non-institutionalized household population in the continental United States who were 18 years of age or older at the time the survey was conducted. Cluster sampling was used to achieve the goal of racially diverse oversamples. Surveys were administered in English or Spanish. For Wave 1, face-to-face interviews were conducted with 2610 respondents in their homes, from April to October 2006. The response rate was 58%. Interviewers used audio computer-assisted self-interviewing (ACASI) for more sensitive questions (e.g., how often they view pornography). The second wave was conducted from March to September 2012, with 1314 respondents successfully re-interviewed. After accounting for respondents from 2006 who died or were mentally incapacitated, the Wave 2 response rate is 53%. The second wave was administered through self-administered web survey, computer-assisted telephone interviewing, and face-to-face interviewing. PALS data include sampling weights that, once applied, bring the PALS sample in line with the U.S. Census Bureau's American Community Survey, 2005 and 2011. Weights also adjust for non-response in Wave 2. These weights are used in all analyses. The full models ultimately use data from 969 respondents who provided valid responses to focal measures used in the analyses.

Measures

Experiencing a Romantic Breakup

The dependent variable is whether a respondent had experienced a breakup since first survey wave. This was measured with the 2012 PALS question, “In the past six years, have any of the following life events or problems happened to you: you broke off a steady, romantic relationship?” Respondents were coded 1 = yes, 0 = no. While the phrasing of this question may imply that the respondent initiated the breakup, it is also reasonable to interpret this question more generally as the respondent having simply experienced the dissolution of a committed relationship. The question does not specify whether the breakup involved a marriage, but only that the relationship was steady. Given the dichotomous nature of this dependent variable, binary logistic regression was the most appropriate estimation strategy.

Pornography Viewing

The focal independent variable for this study is respondents’ reported pornography use. The 2006 wave of PALS asked respondents, “In the past twelve months, how often have you viewed pornographic materials?” Responses ranged from 1 = once a day or more to 8 = never. These responses were re-coded in two ways. First, responses were dichotomized to indicate 1 = any pornography use, 0 = no pornography use, so as to discern whether the mere exposure to pornography earlier on predicted a romantic breakup. Second, the more expansive measure was used and reverse-coded so that higher scores indicated more frequent pornography viewing (1 = never, 8 = once a day or more). Because the latter measure provides a range of porn consumption, it offers an advantage over the porn use measure in the GSS which only asks whether or not a respondent watched an X-rated movie in the previous year (Doran and Price 2014; Perry and Schleifer 2017; Price et al. 2016; Wright 2013, Wright et al. 2013).

Certainly, social desirability could discourage honest answers given that porn use is still viewed as morally objectionable among many Americans (Lykke and Cohen 2015; Price et al. 2016). Emerson et al. (2010) explain that for questions like this, each PALS respondent wore earphones to hear the questions prerecorded, and then entered their responses directly into the computer apart from the knowledge or help of the interviewer. This procedure would help offset social desirability bias for this question. Because the question about pornography consumption was only asked in 2006, only this measure is included in multivariate models.

Control Variables

Analyses included a variety of sociodemographic and ideological controls following previous research on pornography use and relationship outcomes (Doran and Price 2014; Maddox et al. 2011; Willoughby et al. 2016; Perry 2016, 2017a; Perry and Schleifer 2017). In order to ensure that all controls temporally precede the experience of a breakup between 2006 and 2012, all controls are from the 2006

wave.² Importantly, the analysis sought to control for the relational status of a respondent since married respondents would obviously have a different likelihood of experiencing a breakup than respondents who were either not married at the time of the survey or had never been married. A series of dummy variables were constructed for relational status including married (reference category), single-never married, cohabiting, divorced/separated, and widowed. Age was measured in years, from 18 to 80. Dummy variables were constructed for gender (male = 1), whether a respondent had children in the home (yes = 1), and whether the respondent had children out of the home (yes = 1), and a series of dummy variables were used for region (West = reference) and race (white = reference). Education was measured in attainment categories from 1 = less than high school to 5 = graduate degree. Household income was measured in categories from 1 = less than \$5000–19 = \$200,000 or more.

Religious factors are highly correlated with both pornography use (Doring 2009; Perry 2015a, 2017a, b, c; Perry and Hayward 2017; Poulsen et al. 2013; Wright 2013; Wright et al. 2013) and romantic relationship outcomes (Ellison et al. 2010; Mahoney 2010; Perry 2015b, 2016), and thus the analyses control for religious commitment, conservatism, and tradition. Religious commitment was measured with religious service attendance. Responses ranged from 1 = never to 8 = three times a week or more. Theological conservatism was measured with a PALS question asking participants about whether they believed their religious text to be “fully inspired by God.” Responses included 1 = fully inspired by God to 4 = I have never heard of the religious text. The measure was dichotomized so that 1 = fully inspired by God, 0 = other. Religious tradition was measured with a modified version of the RELTRAD classification scheme (Steenland et al. 2000). Categories included conservative Protestant (reference category), mainline Protestant, other Protestant, Catholic, Other Religion, and Unaffiliated. For descriptive statistics on all variables, see Table 1.

