

Diverse Sexual Behaviors and Pornography Use: Findings From a Nationally Representative Probability Survey of Americans Aged 18 to 60 Years

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ABSTRACT

Background: Convenience sample data indicate that substantial portions of adults have engaged in sexual behaviors sometimes described as rough; little is known about these behaviors at the population level.

Aim: To describe, in a U.S. probability sample of Americans aged 18 to 60 years, (i) the prevalence of diverse sexual behaviors, described here as dominant and target behaviors; (ii) the age at first pornography exposure as well as prevalence, range, and frequency of pornography use; (iii) the association between past year pornography use frequency and dominant/target sexual behaviors; and (iv) associations between lifetime range of pornography use and dominant/target sexual behaviors.

Methods: A confidential cross-sectional online survey was used in this study.

Outcomes: Lifetime engagement in dominant behaviors (eg, spanking, choking, name calling, performing aggressive fellatio, facial ejaculation, penile-anal penetration without first asking/discussing) and lifetime engagement in target behaviors (eg, being spanked, being choked, being called names during sex, having their face ejaculated on, receiving aggressive fellatio, or receiving penile-anal penetration without having discussed) were assessed; lifetime pornography use, age at first porn exposure, past-year frequency of porn viewing, and lifetime range of pornography were also assessed.

Results: Women as well as men who have sex with men were more likely to report target sexual behaviors: having been choked (21.4% women), having one's face ejaculated on (32.3% women, 52.7% men who have sex with men), and aggressive fellatio (34.0% women). Lifetime pornography use was reported by most respondents. After adjusting for age, age at first porn exposure, and current relationship status, the associations between pornography use and sexual behaviors was statistically significant.

Clinical Implications: Clinicians need to be aware of recent potential shifts in sexual behaviors, particularly those such as choking that may lead to harm.

Strengths & Limitations: Strengths include U.S. probability sampling to provide population level estimates and the use of Internet-based data collection on sensitive topics. We were limited by a lack of detail and context related to understanding the diverse sexual behaviors assessed.

Conclusion: Clinicians, educators, and researchers have unique and important roles to play in continued understanding of these sexual behaviors in the contemporary United States. **Herbenick D, Fu T-C, Wright P, et al. Diverse Sexual Behaviors and Pornography Use: Findings From a Nationally Representative Probability Survey of Americans Aged 14 to 60 Years. J Sex Med 2020;XX:XXX–XXX.**

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BACKGROUND

Recent research has described declines in sexual frequency in the United States (U.S.) and in other industrialized countries.^{1–3} Less is understood about changes to sexual repertoire. In 2009, the first wave of the decade-long National Survey of Sexual Health and Behavior (NSSHB) was conducted.⁴ Findings suggested that few sexual behaviors had changed in the nearly 2 decades since the National Health and Social Life Survey (NHLS).⁵ Compared with the NHLS, nearly twice as many Americans in the NSSHB reported lifetime anal sex.⁴ In addition, a 2008 U.S. nationally representative probability survey found that about half of respondents had used vibrators,^{6,7} a substantial increase from the 2% of NHLS respondents who indicated past-year vibrator/dildo purchase.⁵ However, all research is limited to the questions it asks, and these surveys focused largely on behaviors associated with sexually transmitted infection and/or pregnancy risk (eg, oral sex, vaginal sex, anal sex, and sex toy use).

A subsequent U.S. nationally representative probability survey, the 2015 Sexual Exploration in America Study (SEAS), improved our understanding of diverse sexual behaviors by asking 2,021 women and men aged 18 to 91 years about their engagement in more than 30 sexual behaviors.⁸ The SEAS was conducted a few years after the release of the book *Fifty Shades of Grey*, which was associated with increased sales of sex toys and with greater interest in bondage, domination, submission, and masochism (BDSM).^{9–11} Among the SEAS findings were indications that >70% of respondents had viewed sexually explicit videos or DVDs, 57% had read erotic stories, one-third reported lifetime spanking, and about one-fifth had tied a partner up or been tied up.⁸ Given the lack of earlier benchmarks, it is unclear to what extent these behaviors may reflect population-level behavior changes.

