

German Heterosexual Women's Pornography Consumption and Sexual Behavior

Chyng Feng Sun¹, Paul Wright², and Nicola Steffen³

Abstract

This study found that German heterosexual women's personal and partnered consumption of pornography were positively correlated with their desire to engage in or having previously engaged in submissive (but not dominant) sexual behaviors such as having their hair pulled, having their face ejaculated on, being spanked, choked, called names, slapped, and gagged. The association between women's partnered pornography consumption and submissive sexual behavior was strongest for women whose first exposure to pornography was at a young age. The findings also indicated that women's personal and partnered pornography consumption were uniquely related to their engagement in submissive sexual behavior. **Public Health Significance Statement:** This study suggests that greater exposure to pornography among heterosexual German women is associated with their desire to engage in or having previously engaged in submissive sexual behaviors but not dominant behaviors. This pattern of correlations aligns with sexual script theory and content analyses of dominance and submission and gender in pornography. It does not align with the perspective that measures of pornography consumption are simply proxies for factors such as a high sex drive or an adventurous approach to sex.

Keywords

pornography, quantitative studies, sex/gender roles, sexual attitudes and behaviors, sexual desire

Human sexual expression and activities are largely learned from social and environmental input (Hogben & Byrne, 1998; Tiefer, 2004). Sexual scripts (i.e., socially constructed guidelines for sexual roles and behaviors) that are prevalent in the environment and positively depicted are the most likely to be adopted (Bandura, 1986; Simon & Gagnon, 1984). Pornography (i.e., erotic, sexually explicit media content) has been argued to be a significant purveyor of cultural-level sexual scripts (Dines, 2010; Jensen, 2007; Paul, 2005). Content analyses indicate that sexual scripts for male aggression and dominance and female subervience and submission are not only prevalent in popular pornography but also depicted as resulting in women's sexual satisfaction (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010; Sun, Bridges, Wosnitzer, Scharrer, & Liberman, 2008).

A growing body of research is specifically interested in how women use and are impacted by pornography (Benjamin & Tlusten, 2010; Laier, Pekal, & Brand, 2014; Weinberg, Williams, Kleiner, & Irizarry, 2010). No study, however, appears to have investigated whether women's pornography consumption is associated with specific sexual behaviors frequently depicted in pornography—for example, spanking (or being spanked), choking (or being choked), pulling hair (or having their hair pulled), or name-calling (or being called names;

Bridges et al., 2010). Since pornographic scripts are gendered and overwhelmingly depict a male dominant and female submissive dynamic (Dines, 2010; Jensen, 2007), the present study investigates heterosexual German women's interest and engagement in the specific types of dominant and submissive behaviors observed in recent content analyses of popular pornography as well as whether their personal and partnered pornography consumption is related to their desires and engagement in such behaviors.

Male Dominance and Female Submission in Pornography

Content analyses of pornography over the past three decades have consistently found that depictions of male dominance and

¹ New York University, New York, NY, USA

² Indiana University, Bloomington, IN, USA.

³ Technische Universität Carola-Wilhelmina zu Braunschweig, Fakultät für Geistes- und Erziehungswissenschaften, Braunschweig, Germany

Corresponding Author:

Chyng Feng Sun, New York University, New York, NY 10012, USA.

Email: cfs1@nyu.edu



aggression directed toward women are prevalent. Cowan, Lee, Levy, and Snyder (1988) randomly selected 45 titles from a list of 121 popular X-rated videos and found that dominance and/or exploitation, including physical or verbal aggression, occurred in 54% of the scenes, and rape was depicted in 51% of the films. Duncan (1991) randomly selected 10% (50 titles) of the entire adult video collection from a video store and found that 13.6% of the scenes contained violent acts. Rape was depicted in one third of these scenes, and degrading acts—mostly verbal abuse—were found in 18.2% of the scenes. Monk-Turner and Purcell (1999) analyzed 209 scenes from 40 popular pornographic videos from a national video store chain and found that 17% of scenes contained themes concerning violence against women and 85% depicted men ejaculating on women. Barron and Kimmel (2000) compared the depiction of sexual violence across different forms of media and concluded that Internet pornography depicted more violent scenes than print media or videos. In recent years, scholars have paid increased attention to Internet pornography. For example, Gorman, Monk-Turner, and Fish (2010) analyzed 45 free videos randomly selected from popular Internet adult websites and reported that 55% of all videos had a main theme of exploitation or domination in which the male actor took control. Klaassen and Peter (2014) analyzed the 100 most viewed videos on each of the top four adult websites (Pornhub, RedTube, YouPorn, and xHamster) and found that men were more often shown as dominant and women as submissive, and that the two most frequent acts of male aggression against women were spanking (27% of scenes) and gagging (18.8% of scenes).

Recent studies that have systematically sampled popular pornographic videos provide detailed information about sexual behaviors frequently depicted in these movies (in 27–75% of scenes analyzed), such as name-calling (e.g., “slut” or “whore”), hair pulling, light and heavy spanking, facial ejaculation, double penetration (i.e., penetrating a partner’s anus or vagina simultaneously with another man), ass-to-mouth (i.e., anally penetrating a partner and then inserting the penis directly into her mouth), penile gagging, facial slapping, and choking (Bridges et al., 2010; Sun et al., 2008). These two studies on pornography’s content further indicate that women, overwhelmingly dominated by men, often express pleasure or no response to men’s aggression.