Data Analysis

Table 1 includes descriptive statistics and zero-order correlations between the outcome variable and all predictors in order to establish the bivariate relationships. Table 2 presents results from binary logistic regression analyses predicting respondents’ experiencing a breakup between waves on whether they viewed any pornography in 2006 with controls. Table 3 presents a binary logistic regression model predicting a romantic breakup with the full pornography use measure in order to assess the association with earlier porn viewing frequency. Table 4 presents binary logistic regression models predicting breakup with the sample split by married and unmarried respondents on both pornography use measures and full controls. Formally, each model takes the following form:

² Using controls from the 2012 wave (results available upon request) did not substantively change any of the findings for this study.

Table 1 Descriptive statistics. *Source* 2006–2012 PALS

Predictors	Range	Mean or %	SD	Corr w/DV
Experienced a breakup	0–1	17%		
Porn at all	0–1	37%		.15***
Porn frequency	1–8	1.9	1.6	.15***
Married (ref.)	0–1	57%		-.37***
Single	0–1	24%		.28***
Cohabiting	0–1	6%		.09**
Divorced/separated	0–1	10%		.16***
Widowed	0–1	4%		-.03
Male	0–1	47%		-.02
Age	18–80	44	15.9	-.26***
Educational attainment	1–5	2.8	1.2	-.06*
Household income	1–19	7.9	6.1	-.04
Children living at home	0–1	44%		-.09**
Children not living at home	0–1	43%		-.16***
White (ref.)	0–1	69%		-.05
Black	0–1	12%		.07*
Latino	0–1	13%		.03
Asian	0–1	5%		-.04
Native American	0–1	1%		.01
West (ref.)	0–1	25%		-.02
South	0–1	32%		-.03
Northeast	0–1	18%		.02
Midwest	0–1	24%		.03
Religious service attendance	1–8	3.8	2.3	-.05
Sacred text fully inspired	0–1	60%		-.08*
Conservative protestant (ref.)	0–1	32%		-.06
Mainline protestant	0–1	11%		-.01
Other protestant	0–1	9%		-.05
Catholic	0–1	27%		.04
Other religion	0–1	8%		-.06
Unaffiliated	0–1	13%		.12***

N = 969

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$ (two-tailed test)

$$\text{Logit}(Y) = \log \frac{p(Y = 1)}{1 - (p = 1)} = \alpha + \beta_1 X_1 + \beta_2 X_2$$

where log corresponds to the natural logarithm; $p(Y = 1)$ is the probability that the dichotomous dependent variable $Y = 1$ (i.e. the respondent has experienced a romantic breakup between 2006 and 2012); α is the Y intercept; β_s are regression

Table 2 Binary logistic regression predicting experiencing a breakup between 2006 and 2012 on 2006 porn use and controls. *Source* 2006–2012 PALS

Predictors	Model 1			Model 2		
	b	SE	OR	b	SE	OR
Porn at all	.62	.24	1.86**	.22	.32	1.24
Porn at all × male				.98	.48	2.67*
Married (ref.)						
Single	1.94	.33	6.94***	1.92	.33	6.79***
Cohabiting	1.80	.39	6.01***	1.83	.39	6.24***
Divorced/separated	2.54	.33	12.71***	2.60	.33	13.46***
Widowed	1.74	.60	5.67**	1.74	.60	5.71**
Male	−.07	.23	.93	−.56	.36	.55 ⁺
Age	−.05	.01	.96***	−.05	.01	.96***
Educational attainment	−.05	.10	.95	−.04	.10	.96
Household income	.02	.02	1.02	.02	.02	1.02
Children living at home	.09	.24	1.09	.11	.24	1.11
Children not living at home	−.25	.29	.78	−.27	.29	.76
White (ref.)						
Black	.47	.31	1.61	.46	.31	1.61
Latino	−.22	.32	.80	−.27	.32	.77
Asian	−.45	.58	.64	−.44	.57	.64
Native American	1.32	1.25	3.74	1.30	1.26	3.68
West (ref.)						
South	.07	.28	1.07	.10	.28	1.10
Northeast	.10	.31	.10	.11	.31	1.11
Midwest	.39	.29	1.48	.40	.29	1.49
Religious service attendance	.10	.05	1.10 ⁺	.10	.05	1.11 ⁺
Sacred text fully inspired	−.31	.23	.73	−.29	.23	.75
Conservative protestant (ref.)						
Mainline protestant	.59	.38	1.81	.57	.38	1.77
Other protestant	−.33	.42	.72	−.20	.42	.82
Catholic	.66	.30	1.93*	.68	.30	1.97*
Other religion	.11	.50	1.12	.08	.50	1.08
Unaffiliated	.82	.33	2.27*	.78	.34	2.22*
Constant	−1.64	.89	.19 ⁺	−1.51	.89	.22 ⁺
Nagelkerke pseudo R ²	.324			.330		
N	969			969		

All predictors are from the 2006 PALS in order to ensure temporal precedence to the outcome variable

⁺ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$ (two-tailed test)

coefficients; X_1 is pornography use in 2006; X_2 is a vector of 2006 control variables. Tables 2, 3 and 4 present unstandardized betas (b), standard errors (SE), and odds ratios (OR).