Sexual Behaviors and the Pornographic Sexual Script

Both the NSSHB and SEAS were administered following shifts in the volume of porn produced, the accessibility of porn, and its content. Porn producers and actors have described a greater emphasis on anal sex and rough sex behaviors in films produced between the 1990s and 2000s.^{12–14} However, research indicates that sexual behaviors differ between porn genres. For example, a content analysis found that women in the “Asian women” category of one porn website were treated less aggressively than women in other categories.¹⁵ Another study found that physical aggression was significantly more often depicted in the queer feminist porn films sampled, as compared with porn categorized as “For Women.”¹⁶

Researchers and journalists have considered whether and how pornographic content and other erotic media may influence people's interest in or engagement in certain sexual behaviors. These behaviors are sometimes described as reflecting

“pornographic sexual scripts” owing to their prevalent depiction in mainstream pornography.¹⁷ Such behaviors include hair pulling, slapping, spanking, facial ejaculation, anal sex, and choking, among others. Recent research indicates that sizable numbers of young adults report having engaged in some of these behaviors.^{8,17–19} 2 studies that asked about enacting and/or receiving these behaviors—grouped as “dominant” and “submissive” in these studies—were conducted among German individuals and used convenience sampling.^{18,19} Another study used survey data from 1,880 Americans, grouping such behaviors as “aggressor behaviors,” “target behaviors,” and “degrading/uncommon sexual behaviors” and used a convenience sample.¹⁷ The present study adds to the existing literature by assessing the prevalence of such behaviors in a U.S. nationally representative probability sample.

Sexual Scripts and Acquisition, Activation, Application Model

To the extent that population-level sexual behaviors may have changed, sexual scripts offer a means of considering such changes and their influences. Sexual scripts are socially constructed ideas or guidelines for sexual behavior; they address how sex unfolds and with what consequences.²⁰ The sexual script acquisition, activation, application model (₃AM) of sexual media socialization²¹ proposes that greater exposure to pornography could lead to a greater likelihood of certain sexual behaviors, including those associated with risk.^{22,23} The model has been used in research demonstrating how such risks may be mitigated by other factors. For example, in a recent study, it was found that adolescents' pornography use was related to condomless sex only when parents engaged in little to no sexual health communication with their children.²⁴

Because people's sexual scripts can influence their sexual attitudes, beliefs, and ideas about how to behave in partnered sex, the ₃AM hypothesizes that sexual media consumption can result in people learning new sexual scripts (sexual script acquisition), the priming of sexual scripts they have previously acquired (sexual script activation), and the utilization of sexual scripts that may then direct their sexual practices or how they feel about others' sexual practices (sexual script application).²¹ In convenience samples, greater pornography use has been associated with a range of sexual behaviors associated with pornographic sexual scripts.^{17–19}

Aims

The purpose of the present study was to describe, in a U.S. nationally representative probability sample of Americans aged 18 to 60 years, (i) the self-reported prevalence of diverse sexual behaviors, focusing on those associated with pornographic sexual scripts and grouped here as dominant and target behaviors; (ii) the age at first exposure to pornography as well as the prevalence, range, and frequency of pornography use; (iii) the extent to which past year pornography use frequency is related to

engagement in dominant and target sexual behaviors; and (iv) the extent to which lifetime range of pornography use is related to engagement in dominant and target sexual behaviors.

METHOD

Data are from the 2016 National Survey of Pornography Use, Relationships, and Sexual Socialization (NSPRSS), a population-based probability survey of 18- to 60-year-old individuals living in the United States and whose methods have been detailed elsewhere.²⁵ Study protocols were reviewed and approved by the institutional review board at the first author's university. Data collection occurred in fall 2016 and was conducted by Ipsos (formerly GfK Research) using KnowledgePanel, a probability-based online panel constructed using address-based sampling and is thus designed to be nationally representative of noninstitutionalized individuals living in the United States. KnowledgePanel samples have been used for numerous U.S. nationally representative probability surveys on diverse topics including sexual health and behavior.^{4,6–8,26–29} KnowledgePanel members are first identified using address-based sampling methodologies and the U.S. Postal Service's Delivery Sequence File. Mailings with follow-up phone calls were used to invite households to participate in the panel. Households without Internet access have been offered Internet access to facilitate participation. A panel base weight, which was created taking the sampling frame into account, was used in a probability proportional to the size selection method to draw specific study samples from the panel. We aimed to recruit a probability sample of 18- to 60-year-old adults from the KnowledgePanel. They received an email invitation for the study, with reminders sent to nonresponders for up to 6 days of the data collection period. KnowledgePanel members earn points for online survey participation. These points can accumulate and then be exchanged for merchandise or payment.