Pornography and Sexual Scripts

Wright’s sexual script acquisition, activation, application model (3AM) provides a conceptual rationale for the socializing impact of pornography (Wright, 2011; Wright, Malamuth, & Donnerstein, 2012). The model incorporates Bandura’s social cognitive theory (2001), cultivation concepts (Gerbner, Gross, Morgan, & Signorielli, 1994), the media dependency model (Hetsroni, 2008), principles of priming and uses and gratifications (Rubin, 2002), and other perspectives. It also draws from the insights of Huesmann’s (1986) cognitive script theory, which posits that media scripts create a readily accessible heuristic model for information processing. The more that

users watch a particular media script, the more embedded those codes of behavior become in their worldview, and the more likely they are to use those scripts to act upon real-life experiences. Scripts can be specific about sexual behavior and dynamics but can also be abstracted into higher order schema that inform behavioral patterns at a more general level. In accordance with the position that people with higher exposure to certain media content may be more likely to adopt the worldview propagated by that media (Potter, 2014), some pornography researchers have posited that heavier users will tend to exhibit stronger sexual attitudes and behaviors scripted in pornography than lighter users (Zillmann, 2000).

It has been argued that pornography is an important social influence (Dines, 2010; Jensen, 2007) and that the culture has been increasingly “pornified” (Mulholland, 2014; Paul, 2005; Tyler, 2011). If there is veracity to these arguments, and if the construction of gender and sex in most pornography is that of male dominance and female submission (Whisnant, 2016), then women should be more likely to have tried and to express interest in trying the submissive side of the particular sexual behaviors observed in Bridges, Wosnitzer, Scharrer, Sun, and Liberman (2010) and Sun, Bridges, Wosnitzer, Scharrer, and Liberman (2008) than the dominant side. The following hypothesis is thus proposed:

Hypothesis 1: Women will be more likely to want to try and to have tried submissive than dominant behaviors.

If women are more likely to want to try or to have tried the submissive side of the sexual behaviors observed in Bridges et al. (2010) and Sun et al. (2008), this is suggestive of pornography’s social influence. If these behaviors are particular to pornography (Dines, 2010; Jensen, 2007), and if women’s sexual scripts tend toward the submissive rather than the dominant side of these behaviors, it is likely that women’s submissiveness reflects the influence of pornography. It is also possible, however, that this dominance–submission imbalance is simply reflective of broader, long-standing sociosexual influences on gendered sexual behavior that have little to do with pornography. More conclusive evidence would come from women’s frequency of pornography exposure correlating more strongly with their interest and engagement in the submissive side of these behaviors than the dominant side. Other factors being equal, the 3AM posits that more frequent exposure increases the probability of script activation and application. If male dominance and female submission are the norms in pornography (as opposed to the converse), frequency of consumption should correlate with women’s submissive behaviors more strongly than with their dominant behaviors.

It is important to examine the frequency of women’s partnered pornography consumption, in addition to the frequency of their personal consumption, when considering pornography’s possible impact on women’s sexual behavior. In a study of couples and pornography use, Bridges and Morokoff (2011) examined heterosexual partners and found that although men mostly use pornography for masturbation, women often

reported the use of pornography as part of sexual activity with their partners. Further, the higher frequency of pornography use on the part of females is related to their male partners' higher sexual satisfaction. This suggests that coupled use may associate with female sexual behavior that leads to their male partners' satisfaction. Since men's pornography consumption tends to associate with dominant behaviors (Wright, Sun, Steffen, & Tokunaga, 2015), it may be the case that consumption with partners affects women's orientation toward and engagement in submissive sexual behavior. Accordingly, the study's second and third hypotheses are:

Hypothesis 2: The association between women's personal pornography consumption and their behavioral interest and engagement will be stronger for submissive than dominant behavior.

Hypothesis 3: The association between women's use of pornography with their partners and their behavioral interest and engagement will be stronger for submissive than dominant behavior.

Women's personal pornography consumption may lead to their facilitating being dominated or their willingness to accept being dominated when their partners are the initiators. Additionally, as men and women consume pornography during sex, men may be prompted to attempt the acts of dominance and women may feel compelled to accept these acts, or women may be spurred to encourage their partners to model the acts of dominance being presented. The former process suggests a modeling effect through women's acquisition and internalization of submissive scripts (e.g., Bandura, 2001). The latter process suggests a modeling effect through the activation of submissive scripts during couples' use of pornography (e.g., Berkowitz & Rogers, 1986). If women's personal pornography consumption and use of pornography with their partner reflect different modeling mechanisms, they each should be related to women's submissive behavior after partialling out the influence of the other. Consequently, the study's fourth hypothesis states:

Hypothesis 4: Women's personal pornography consumption and use with their partners will correlate with their submissive behavior after each variable is partialled out of the other.

Age of First Pornography Exposure

The 3AM identifies a number of factors that may increase the likelihood of behavioral modeling following exposure to sexual media. Age is an important moderating factor specified by the model. Several recent 3AM studies have suggested that the impact of pornography depends on consumers' age (Wright, 2015; Wright & Bae, 2015). A variety of studies have found associations between exposure to pornography and attitudes and behaviors in alignment with pornography's presentation of sex among children and adolescents (Brown & L'Engle,

2009; Peter & Valkenburg, 2009), but no study appears to have examined the model's assertion that the effects of current exposure to particular sexual media depictions may be stronger for individuals exposed to similar depictions earlier in life.