Table 3 Binary logistic regression predicting experiencing a romantic breakup between 2006 and 2012 on 2006 porn use frequency and controls. Source 2006–2012 PALS

Predictors	b	SE	OR
Porn frequency	.13	.07	1.14*
Married (ref.)			
Single	1.90	.32	6.65***
Cohabiting	1.81	.39	6.08***
Divorced/separated	2.56	.33	12.94***
Widowed	1.68	.60	5.39**
Male	-.04	.24	.96
Age	-.05	.01	.96
Educational attainment	-.03	.10	.97
Household income	.02	.02	1.02
Children living at home	.09	.24	1.10
Children not living at home	-.19	.29	.83
White (ref.)			
Black	.42	.31	1.52
Latino	-.23	.32	.79
Asian	-.49	.58	.62
Native American	1.24	1.26	3.45
West (ref.)			
South	.05	.28	1.05
Northeast	.08	.31	1.08
Midwest	.37	.29	1.45
Religious service attendance	.09	.05	1.09 ⁺
Sacred text fully inspired	-.31	.23	.73
Conservative protestant (ref.)			
Mainline protestant	.59	.38	1.80
Other protestant	-.35	.42	.70
Catholic	.63	.30	1.88*
Other religion	.14	.50	1.14
Unaffiliated	.69	.33	2.20*
Constant	-1.66	.60	.19 ⁺
Nagelkerke pseudo R ²	.321		
N	969		

All predictors are from the 2006 PALS in order to ensure temporal precedence to the outcome variable

⁺ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$ (two-tailed test)

Results

Table 1 shows that 37% of the total population affirms viewing “pornographic material” at least some time in 2006. Though this is somewhat lower than estimates in recent studies that find over 60% of American men and over 30% of American women view pornography in a given year (Price et al. 2016; Regnerus et al. 2016), the PALS data are including all adult respondents, age 18–80, while other recent studies have focused on younger adults specifically. Looking at the correlation coefficients, both viewing pornography at all ($r = .15, p < .001$) and porn viewing

Table 4 Binary logistic regression predicting experiencing a romantic breakup between 2006 and 2012 on 2006 porn use measures across 2006 marital status *Source* 2006–2012 PALS

Predictors	Married				Unmarried ^a			
	Porn at all		Porn frequency		Porn at all		Porn frequency	
	b	SE	OR	OR	b	SE	OR	OR
Porn at all	.21	.50	1.23		.91	.30	2.49**	
Porn frequency				-.01	.16	.99		.21
Control variables	√			√				√
Nagelkerke pseudo R ²	.174			.173				.196
N	458			458				511

All controls from Tables 2 and 3 are included in the models except the relationship status controls. Predictors are from the 2006 PALS in order to ensure temporal precedence to the outcome variable

^a Unmarried includes all relationship statuses in 2006 besides marriage, including single-never married, cohabiting, divorced/separated, and widowed
 ** $p \leq .01$ (two-tailed test)

frequency ($r = .15$, $p < .001$) are positively and significantly correlated with respondents experiencing a romantic breakup by 2012. Among the controls, being married, older, having any children, higher educational attainment, and believing in the divine inspiration of one's sacred text in 2006 are all negatively associated with experiencing a later breakup. In contrast, being single, cohabiting, divorced or separated, black, and religiously unaffiliated were positively associated with experiencing a breakup.

Turning to the multivariate findings, Table 2 presents binary logistic regression models predicting the odds that a respondent experienced a romantic breakup between 2006 and 2012 on whether they viewed *any* porn in 2006 with controls. Among the significant sociodemographic factors predicting breakup, those who were older in 2006 had a far lower likelihood of experiencing a romantic breakup later on, while those who were in any relationship status other than marriage (single, cohabiting, divorced/separated, or widowed) were far more likely to experience a breakup. This would make sense as the relationships of older and already-married persons would tend to be more stable. Additionally, Catholics and the religiously unaffiliated (both compared to conservative Protestants) had a higher likelihood of experiencing a breakup. This is somewhat surprising in that both Catholics and the unaffiliated tend to have lower divorce rates than conservative Protestants both in the PALS data and previous studies (e.g., Glass and Levchak 2014), but the present analysis is also catching higher instances of romantic breakup before marriage. Religious service attendance is also positively associated with experiencing a romantic breakup, but only to a marginal degree ($p < .10$). All these associations are substantively the same in Tables 3 and 4.