In all, 6,535 individuals were recruited; 3,622 (55.4%) clicked on the survey link and viewed the study information sheet; and 2,533 (44.9% of those invited) agreed to participate and proceeded to complete the confidential online survey. We suggested that individuals take the survey in a private space. Survey completion times were a median of 15 minutes. Ipsos prepared poststratification statistical weights to adjust for nonresponse or under/over-coverage. Weighted data were used for quantitative analyses.

Measures

Demographics

Demographic data (eg, age, gender, race/ethnicity, education, annual household income) are collected by Ipsos when individuals join the panel and periodically throughout retention and then included in the deidentified data set provided to the researchers. In addition, we asked respondents their sexual orientation (heterosexual or straight/gay or lesbian/bisexual/asexual/something else) and relationship status (single, not dating

or hooking up with anyone/dating or hooking up with one person/dating or hooking up with more than one person/in a relationship with one person/in a relationship with more than one person/engaged/married/widowed/something else).

Recency of Sexual Behaviors

Using items modified from the NSSHB and SEAS,^{4,8} we asked respondents how recently they had kissed someone romantically, masturbated by themselves, performed oral sex, received oral sex, had penile-vaginal intercourse, received anal sex ("someone put their penis in your anus/butthole"), had someone put a sex toy or similar object in their anus, and (for men) performed anal sex ("you put your penis in someone's anus/butthole"). Response options were as follows: done in past 30 days (past month), done in past year, done more than a year ago, and never done this.

Dominant Sexual Behaviors

Respondents who reported having ever engaged in oral, vaginal, or anal sex behaviors were asked how many times they had ever spanked a partner's behind (butt) as part of sex play; choked someone as part of sex play; called someone names like "slut" or "whore" or "bitch" as part of sex play; and pressured someone into doing something sexual that they did not want to do. Men were also asked how often they had slipped their penis in a partner's anus without first asking or talking about it; ejaculated (cum) on someone's face; and aggressively thrust their penis in and out of someone's mouth (sometimes called "face-fucking"). Response options were as follows: never, 1 or 2 times, 3–5 times, 6–10 times, and more than 10 times. The Cronbach's alpha for these 7 dominant sexual behaviors was 0.74.

Target Sexual Behaviors

Respondents were asked to indicate how many times they had ever been spanked by a partner as part of sex play; been called names like "slut," "whore," or "bitch" as part of sex play; been choked as part of sex play; someone pressured you into doing something sexual that you did not want to do. Those who reported having ever had male partners were also asked how many times someone had ejaculated ("cum") on their face; aggressively thrust their penis in and out of their mouth (sometimes called "face-fucking"); or slipped their penis in their anus without first asking (tried anal sex without asking). Response options were never, 1 or 2 times, 3–5 times, 6–10 times, and more than 10 times. The Cronbach's alpha for these 7 target sexual behaviors was 0.79.

Bondage, Domination, Submission, and Masochism

We also asked participants how many times they had engaged in "BDSM (eg, things such as bondage or whipping) as part of sex" with the same response options as mentioned previously, ranging from never to more than 10 times. Owing to the broad range of behaviors associated with BDSM play, we did not code these as either dominant or target behaviors and instead present results separately.

Pornography Use

At the beginning of a section about porn use, we wrote that “Many people have seen porn — sometimes just by accident and sometimes on purpose.” We indicated that, for the purposes of this survey, “pornography or porn refers to sexually explicit pictures, videos, or livestreams showing clearly exposed genitals OR in which people are clearly shown having sex, such as oral sex, vaginal sex, or anal sex.” This definition is consistent with others in the literature.^{30,31}

Lifetime prevalence of porn use. Respondents were asked, “Have you ever seen any kind of pornography (“porn”) — even if just one time, and whether on purpose or by accident?” (yes/no).