Individuals exposed to pornography at an early age may be more impacted by later exposures for several reasons. Sexual scripts encountered early in life may have a lasting impact on the perceptions of sexual normativeness and desirability (Huesmann, 1986). Higher congruence between previously established sexual scripts and subsequently encountered sexual scripts may increase the likelihood of behavioral application (Wright, Bae, & Funk, 2013; Wright, Randall, & Arroyo, 2013). Additionally, because of their originality and vividness, pornographic scripts observed early in life may be more accessible in memory (Greenberg, 1988; Shrum, 2009). This heightened accessibility may increase their ease of subsequent activation, and, ultimately behavioral application (Rasmussen, Rhodes, Ortiz, & White, 2016; Roskos-Ewoldsen, Klinger, & Roskos-Ewoldsen, 2007; Wright, 2011). Correspondingly, the study's fifth hypothesis is:

Hypothesis 5: Associations between women's pornography exposure and submissive behavior will be strongest when they were first exposed to pornography at an earlier age.

Method

Procedure

Participants were recruited in three ways. First, psychiatry, psychology, gender studies, and sexology departments and units from four German universities and institutes were contacted and asked to notify their students of the study. Second, individual German sexologists were contacted and asked to notify their students and associates of the study. Third, a German gender studies group was contacted and asked to place the survey on its blog. All potential participants were directed to an anonymous online survey. Given the nature and goals of the study, only heterosexual women 18 years of age or older participated in the survey. Data were gathered over the course of an academic calendar year.

Participants

Three hundred and ninety-two heterosexual women participated in the survey. A slight majority were college students (53.80% were college students; 46.20% were not college students). Women reported an age of 27.49 years, on average ($SD = 6.72$). Of the women, 70% reported being in a romantic relationship; 30% of women said that they were not in a romantic relationship. Women were asked whether religious faith was important to them. Consistent with research on declining religiosity in Germany, particularly among younger people (Wolf, 2008), more women disagreed that religious faith was important to them (79.80%) than agreed that religious faith was important to them (20.20%).

Table 1. Behavioral Interest or Engagement.

Behavior	No Desire to Try (%)	Would Like to Try (%)	Have Tried (%)
Dominant behavior			
Choke partner	88.6	2.4	9.0
Dominate partner in S&M	59.6	16.4	24.0
Pull partner hair	53.2	5.9	40.9
Role-play forcing sex on partner	78.9	9.9	11.2
Slap partner face	90.7	1.4	7.9
Spank partner lightly	28.4	6.7	64.9
Spank partner hard	75.0	7.0	18.0
Tie partner up	29.8	23.9	46.3
Submissive behavior			
Be choked by partner	75.3	1.6	23.1
Be dominated by partner in S&M	50.7	18.1	31.2
Hair pulled by partner	41.5	3.7	54.8
Role-play being forced into sex	57.8	16.9	25.3
Face slapped by partner	83.2	2.4	14.4
Be spanked by partner lightly	14.6	6.7	78.7
Be spanked by partner hard	59.6	8.5	31.9
Be tied up by partner	18.1	28.0	53.9
Behaviors particular to male dominance and female submission			
Anal penetration	26.0	9.0	65.0
Ass-to-mouth	91.0	1.1	7.9
Double penetration	60.2	32.7	7.1
Facial ejaculation	21.4	2.2	76.4
Gang bang	66.6	25.3	8.1
Name-calling	69.6	5.5	24.9
Penile gagging	67.8	1.9	30.3
Penis worship	16.3	7.6	76.1

Note. S&M = Sadomasochism.

Measures

The study's primary measures are detailed below. Pornography was identified for participants as erotic, sexually explicit media content (Brown & L'Engle, 2009; Daneback, Traeen, & Mansson, 2009; Kasper, Short, & Milam, 2015; Levin, Lillis, & Hayes, 2012; Zillmann, 2000). Descriptive statistics for the pornography measures are provided with their descriptions. Responses to the dominance and submission items are provided in Table 1. One third of the behaviors were associated with a majority of women's interest and engagement and two thirds with a minority of women's interest and engagement.

Age of First Pornography Exposure

Following Romito and Beltrami (2011), Sabina, Wolak, and Finkelhor (2008), and Sinkovic, Stulhofer, and Bozic (2013), women were asked the age at which they were first exposed to pornography. Specifically, after being asked if they had ever encountered pornography, women who answered affirmatively were asked "How old were you when this exposure first happened?" Only five women (1.3%) who completed the survey stated that they had never been exposed to pornography.

Among women who indicated pornography exposure, 0.5% reported being exposed prior to age 6 (coded 1), 12.50% between the ages of 6 and 9 years old (coded 2), 31.50% between the ages of 10 and 12 years old (coded 3), 31.00% between the ages of 13 and 15 years old (coded 4), 14.20% between the ages of 16 and 18 years old (coded 5), and 10.30% at the age of 19 years or older (coded 6).