In the first model, the dichotomous measure of pornography use is statistically significant ($b = .62$; OR = 1.86; $p < .01$). This indicates that after controlling for the relationship status of a respondent in 2006 along with a variety of other sociodemographic and ideological characteristics, the odds of experiencing a breakup were about 86% higher for those who viewed pornography compared to those who had never viewed porn. The second model includes the interaction term with any porn use \times being male, which is significant and positive ($b = .98$; OR = 2.67; $p < .05$) indicating that the association between viewing any pornography and later likelihood of breakup is stronger for men than for women. Moreover, with the interaction term in place, the "conditional effect" of being male is now marginally significant and negative, suggesting that, when pornography use is at zero, men are less likely to experience a romantic breakup than women. Ancillary analyses (available upon request) found no interactions between any porn use and other controls including age or relationship status.

Figure 1 illustrates predicted probability of experiencing a breakup between 2006 and 2012 on whether or not a respondent viewed pornography in 2006 for the full sample and by gender. The probabilities have been transformed to percentages for ease of interpretation. In the full sample, among those who "never" viewed pornography in 2006, about 13% experienced a breakup by 2012, but this number increased to about 23% for those who viewed pornography at some point in 2006. The first hypothesis is thus strongly supported. Comparing females and males, it is clear that while females who did not view pornography in 2006 were more likely to

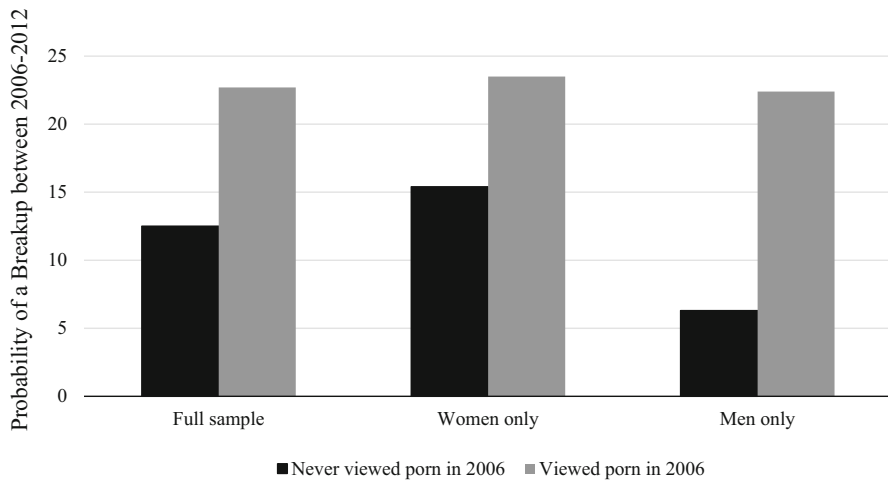


Fig. 1 Predicted probability of experiencing a breakup between 2006 and 2012 by any porn use in 2006 and gender

experience a romantic breakup later on than their male counterparts, males who did view pornography saw a much sharper increase in their likelihood of experiencing a breakup. While the likelihood of women experiencing a breakup only rose about 34% with earlier porn viewing (from 15.4 to 23.5%), the likelihood of male porn users experiencing a breakup was over 3.5 times that of non-porn users (22.5% compared to 6.3%). The third hypothesis thus receives strong support.

But is the association between earlier porn use and the likelihood of breakup over time due to pornography use in general or is there a gradient with higher frequencies of pornography use corresponding to higher likelihood of breakup? In order to test this, Table 3 presents binary logistic regression models predicting breakup with pornography viewing frequency as a continuous measure. The association is positive and statistically significant ($b = .13$; $OR = 1.14$; $p < .05$), and indicates that for every unit increase in porn viewing frequency in 2006, the odds of experiencing a breakup by 2012 increased by 14%.

Figure 2 illustrates this progression fairly clearly. The chart plots out the predicted probability scores (transformed into percentages) for experiencing a romantic breakup by 2012 across different frequencies of pornography use in 2006. There is a clear, linear progression of breakup likelihood across greater frequencies of earlier pornography use. At the extremes, while 13% of those who reported “never” viewing porn in 2006 had experiencing a breakup by 2012, that likelihood increased gradually to about 33% for those who viewed pornography more than once a week in 2006. This supports the second hypothesis. Subsequent analyses (available upon request) showed that the association between pornography use frequency and later breakup were not significantly moderated by gender or other relevant correlates like relationship status, age, or religious factors. The lack of any observed moderating effects is most likely due to the lower instances of high pornography use frequency across certain subgroups in the sample.