Age at first porn exposure. Those who reported ever seeing porn were then asked “How old were you (in years) when you first saw any type of pornography (“porn”)?” Responses of 4 years and under were set to missing, resulting in a total of 1.5% of missing responses for this item.

Past-year frequency of viewing porn. Participants were asked, “Thinking about the last year, how often would you say you have used each of the following to see pornography?” Sources listed were as follows: Free porn websites (eg, Pornhub, PornTube, Xvideos), pay porn websites (where you have to pay a fee to access content), social media apps or websites (Tumblr, Reddit, Twitter, Snapchat, and so on), print (eg, magazines or books), smartphone, or tablet, laptop, or desktop computer. For each, response options were never, once or twice per year, once or twice per month, once or twice per week, every day, or nearly every day. A score representing the frequency of past-year pornography use was created by summing all the responses and then subtracting by the number of items answered.

Lifetime range of pornography viewed. Participants were asked, “Which of the following types of pornography (“porn”) have you EVER seen — even if just once or twice? (yes/no)” The categories shown were described as follows: amateur porn (featuring regular people who are not professional models or actors); porn showing facials (male ejaculating on a person’s face); porn showing gang bangs (gang bangs show multiple different people having sex with one person one after another); porn showing double penetration (showing 2 or more penises or objects in one person’s vagina and/or anus at the same time); porn showing rough oral sex (where a man forces or aggressively thrusts his penis in and out of a person’s mouth; sometimes called ‘face fucking’); porn showing bondage/dominance (BDSM); porn where someone seems to physically or verbally persuade or force another person to do something that they either did not want to do or were unsure about doing; porn showing simulated rape. The different types of pornography ever seen were summed to represent the lifetime range of pornography ever accessed by each individual (range: 0–8); 5.9% did not answer these questions and were not included in this part of the analysis.

Statistical Analysis

All statistical analyses were conducted using Stata, version 15. We included individuals who reported ever having had oral, vaginal, or anal sex during their lifetime in our analysis. As most of the measured behaviors were uncommon, we recoded each sexual behavior to a dichotomous yes/no variable. A score was created from the sum of the dichotomously coded variables, separately for dominant vs target behaviors, and then divided by the number of items that the participant had answered. The resulting percentage of sexual behaviors engaged in during the lifetime is the dependent variable of interest.

We assessed the effect of pornography use frequency and range of pornography accessed on dominant vs target sexual

Table 1. Weighted demographic characteristics

Characteristics	Men	Women
	% (n)	% (n)
Total	n = 1,075	n = 1,152
Age		
18–24	8.1 (87)	6.6 (76)
25–29	16.2 (174)	19.2 (221)
30–39	23.7 (254)	23.3 (268)
40–49	23.5 (253)	23.2 (267)
50–60	28.6 (307)	27.7 (319)
Race/ethnicity		
White, non-Hispanic	61.8 (664)	62.3 (717)
Black, non-Hispanic	11.4 (122)	13.1 (151)
Other, non-Hispanic	7.3 (78)	6.4 (74)
Hispanic	18.4 (197)	17.0 (196)
Multiple races/ethnicities	1.3 (14)	1.3 (14)
Adult/parent education		
Less than high school	10.1 (109)	11.2 (128)
High school	27.6 (297)	27.2 (314)
Some college	29.7 (320)	28.1 (323)
Bachelor’s degree or higher	32.5 (350)	33.5 (386)
Adult/parent household income		
<\$25,000	11.2 (121)	12.7 (146)
\$25,000–\$49,999	19.3 (207)	18.4 (211)
50,000–\$74,999	17.0 (183)	18.6 (214)
≥\$75,000	52.5 (565)	50.4 (580)
Sexual orientation		
Heterosexual/straight	91.5 (984)	93.2 (1,072)
Gay or lesbian	6.3 (67)	1.3 (15)
Bisexual	2.0 (21)	4.9 (57)
Asexual/other	0.3 (3)	0.5 (6)
Current relationship status		
Single, not dating	16.7 (180)	12.1 (139)
Dating or in a relationship	26.1 (281)	25.2 (290)
Married	56.2 (604)	61.2 (705)
Other	0.9 (10)	1.6 (18)

The total sample presented here is of respondents who reported having engaged in oral, vaginal, or anal sex at least once in their lifetime.