Personal Pornography Consumption

Personal pornography consumption is usually discussed in terms of masturbatory motives (Pound, 2002). Following Bridges and Morokoff (2011) and Sun, Miezian, Lee, and Shim (2015), women were asked how frequently they consumed pornography for masturbation. Specifically, women were asked "On average, how often do you use pornography for masturbation?" (scale: 1 = *never*, 2 = *less than once a year*, 3 = *a few times a year*, 4 = *once a month*, 5 = *a few times a month*, 6 = *1–2 days a week*, 7 = *3–5 days a week*, and 8 = *daily or almost daily*). Pornography use for masturbation was reported once a month on average ($M = 4.22$; $SD = 1.64$).

Partnered Pornography Consumption

Following Bridges and Morokoff (2011), Maddox, Rhoades, and Markman (2011), and Daneback, Traeen, and Mansson (2009), women were asked how frequently they use pornography during sex with partners. Specifically, women were asked "On average, how often do you view pornography when you are having sex with a partner(s)?" Response options mirrored those used to assess women's personal pornography consumption. Women's reported use of pornography with partners during sex was infrequent, on average ($M = 1.77$; $SD = 1.27$).¹

Dominant and Submissive Behaviors

Women were asked whether they would like to try or had already tried the following eight dominant behaviors during sex: spank a partner lightly, spank a partner hard enough to leave marks on his skin, pull a partner's hair, role-play the scenario of forcing a partner into sex, slap a partner in his face, choke a partner, tie up a partner, and sexually dominate a partner in sadomasochism. Women were also asked whether they would like to try or had already tried the submissive side of these dominant behaviors during sex (i.e., be spanked by a partner lightly, be spanked by a partner hard enough to leave marks, have their hair pulled, role-play the scenario of being forced into sex, be slapped by a partner in the face, be choked by a partner, be tied up by a partner, and be sexually dominated in sadomasochism). For each behavior, women's responses indicated whether they had not tried the behavior and had no desire to try the behavior, whether they had not tried the behavior but wanted to try the behavior, and whether they had actually tried the behavior. Codes for these items varied by analysis and are explained for each hypothesis test.

Table 2. Comparisons of Interest and Engagement in Dominant and Submissive Behavior.

Behavior	Comparison Involves Women Who Have Not Tried Either Behavior			Comparison Involves All Women		
	No Desire to Try (%)	Would Like to Try (%)	McNemar Test	Have Not Tried (%)	Have Tried (%)	McNemar Test
Choke partner (Dom)	99.3	0.7	<i>ns</i>	91.2	8.8	$p < .01$
Be choked by partner (Sub)	97.9	2.1		76.9	23.1	
Dominate partner in S&M (Dom)	80.2	19.8	$p < .05$	76.2	23.8	$p < .01$
Be dominated by partner in S&M (Sub)	74.2	25.8		68.6	31.4	
Pull partner hair (Dom)	96.0	4.0	<i>ns</i>	58.9	41.1	$p < .01$
Hair pulled by partner (Sub)	94.0	6.0		45.2	54.8	
Role-play forcing sex on partner (Dom)	93.0	7.0	$p < .01$	88.9	11.1	$p < .01$
Role-play being forced into sex (Sub)	77.8	22.2		74.5	25.5	
Slap partner face (Dom)	99.0	1.0	<i>ns</i>	92.3	7.7	$p < .01$
Face slapped by partner (Sub)	97.8	2.2		85.9	14.1	
Spank partner lightly (Dom)	77.6	22.4	<i>ns</i>	35.1	64.9	$p < .01$
Be spanked by partner lightly (Sub)	69.7	30.3		21.2	78.8	
Spank partner hard (Dom)	93.9	6.1	$p < .01$	82.0	18.0	$p < .01$
Be spanked by partner hard (Sub)	87.4	12.6		68.0	32.0	
Tie partner up (Dom)	53.9	46.1	$p < .01$	53.7	46.3	$p < .01$
Be tied up by partner (Sub)	40.1	59.9		46.0	54.0	

Note. Percentage variations from Table 1 are due to pairwise deletion. Dom = Dominant behavior; Sub = Submissive behavior.

Behaviors Particular to Male Sexual Dominance and Female Sexual Submission

Women were also asked about eight additional behaviors that have been observed in pornography and argued to be indicative of male sexual dominance and female sexual submission (Dines, 2010, 2012; Jensen, 2007, 2008). Specifically, women were asked if they would like to try or had already tried having their partner insert their penis so deeply into their throat it caused them to gag, being called pejorative terms for women during sex such as slut or whore, having their partner insert their penis into their anus, having their partner insert their penis into their anus and then immediately into their mouth, having their partner ejaculate on their face, performing oral sex while kneeling as their partner stood upright before them, having sex with a group of men (while she was the only female), and being penetrated (anally or vaginally) by two men at the same time. Codes for these items are also outlined in their hypothesis tests.

Results

Hypothesis 1: Interest and Engagement in Dominant Versus Submissive Behavior

To test Hypothesis 1, analyses were undertaken to explore whether women were more likely to want to try and to have tried the dominant side or the submissive side of eight behaviors observed in content analyses of pornography. To compare women's level of interest, women who had not tried the behavior and who had no interest in trying the behavior (coded 0) were compared to women who had not tried the behavior but said they would like to try the behavior (coded 1). To compare women's actual engagement in each behavior, women who had

tried the behavior (coded 1) were compared to women who had not tried the behavior (coded 0).