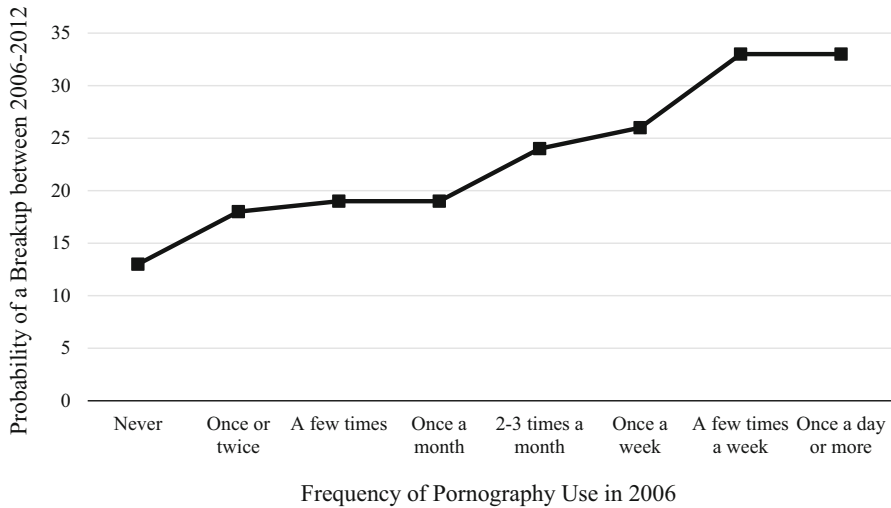


Fig. 2 Predicted probability of experiencing a breakup between 2006 and 2012 by frequency of porn use in 2006

How do these associations differ by the relationship status at the start of the study? Though interaction terms for relationship status \times pornography use measures were not statistically significant in multivariate models, this may be due to the lack of variation in relationship status for married persons in the six years between surveys. Another way to more directly assess whether pornography use is associated with the likelihood of breakup across relationship statuses was to simply run separate models for married and unmarried Americans. Table 4 presents binary logistic regression models predicting breakup with the sample split by marital status. The first two models in Table 4 show that earlier pornography viewing, either at all or in greater frequencies, is not a significant predictor of breakup for Americans who were married in 2006. Conversely, both pornography use measures are significant predictors of breakup for all those who were unmarried.³ Figure 3 shows the differences in the likelihood of experiencing a breakup by any porn use and relationship status. First, it is clear that Americans who were married in 2006 were far less likely than unmarried persons to experience a breakup by 2012. And while there does seem to be a greater likelihood that married porn users would experience a breakup than non-users, this difference did not attain statistical significance. In contrast, Americans who were unmarried in 2006 were far more likely to experience a breakup by 2012, with an estimated 44% of unmarried porn users experiencing a breakup compared to only 24.5% of unmarried non-users, net of controls. The fourth hypothesis is therefore supported.

³ When the “unmarried” group is disaggregated and models were run with each group separately (single, cohabiting, divorced/separated, and widowed), the direction and size of the porn effect was substantively the same and obtained statistical significance in many of the models, even with a drastic reduction in sample size. Results available upon request.

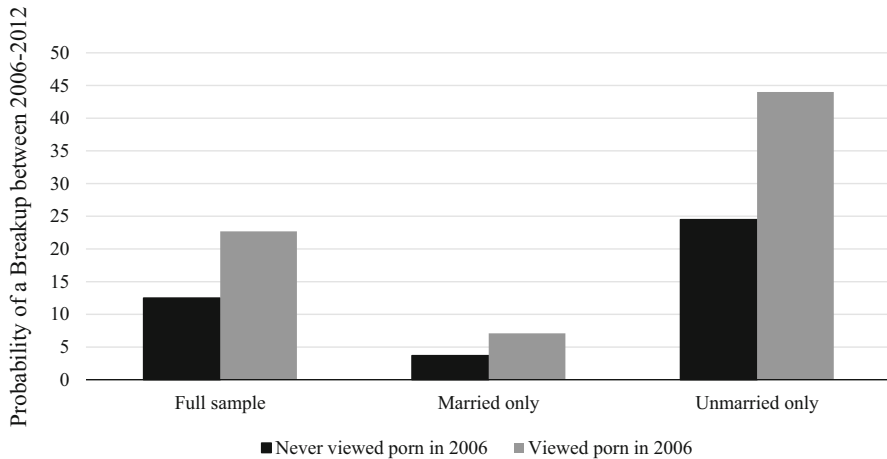


Fig. 3 Predicted probability of experiencing a breakup between 2006 and 2012 by any porn use in 2006 and 2006 marital status

Discussion and Conclusion

This study sought to examine whether earlier pornography use predicts a greater likelihood of experiencing a breakup later on. Using longitudinal data from a nationally representative sample of Americans, the findings have affirmed that earlier pornography use, both in general and corresponding to greater use frequency, predict a higher likelihood of experiencing a romantic breakup within the following 6 years. Moreover, it was also shown that gender moderates the association between earlier porn use and the likelihood of breakup such that men's relationships seem more strongly associated with exposure to porn than those of women. Lastly, analyses showed that the association between earlier porn use and the likelihood of breakup over time extended primarily to persons who were unmarried in 2006. While those who were married in 2006 also seemed somewhat more likely to experience breakup if they were porn users (see Fig. 3), this association did not attain statistical significance.