behaviors, respectively, using fractional logit regression. Our dependent variable of interest is the percentage of dominant/target sexual behaviors reported among a list of such sexual behaviors. We chose to dichotomize our behavior items and model our dependent variable as a percentage because of the fact that not all behavior items were given to all respondents; certain behavior items, such as a partner ejaculated on your face, a partner face-fucked you, and a partner tried anal sex without asking, were asked only to respondents who reported at least one male partner during their lifetime. Analyses were conducted separately for men and women because of the fact that some of the sexual behaviors measured pertains only to men (eg, tried anal sex without asking, face-fucked someone, ejaculated on someone's face). Adjusted regression models accounted for potential confounding because of age (in years), age of first access to pornography (in years), and current relationship status (single/dating or in a relationship/married/other). Missing data were rare (<1%) for most survey items (with the exception of age at first porn exposure and lifetime range of porn accessed; missing data described in the [Measures](#) section); therefore, complete case analysis was used.

RESULTS

A weighted total of 2,227 individuals aged 18–60 years who reported oral, vaginal, or anal sex during their lifetime were included in the present analysis. The mean age for the sample was 42.4 years (SD = 11.9). Additional demographic characteristics are presented in [Table 1](#).

Table 2. Lifetime dominant and target sexual behaviors

Behaviors	Men	Women	P value
	% (n)	% (n)	
Called someone names such as “slut” or “whore” or “bitch”	23.3 (249)	12.0 (138)	<.001
A partner called you names such as “slut”, “whore”, or “bitch”	13.6 (146)	26.1 (299)	<.001
Choked someone during sex	19.6 (209)	12.2 (140)	<.001
A partner choked you during sex	11.0 (118)	21.4 (245)	<.001
Spanked a partner's behind	76.6 (819)	54.3 (621)	<.001
A partner spanked your behind	45.5 (488)	66.2 (756)	<.001
Pressured someone into doing something sexual that they did not want to do	15.2 (163)	5.0 (57)	<.001
Someone pressured you into doing something sexual that you did not want to do	12.0 (128)	36.9 (423)	<.001
Tried anal sex without asking	21.9 (234)	–	–
A partner tried anal sex without asking*	31.0 (39)	26.8 (303)	.318
Face-fucked someone	35.7 (381)	–	–
A partner face-fucked you*	54.2 (68)	34.0 (385)	<.001
Ejaculated on someone's face	47.7 (509)	–	–
A partner ejaculated on your face*	52.7 (66)	32.3 (365)	<.001
Engaged in BDSM [†]	19.7 (210)	20.3 (233)	.752
	M (SD)	M (SD)	
Number of dominant sexual behaviors	2.4 (2.0)	0.8 (0.9)	<.001
Number of target sexual behaviors	1.0 (1.4)	2.4 (2.0)	<.001

BDSM = bondage, domination, submission, and masochism.

*Among those who have ever had sex with men (126 adult men, 1,138 adult women, 1 adolescent boy, 57 adolescent girls).

[†]Not included in dominant or target sexual behaviors.

Lifetime Prevalence of Dominant and Target Sexual Behaviors

Women were consistently more likely to report target sexual behaviors than dominant sexual behaviors, whereas men were generally more likely to report dominant sexual behaviors rather than target sexual behaviors, with the exception of target sexual behaviors where the denominator was men who have had sex with men (ie, a partner tried anal sex without asking, a partner face-fucked you, and a partner ejaculated on your face) ([Table 2](#)). Among the target behaviors were having been choked (21.4% of women), having one's face ejaculated on (32.3% of women, 52.7% of men who have sex with men), and aggressive fellatio (34.0% of women).

Dominant and target spanking was the most commonly reported behavior among women (more than half of women). Although spanking was also commonly reported among men, dominant spanking (77% of men) was more common than target spanking (46% of men). Other common behaviors included ejaculating on someone's face (reported by 48% of men) and being pressured into doing something sexual that they did not want to do. 3 times as many women (compared with men) reported experiencing sexual pressure (36.9% vs 12.0%).