Differences between women's interest and engagement in each dominant behavior and its submissive counterpart were evaluated using McNemar tests. Results are presented in Table 2. Women who had not tried the behaviors expressed more interest in the submissive side of each behavior than the dominant side. Four of these differences were statistically significant (i.e., sadomasochism, forced sex, hard spanking, and binding). Regarding actual behavior, women were significantly more likely to report engaging in the submissive side than the dominant side in all instances (i.e., choking, sadomasochism, hair pulling, forced sex, slapping, light spanking, hard spanking, and binding). In sum, the direction of women's interest in submissive behavior versus dominant behavior and actual engagement in submissive behavior versus dominant behavior was similar: Women were more likely to express interest and engage in submissive behavior than dominant behavior.

Hypothesis 2: Personal Pornography Consumption and Dominance and Submissiveness

Hypothesis 2 predicted that women's personal pornography consumption would more strongly correlate with their interest and engagement in submissive behavior than dominant behavior. Given the directional correspondence between women's desires and behaviors across the eight dominance/submission acts, summative indexes were created for the submissive behaviors and the dominant behaviors (i.e., the summation of submissive and dominant behaviors that women want to try or have tried—possible range of 0–8 for each). Principal components analyses using eigenvalues, scree plots, and factor

loadings as evaluative criteria suggested one factor solutions for each index. Both scales were internally consistent (submission interest and engagement index Cronbach's $\alpha = .79$; dominance interest and engagement index Cronbach's $\alpha = .76$). Women wanted to try or had tried more submissive behaviors ($M = 4.06$; $SD = 2.26$) than dominant behaviors ($M = 2.98$; $SD = 2.09$; within subjects $t = 11.12$, $p < .01$).

The correlation between women's personal pornography consumption and submissiveness was positive and significant ($r = .28$, $p < .01$). The correlation between women's personal pornography consumption and dominance was not significant ($r = .05$, *ns*). The difference between these correlations was significant (Williams' $t = 4.38$, $p < .01$).² In sum, women's personal pornography consumption correlated with their submissive desires and behavior but was unrelated to their dominant desires and behavior.

Hypothesis 3: Partnered Pornography Consumption and Dominance and Submissiveness

Hypothesis 3 predicted that women's partnered pornography consumption would more strongly correlate with their interest and engagement in submissive behavior than dominant behavior. To test this hypothesis, the analyses carried out for Hypothesis 2 were replicated with partnered pornography consumption in place of personal pornography consumption. The correlation between women's partnered pornography consumption and submissiveness was positive and significant ($r = .26$, $p < .01$). The correlation between women's partnered pornography consumption and dominance was not significant ($r = .10$, *ns*). The difference between these correlations was significant (Williams' $t = 3.21$, $p < .01$).² In sum, women's partnered pornography consumption correlated with their submissive desires and behavior but was unrelated to their dominant desires and behavior.

Hypothesis 4: Unique Correlation of Personal and Partnered Pornography Consumption to Submissive Behavior

Hypothesis 4 predicted that women's personal pornography consumption and partnered pornography consumption would uniquely correlate with their submissive behavior. To test this hypothesis, a summative index was created that reflected the number of general submission behaviors women had actually tried and the number of behaviors particular to male sexual dominance and female sexual submission that women had actually tried (possible range of 0–8 for each index). Women were slightly more likely to have tried the former ($M = 3.21$; $SD = 2.37$) than the latter ($M = 3.00$; $SD = 1.81$) behaviors (within subjects $t = 2.14$, $p < .05$). Principal components analyses using eigenvalues, scree plots, and factor loadings as evaluative criteria suggested one factor solutions for each index. Both scales were internally consistent (submission behavior index Cronbach's $\alpha = .82$; male sexual dominance and female sexual submission behavior index Cronbach's $\alpha = .72$).

Partial correlations were calculated to test the fourth hypothesis. After partialling out the contribution of their partnered pornography consumption, women's personal pornography consumption was marginally correlated with their general submission behavior (partial $r = .13$, $p = .07$) and significantly correlated with their male sexual dominance/female sexual submission behavior (partial $r = .26$, $p < .01$). After partialling out the contribution of their personal pornography consumption, women's partnered pornography consumption was positively correlated with their general submission behavior (partial $r = .21$, $p < .01$) and male sexual dominance/female sexual submission behavior (partial $r = .38$, $p < .01$). In sum, the pattern of results suggested that women's personal and partnered pornography consumption were uniquely correlated with their submissive behavior.

Hypothesis 5: Age of First Pornography Exposure as a Moderator

Hypothesis 5 predicted that associations between women's pornography exposure and submissive behavior would be strongest in the case of women who were first exposed to pornography at an early age. Three-step hierarchical multiple regression analyses predicting women's general submission behavior and male sexual dominance/female sexual submission behavior were conducted. In addition to age of first exposure, women's student status, relationship status, religiosity, and years of age were entered as controls in step one, as prior research suggests that these factors may correlate with pornography exposure or sexual behavior (Ballester-Arnal, Castro-Calvo, Gil-Llario, & Gimenez-Garcia, 2014; Maddox, Rhoades, & Markman, 2011; Zillmann & Bryant, 1988). Women's personal and partnered pornography consumption were entered in step two. Multiplicative interaction terms between women's personal and partnered pornography consumption and age of first pornography exposure were entered in step three. All covariates and predictors were either centered or binary coded. Results are presented in Table 3.