Before discussing the implications of this study, several data limitations should be acknowledged in order to chart a path for future research. First and most obviously, the data are unable to discern precisely why a respondent experienced a breakup between 2006 and 2012. Respondents were only asked whether they broke off a steady relationship, and thus for many it may have had nothing to do with pornography. A related limitation is that respondents could have broken off numerous relationships during this time frame, each for different reasons. Yet neither of these limitations changes the fact that pornography viewers, and especially men, are considerably more likely to report experiencing a breakup or that the likelihood of breakup increased with virtually every increase in porn viewing frequency earlier on. Moreover, these associations were robust even when controlling for a variety of potential confounders. Nevertheless, future studies on

this topic would ideally allow respondents to elaborate on their relationship history and the factors contributing to the dissolution of their relationships. A third limitation is that pornography use is only measured in 2006 and thus the study is unable to discern whether respondents maintained a particular frequency of pornography use through the next wave. Certainly, pornography use often ebbs and flows corresponding to different life seasons and events (Paul 2005). A related limitation is that the data do not indicate what type of pornography a respondent was viewing or whether they were actually viewing it with their partner in 2006. Previous studies have found that these factors, and especially whether pornography is viewed with a partner, can moderate the association between pornography use and romantic relationships (Bridges and Morokoff 2011; Maddox et al. 2011; Poulsen et al. 2013; Willoughby et al. 2016). Future studies, then, ideally using dyadic data, should take these factors into account as well. Qualitative interviews would also be helpful to flesh out specific mechanisms at work in these relationships.

These limitations notwithstanding, the current study has contributed to the literatures on pornography use and committed romantic relationships in several important ways. First, the findings affirm that earlier pornography use significantly predicts relational instability, particularly for men. Holding relationship status constant, along with other relevant correlates, pornography viewers were almost twice as likely to experience a romantic breakup in the six years following the initial survey, and over 3.5 times as likely if they were men. Moreover, this relationship extends not only to the presence of pornography in a person's life, but how frequently they view pornography. Put simply, the more often someone viewed pornography in 2006, the more likely they were to experience a romantic breakup by 2012.

Pornography's observed association with relationship stability may flow through different paths. Following social learning and scripting theories, it could be that habitual pornography use shapes porn users themselves, causing them to devalue monogamy and fidelity or to have unrealistic expectations about body image or sexual interactions that can negatively influence their relationship commitment (Gagnon and Simon 1973; Sun et al. 2016; Weinberg et al. 2010; Wright 2013; Wright et al. 2013, 2014; Zillmann and Bryant 1988). This would help explain why the association between pornography use and breakup was stronger for men. Because men tend to view pornography more often than women, and more often by themselves for the purposes of masturbation (Bridges and Morokoff 2011; Maddox et al. 2011; Poulsen et al. 2013), scripting theory would predict that men would be more affected by the messages conveyed through that media.

Still under the assumption of a causal link, an alternative pathway through which pornography might be influencing relationship stability is through effects on the relationship partner. Studies have often found that spouses or dating partners can react negatively to their companion habitually using pornography, especially if it is without them (Bergner and Bridges 2002; Bridges et al. 2003; Daneback et al. 2009; Grov et al. 2011; Schneider 2000; Stewart and Szymanski 2012; Zitzman and Butler 2009). A partner's pornography use can contribute to feelings of insecurity or betrayal, especially if it has been connected to dishonesty or hiding. While many heterosexual couples view pornography together and find that it enhances the

relationship (Maddox et al. 2011; Willoughby et al. 2016), men still use pornography alone in such relationships far more often than women and this potentially sets up a dynamic where female partners feel inadequate and insecure, and consequently, less committed to the relationship or resentful, with either feeling contributing to greater likelihood of breakup. In reality, pornography use is likely connected to relational instability through both of these pathways, at different levels and for different persons depending on circumstances. Future research could further explore these dynamics through qualitative interviews with both romantic partners.

A second implication is that, because pornography use is increasing in the United States, and primarily among younger Americans (Price et al. 2016), relational instability may also increase, either because porn use itself contributes to relational disruption or because Americans who use pornography may already be more prone to relational breakup. Perhaps both. Even if pornography use somehow negatively influences relationship stability, it is important to point out that earlier pornography use predicts later relational breakup for those who were *single* (never married) in 2006. While some of these Americans might have been in committed dating relationships, many were likely unattached at the time. This suggests that earlier and more frequent pornography use may be associated with Americans' likelihood of breakup in *future* relationships, and not just those they are in currently. This would also lend support to the scripting perspective. Future studies should explore how increasing pornography use over time may relate to either greater instances of breakup and divorce, or, on the other side, lower marriage rates since pornography use may lessen esteem for traditional relationship forms and/or disincentivize getting married.

Compliance with Ethical Standards

Conflict of interest Authors declare that they have no conflicts of interests.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

References

- Bergner, R. M., & Bridges, A. J. (2002). The significance of heavy pornography involvement for romantic partners: Research and clinical implications. *Journal of Sex and Marital Therapy, 28*, 193–206.
- Braithwaite, S. R., Aaron, S. C., Dowdle, K. K., Spjut, K., & Fincham, F. D. (2015). Does pornography consumption increase participation in friends with benefits relationships? *Sexuality and Culture, 19*(3), 513–532.
- Bridges, A. J., Bergner, R. M., & Hesson-McInnis, M. (2003). Romantic partner's use of pornography: Its significance for women. *Journal of Sex and Marital Therapy, 29*, 1–14.
- Bridges, A. J., & Morokoff, P. J. (2011). Sexual media use and relational satisfaction in heterosexual couples. *Personal Relationships, 18*, 562–585.
- Campbell, L., & Kohut, T. (2017). The use and effects of pornography in romantic relationships. *Current Opinion in Psychology, 13*, 6–10.
- Carroll, J. S., Padilla-Walker, L. M., Nelson, L. J., Olson, C. D., McNamara Barry, C., & Madsen, S. D. (2008). Generation XXX: Pornography acceptance and use among emerging adults. *Journal of Adolescent Research, 23*, 6–30.

- Daines, R. M., & Shumway, T. (2011). Pornography and divorce. In *7th Annual Conference on Empirical Legal Studies Paper*. Available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2112435.
- Daneback, K., Traeen, B., & Mansson, S. (2009). Use of pornography in a random sample of Norwegian heterosexual couples. *Archives of Sexual Behavior, 38*, 746–753.
- Doran, K., & Price, J. (2014). Pornography and marriage. *Journal of Family and Economic Issues, 35*, 489–498.
- Doring, N. M. (2009). The internet's impact on sexuality: A critical review of 15 years of research. *Computers in Human Behavior, 25*, 1089–1101.
- Ellison, C. G., Burdette, A. M., & Wilcox, W. B. (2010). The couple that prays together: race and ethnicity, religion, and relationship quality among working-age adults. *Journal of Marriage and Family, 72*, 963–975.
- Emerson, M. O., & Sikkink, D. (2006–2012). *Portraits of American Life Study, 2006–2012*.
- Emerson, M. O., Sikkink, D., & James, A. (2010). The panel study on American religion and ethnicity: Background, methods, and selected results. *Journal for the Scientific Study of Religion, 49*, 162–171.
- Gagnon, J. H., & Simon, W. (1973). *Sexual conduct: The social sources of human sexuality*. Chicago: Aldine.
- Glass, J., & Levchak, P. (2014). Red states, blue states, and divorce: Understanding the impact of conservative Protestantism on religion variation in divorce rates. *American Journal of Sociology, 119*(4), 1002–1046.
- Grov, C., Gillespie, Royce, & Lever, J. (2011). Perceived consequences of casual online sexual activities on heterosexual relationships: A U.S. online survey. *Archives of Sexual Behavior, 40*, 429–439.
- Lambert, N. M., Negash, S., Stillman, T. F., Olmstead, S. P., & Fincham, F. D. (2012). A love that doesn't last: Pornography consumption and weakened commitment to one's romantic partner. *Journal of Social and Clinical Psychology, 31*, 410–438.
- Lykke, L. C., & Cohen, P. N. (2015). The widening gender gap in opposition to pornography, 1975–2012. *Social Currents, 2*(4), 307–323.
- Maddox, A. M., Rhoades, G. K., & Markman, H. J. (2011). Viewing sexually explicit materials alone or together: Associations with relationship quality. *Archives of Sexual Behavior, 40*, 441–448.
- Mahoney, A. (2010). Religion in families, 1999–2009: A relational spirituality framework. *Journal of Marriage and Family, 72*, 805–827.
- Malcolm, M., & Naufal, G. (2016). Are pornography and marriage substitutes for young men? *Eastern Economic Journal, 42*, 317–334.
- Manning, J. C. (2006). The impact of internet pornography on marriage and the family: A review of the research. *Sexual Addiction & Compulsivity, 13*, 131–165.
- Muusses, L. D., Kerkhof, P., & Finkenauer, C. (2015). Internet pornography and relationship quality: A longitudinal study of within and between partner effects of adjustment, sexual satisfaction and sexually explicit internet material among newly weds. *Computers in Human Behavior, 45*, 77–84.
- Olmstead, S. B., Negash, S., Pasley, K., & Fincham, F. D. (2013). Emerging adults expectations for pornography use in the context of future committed romantic relationships: A qualitative study. *Archives of Sexual Behavior, 42*, 625–635.
- Paul, P. (2005). *Pornified: How pornography is transforming our lives, our relationships, and our families*. New York: Times Books.
- Perry, S. L. (2015a). Pornography consumption as a threat to religious socialization. *Sociology of Religion, 76*, 436–458.
- Perry, S. L. (2015b). A match made in heaven? Religion-based marriage decisions, marital quality, and the moderating effects of spouse's religious commitment. *Social Indicators Research, 123*(1), 203–225.
- Perry, S. L. (2016). From bad to worse? Pornography consumption, spousal religiosity, gender, and marital quality. *Sociological Forum, 31*(2), 441–464.
- Perry, S. L. (2017a). Does viewing pornography reduce marital quality over time? Evidence from longitudinal data. *Archives of Sexual Behavior, 46*(2), 549–559.
- Perry, S. L. (2017b). Does viewing pornography diminish religiosity over time? Evidence from two-wave panel data. *Journal of Sex Research, 54*(2), 214–226.
- Perry, S. L. (2017c). Spousal religiosity, religious bonding, and pornography consumption. *Archives of Sexual Behavior, 46*(2), 561–574.
- Perry, S. L., & Hayward, G. M. (2017). Seeing is (not) believing: How viewing pornography shapes the religious lives of young Americans. *Social Forces, 95*, 1757–1788.