The interactions between women's personal pornography consumption and age of first pornography exposure were not significant. Frequent personal pornography consumption was associated with engaging in more general submission behavior and male sexual dominance/female sexual submission behavior regardless of the age at which women were first exposed to pornography.

The interactions between women's partnered pornography consumption and age of first pornography exposure were significant, however. Simple slope analyses indicated that women's partnered pornography consumption was most strongly related to their submission behavior and male sexual dominance/female sexual submission behavior when they were first exposed to pornography at an early age. Illustrative simple slopes for the association between partnered pornography consumption and general submission behaviors are: 6–9 years old first exposed to pornography, $\beta = .48$, $p < .01$; 10–12 years old first exposed to pornography, $\beta = .30$, $p < .01$; 13–15 years old

Table 3. Hierarchical Multiple Regression Analyses Predicting Women's Submissive Behavior.

Predictor	General Submission Behavior		Male Sexual Dominance/Female Sexual Submission Behavior	
	ΔR^2	β	ΔR^2	β
Step 1	.03		.06†	
Age		.01		-.04
Age first Pornography exposure		-.13		-.06
Relationship status ^a		.05		.12
Religiosity ^b		.06		.12
Student status ^c		-.08		-.21*
Step 2	.07**		.25**	
Partnered pornography consumption		.20*		.35**
Personal pornography consumption		.14†		.28**
Step 3	.03*		.07**	
Partnered Porn × Age First Exposure		-.17*		-.22**
Personal Porn × Age First Exposure		-.04		-.11

^a0 = not in relationship, 1 = in a relationship. ^bReligiosity scale: 1 = strongly disagree to 6 = strongly agree. ^c0 = nonstudent, 1 = student.

† $p < .10$. * $p < .05$. ** $p < .01$.

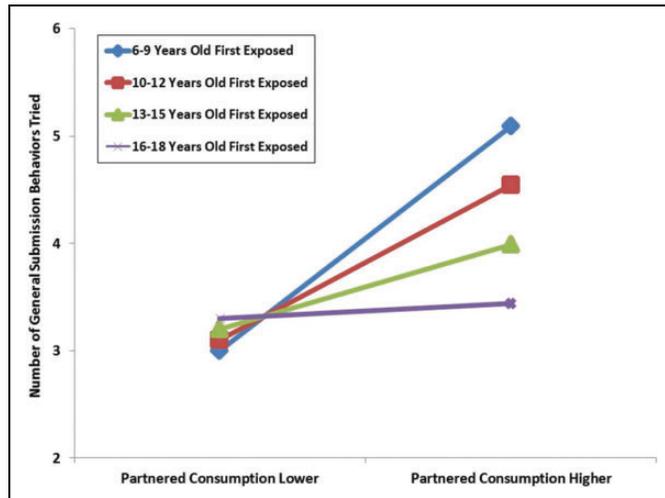


Figure 1. Interaction of frequency of partnered pornography consumption and age of first pornography exposure on the number of general submission behaviors tried.

first exposed to pornography, $\beta = .13$, *ns*. Illustrative simple slopes for the association between partnered pornography consumption and male sexual dominance/female sexual submission behaviors are: 6–9 years old first exposed to pornography, $\beta = .69$, $p < .01$; 10–12 years old first exposed to pornography, $\beta = .46$, $p < .01$; 13–15 years old first exposed to pornography, $\beta = .23$, $p < .01$. Figures 1 and 2 provide visual illustrations of these interactions. In sum, the younger the age at which women had first been exposed to pornography, the more strongly their partnered pornography consumption predicted their submissive behavior.

Discussion

Recent content analytic studies of popular heterosexual targeted pornography indicate that aggressive and dominant male

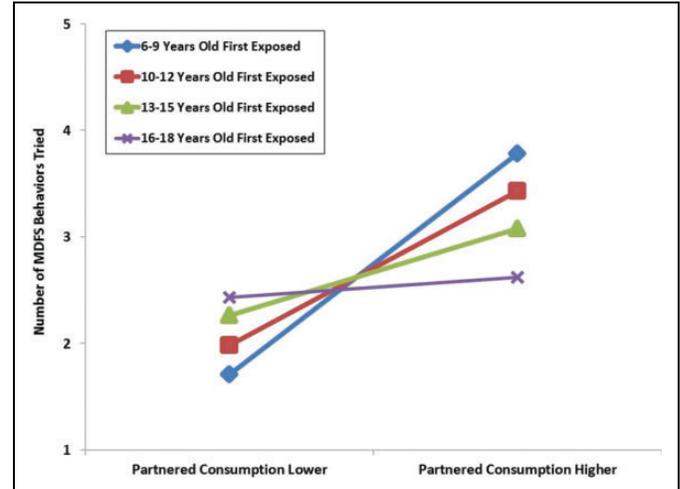


Figure 2. Interaction of frequency of partnered pornography consumption and age of first pornography exposure on the number of male sexual dominance and female sexual submission behaviors tried.

behaviors are “intrinsic and integral” to the sexual pleasure of participants (Sun et al., 2008, p. 321; see also Bridges et al., 2010). The present study measured women's exposure to pornography and their interest and engagement in a variety of dominant and submissive behaviors observed in these content analyses.

The sexual behaviors that women had engaged in or said they would like to engage in were submissive more so than dominant. The majority (55–79%) had experiences of having their hair pulled or being lightly spanked; more than 30% were spanked hard and dominated in S&M; 23–25% were choked or had role-played being forced into sex, and 14% were slapped in the face. Of the women who had not tried those submissive behaviors, 30% had an interest in being lightly spanked; 22–26% in role-playing being forced into sex or being submissive in S&M; 13% in being spanked hard; and between 2% and 6% in having their hair pulled, being choked, and being slapped. In

terms of male dominant/female submissive sexual behaviors, between approximately 65% and 75% had engaged in penis worship, facial ejaculation, and anal penetration; 30% had been gagged; 25% had been called names; and 7–8% had participated in a gang bang, an ass-to-mouth, or a double penetration.

Nearly all women reported previous exposure to pornography, the majority being exposed before 16 years old (75%). Given the study's interest in potential associations between pornography use and sexual behaviors, insights from Wright's (2011) sexual script 3AM of media sexual socialization were applied to investigate three aspects of women's pornography use: personal use, use with a partner, and exposure to pornography early in life.

Women's personal and partnered pornography consumption were uniquely related to their engagement in submissive sexual behavior. The results also showed that while women who had higher pornography consumption, either on their own or with partners, were more likely to have engaged in or to want to try sexually submissive behaviors, their consumption of pornography was not related to their dominant behaviors. In other words, pornography use was related to women's submissive behavior but was unrelated to their dominant behavior. This pattern of correlations aligns with sexual script theory and content analyses of dominance and submission and gender in pornography. It does not align with the perspective that measures of pornography consumption are simply proxies for factors such as a high sex drive or an adventurous approach to sex. If this were the case, pornography consumption should have correlated with women's dominant sexual behavior in addition to their submissive sexual behavior.

The 3AM theorizes that early exposure to sexual scripts may have a lasting impact on sexual perceptions, particularly when they are vivid and novel and thus easier to remember (Greenberg, 1988; Shrum, 2009). Further, if later encountered sexual scripts are congruent with the earlier encountered sexual scripts, their behavioral application is more likely (Wright et al., 2013). Since content analyses of pornography spanning three decades have demonstrated that male dominance and female submission is a primary message (Barron & Kimmel, 2000; Cowan, Lee, Levy, & Snyder, 1988; Duncan, 1991; Gorman, Monk-Turner, & Fish, 2010; Klaassen & Peter, 2014; Monk-Turner and Purcell, 1999), the sexual scripts depicted in the pornography that female participants saw as children were likely to be consistent with the ones they saw later in life. Accordingly, the younger the age at which women were first exposed to pornography, the stronger the associations between women's submissive behavior and partnered pornography consumption. Interestingly, the strength of the association between women's submissive behavior and recent personal pornography consumption was equally strong regardless of when women were first exposed to pornography. Women used pornography on their own much more frequently than with a partner. Perhaps the heightened accessibility of submission scripts resulting from these more frequent, proximate exposures overrode variation in women's sexual script development due to differences in the age of first exposure.

This study provides support for several tenets of the 3AM, most notably that sexual media provide scripts for specific sexual behaviors and that early childhood exposure may increase the likelihood that individuals will engage in particular behaviors they observe later in life. But it is especially salient if the results are compared to a recent study of men's pornography consumption and sexually dominant behavior (Wright et al., 2015). This study found that men who more frequently consumed pornography were more likely to have engaged in or were more interested in trying the dominant behaviors common in popular pornography: hard spanking, role-played forced sex, slapping, choking, tying up a partner, dominating a partner, double penetration, penile gagging, and name-calling. Taken together, the two studies suggest that male dominance and female submission in pornographic scripts are likely acquired, activated, and applied in many of frequent consumers' sexual interactions, and as personal or partnered use may point to different modeling paths, that personal use, partner's own use, and coupled use all may influence the application of pornographic scripts.

Limitations

Although male dominance and female submission is the most likely pattern of gendered behavior in popular pornography, sexually explicit media are not monolithic, and even within popular pornography, there are different genres. Measuring the specific genres of pornography women consume would enable more precise predictions about the types of behaviors they are most likely to desire and engage in. While general measures of consumption and content analysis-based predictions are the norm in the literature, and while our general measures yielded results consistent with expectations, that our study did not ask what type of pornography women consumed could be considered a limitation. It should also be noted that women who perceive that they have chosen to be dominated by men may identify their submissive behavior as empowering (see Linden, Pagano, Russell, & Star, 1982; Newmahr, 2011 for a discussion). In this study, we investigated women's engagement in and interest in a variety of sexual behaviors and their connection to the consumption of pornography. It is beyond the scope of this study to speculate about the psychology of the participants—for example, if they felt submissive behaviors were degrading or empowering.