- Perry, S. L., & Schleifer, C. (2017). Till porn do us part? A longitudinal examination of pornography use and divorce. *Journal of Sex Research*. doi:10.1080/00224499.2017.1317709.
- Poulsen, F. O., Busby, D. M., & Galovan, A. M. (2013). Pornography use: Who uses it and how it is associated with couple outcomes. *Journal of Sex Research*, 50, 72–83.
- Price, J., Patterson, R., Regnerus, M., & Walley, J. (2016). How much more XXX is Generation X consuming? Evidence of changing attitudes and behaviors related to pornography since 1973. *Journal of Sex Research*, 53(1), 12–20.
- Regnerus, M. D. (2017). *Cheap sex and the transformation of men, marriage, and monogamy*. New York: Oxford University Press.
- Regnerus, M. D., Gordon, D., & Price, J. (2016). Documenting pornography use in America: A comparative analysis of methodological approaches. *Journal of Sex Research*, 53, 873–881.
- Rosenfeld, M. J. (2014). Couple longevity in the era of same-sex marriage in the United States. *Journal of Marriage and Family*, 76, 905–918.
- Schneider, J. P. (2000). Effects of cybersex addiction on the family: Results of a survey. *Sexual Addiction and Compulsivity*, 7, 31–58.
- Stack, S., Wasserman, I., & Kern, R. (2004). Adult social bonds and use of internet pornography. *Social Science Quarterly*, 85, 75–88.
- Steenland, B., Park, J. Z., Regnerus, M. D., Robinson, L., Wilcox, W. B., & Woodberry, R. (2000). The measure of American religion: Toward improving the state of the art. *Social Forces*, 79, 291–318.
- Stewart, D. N., & Szymanski, D. M. (2012). Young adult women's reports of their male romantic partner's pornography use as a correlate of their self-esteem, relationship quality, and sexual satisfaction. *Sex Roles*, 67, 257–271.
- Sun, C., Bridges, A., Johnason, J., & Ezzell, M. (2016). Pornography and the male sexual script: An analysis of consumption and sexual relations. *Archives of Sexual Behavior*, 45, 983–994.
- Traeen, B., Nilsen, T. S., & Stigum, H. (2006). Use of pornography in traditional media and on the internet in Norway. *Journal of Sex Research*, 43, 245–254.
- Weinberg, M. S., Williams, C. J., Kleiner, S., & Irizarry, Y. (2010). Pornography, normalization, and empowerment. *Archives of Sexual Behavior*, 39, 1389–1401.
- Willoughby, B. J., Carroll, J. S., Busby, D. M., & Brown, C. C. (2016). Differences in pornography use among couples: Associations with satisfaction, stability, and relationship processes. *Archives of Sexual Behavior*, 45, 145–158.
- Wright, P. J. (2013). U.S. males and pornography, 1973–2010: Consumption, predictors, and correlates. *Journal of Sex Research*, 50, 60–71.
- Wright, P. J., Bae, S., & Funk, M. (2013). United States women and pornography through four decades: Exposure, attitudes, behaviors, and individual differences. *Archives of Sexual Behavior*, 42, 1131–1144.
- Wright, P. J., Tokunaga, R. S., & Bae, S. (2014). More than a dalliance? Pornography consumption and extramarital sex attitudes among married U.S. adults. *Psychology of Popular Media Culture*, 3, 97–109.
- Yucel, D., & Gassanov, M. A. (2010). Exploring actor and partner correlates of sexual satisfaction among married couples. *Social Science Research*, 39, 725–738.
- Zillmann, D., & Bryant, J. (1988). Pornography's impact on sexual satisfaction. *Journal of Applied Social Psychology*, 18, 438–453.
- Zitzman, S. T., & Butler, M. H. (2009). Wives' experience of husbands' pornography use and concomitant deception as an attachment threat in the adult pair-bond relationship. *Sexual Addiction & Compulsivity*, 16, 210–240.