The data for the present study were gathered on a single occasion by means of survey. This method poses two limitations. First, while the present study controlled for a variety of potential confounds such as age, relationship status, religiosity, and student status, it may still be possible that other confounds were operable. A confound is a variable that is related to the focal variables under investigation and may therefore be responsible for any association found between the focal variables (Newton & Rudestam, 1999). For example, it could be women's low self-esteem that leads to their agreeing to use pornography with their partners and to their acceptance of male domination during sexual encounters. Second, assuming at least a partial cause-and-effect dynamic, the direction of

influence (i.e., consuming pornography → behavior or behavior → consuming pornography) cannot be known. For example, although the probability seems remote, it may be the case that women have friends or other interpersonal sources of influence who have encouraged them to be choked, gagged, or called names during sex by men, and having internalized these scripts, subsequently seek out media content that displays these acts. The results of the present study should be complemented by longitudinal surveys of behavior and experiments on behavioral intentions that can more definitively address the possibility of third-variable confounding and selective exposure.³ Longitudinal studies would also be able to better estimate the cumulative influence of women's pornography consumption and whether their sexual interests and behaviors change over time (e.g., whether women try a behavior a single time or try a behavior and continue to engage in it).

Several additional limitations and corresponding future research directions should be noted. First, the present study should be replicated cross-culturally. Results of recent studies conducted on pornography consumption and attitudes, behaviors, and sexual intimacy have been more similar than discrepant in different countries (Brown & L'Engle, 2009; Hald & Mulya, 2013; Lo & Wei, 2005; Peter & Valkenburg, 2009; Sun, Miezian, Lee, & Shim, 2015). Nevertheless, the specific behaviors investigated in the present article were heretofore unstudied, and caution should be exercised regarding cross-cultural generalization until additional studies have been completed. Second, more representative and less self-selected sampling designs are needed, whether within Germany or cross-culturally. Critics have pointed out that a large number of academic studies have been conducted among college students in Western societies (Henrich, Heine, & Norenzayan, 2010). The present study has attempted to move beyond this limitation by surveying students from several universities and by sampling within different departments at these universities. Additionally, nonstudents were surveyed and comprised 46% of the sample. However, the recruitment strategies of sexologists' referral, and surveys posted on the blog of gender studies, may have attracted female participants who were more likely to engage in nonconventional sexual behaviors.

Third, audience reception studies are needed to better understand women's pornography use and their sexual behavior. Such studies would provide insight into women's incentives for using pornography and interpretations of different pornography genres and sexual behaviors, and to have a deeper and more nuanced understanding of correlations found in quantitative analyses. For example, 76% of participants in the present study had their faces ejaculated on by their partners, an act that many women report to be undesirable (Ogas & Gaddam, 2011). Why would women participate in such an act? Was it because the participants, by repeated use, learned to like it, or accepted that it was expected of them? Or did they participate in it because it was something men desire, and it would make their partner happy? Reception studies may also provide more precise insight into the particular pathways through which women's personal pornography consumption and partnered

pornography consumption increase their probability of engaging in submissive behavior. Future research can also consider including open-ended and forced-choice questions in a single large-scale survey design.

Conclusion

This study is one of the first to demonstrate a clear link between pornography consumption and women's submissive sexual behaviors by identifying acts prevalent in pornography and by using an examination of different uses of pornography and their interactions with women's early exposure. Pornography has been argued to be mere fantasy (Bader, 2008; Kipnis, 1996; Lehman, 2006) and a tool for women's sexual liberation (Ellis, O'Dair, & Tallmer, 1990). It has also been argued that the pornographic images are polysemic and that the audience's identification is unpredictable (McClintock, 1993). Thus, when women see other women being dominated in pornography, they may identify with the dominator, not the dominated, and subsequently learn a sexual domination script. However, based on this and previous research (Wright, Sun, Steffen, & Tokunaga, 2014), many heterosexual men and women appear to largely accept pornography's script of male dominance and female submission and to behave accordingly. This power imbalance provides much to ponder in terms of sexual relations and gender inequality.

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Notes

1. Given this variable's positive skew, replicative analyses were conducted for all hypothesis tests using a logarithm transformation (Mertler & Vannatta, 2002). Results with the variable in its original form mirrored the transformed variable results.
2. Correlative difference significant regardless of the test employed (<http://comparingcorrelations.org/>; Diedenhofen & Musch, 2015).
3. As knowledge is cumulative, however, it would be remiss to not also mention the following. First, scholars have identified economic factors as crucial in motivating pornographers to come up with novel sexual acts to catch consumers' attention (Dines, 2012; Jensen, 2008). Thus, it is likely counterproductive for pornographers to merely document already-established patterns of sexual behavior. An "upping-the-ante" example can be seen in the act of ejaculating on a woman's face/mouth. Once a rare occurrence in stag films, the predecessors of modern pornography (Williams, 1989), this act has become ubiquitous in recent years (Bridges et al., 2010; Hardy, 1998). Second, if women's already-established submissive behavior is the cause of their pornography consumption, two patterns should be present in the data (see Cohen & Cohen, 1983, p. 93: model c: spurious relationships): (1) women's personal and partnered pornography use should be correlated and (2) this association should reduce to nonsignificance

when women's submissive behavior is controlled. Women's personal and partnered pornography consumption were positively correlated ($r = .37, p < .01$). This association remained significant, however, after controlling for both women's general submission behavior (partial $r = .33, p < .01$) and male sexual dominance/female sexual submission behavior (partial $r = .23, p < .01$). Third, data from a growing body of longitudinal pornography studies have more consistently supported a media effects explanation than a selective exposure explanation (see Wright, Tokunaga, & Bae, 2014, for a discussion).

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