Pornography Use

Lifetime pornography use was reported by 94% of men and 87% of women, with the mean age of first porn exposure at 13.8 and 17.8, respectively ([Table 3](#)). Pornography was most often accessed through free porn websites and by using smartphones,

Table 3. Lifetime and past year pornography use

	Men	Women	<i>P</i> value
	% (n)	% (n)	
Lifetime porn use	94.1 (1,007)	86.9 (990)	<.001
Age of first porn exposure, M (SD)	13.8 (3.7)	17.5 (5.7)	<.001
Past-year porn use frequency*			
Free porn websites, M (SD)	2.7 (1.4)	1.6 (0.9)	
Pay porn websites, M (SD)	1.1 (0.5)	1.0 (0.2)	
Social media apps or websites, M (SD)	1.6 (1.2)	1.2 (0.6)	
Print, M (SD)	1.4 (0.7)	1.1 (0.4)	
Smartphone, M (SD)	2.1 (1.4)	1.5 (0.9)	
Tablet, laptop, or desktop computer, M (SD)	2.4 (1.4)	1.4 (0.8)	
Sum score of aforementioned porn sources, M (SD)	5.3 (4.6)	1.8 (2.8)	<.001
Range of porn seen during lifetime			
Amateur porn	82.8 (794)	63.0 (579)	<.001
Porn showing facials	71.9 (689)	45.6 (419)	<.001
Porn showing gang bangs	61.7 (592)	39.6 (364)	<.001
Porn showing double penetration	64.2 (616)	46.4 (426)	<.001
Porn showing face-fucking	60.2 (577)	38.7 (256)	<.001
Porn showing BDSM	44.9 (431)	32.6 (300)	<.001
Porn where someone pressures another person to do something that they did not want to do	35.2 (337)	21.7 (200)	<.001
Porn showing simulated rape	20.5 (197)	11.4 (105)	<.001
Types of aforementioned porn seen, M (SD)	4.4 (2.7)	3.0 (2.4)	<.001

Lifetime porn use assessed for the total sample; all other variables restricted to those who reported lifetime porn use.

*Porn use frequency for each source coded 1 (never) to 5 (every day or nearly every day). The sum score was calculated by summing all sources of porn subtracted by the number of items answered (max: 24).

websites/apps, or a tablet/laptop/desktop computer. Frequency of pornography use through any source was lower among women than among men. Participants reported seeing a wide range of pornography throughout their lifetime, with amateur porn being the most commonly reported type and porn showing simulated rape being the least commonly viewed. Of the 8 types of porn assessed, men reported seeing an average of 4 types compared with 3 for women.

Pornography Use in Relation to Dominant and Target Sexual Behaviors

In unadjusted models, we observed that more frequent past-year pornography use and a greater lifetime range of pornography accessed were significantly associated with engaging in both dominant and target sexual behaviors among all participants (Table 4). After adjusting for age, age at first porn exposure, and current relationship status, the associations between pornography use and sexual behaviors, although attenuated, remain statistically significant (Table 5).

DISCUSSION

Using data from a U.S. nationally representative probability survey of 18- to 60-year-olds, the present study describes the prevalence of diverse sexual behaviors, including those associated

with what has been called “pornographic sexual scripts.”¹⁷ Significantly more men than women reported having engaged in at least one dominant sexual behavior such as choking, name

Table 4. Associations between past-year pornography use frequency and dominant vs target sexual behaviors

	Men	Women
	OR (95% CI)	OR (95% CI)
Dominant sexual behaviors		
Past-year pornography use frequency	1.09 (1.07–1.11)**	1.15 (1.11–1.19)**
Lifetime range of pornography accessed	1.17 (1.13–1.21)**	1.20 (1.16–1.25)**
Target sexual behaviors		
Past-year pornography use frequency	1.13 (1.10–1.15)**	1.19 (1.14–1.23)**
Lifetime range of pornography accessed	1.17 (1.12–1.22)**	1.28 (1.24–1.32)**

***P* < .001.

OR = odds ratio.

Table 5. Associations between lifetime range of pornography accessed and dominant vs target sexual behaviors

	Men	Women
	aOR (95% CI)	aOR (95% CI)
Dominant sexual behaviors		
Past-year pornography use frequency	1.05 (1.03–1.07)**	1.08 (1.04–1.12)**
Lifetime range of pornography accessed	1.10 (1.06–1.15)**	1.12 (1.07–1.17)**
Age	1.01 (1.00–1.01)	0.99 (0.98–1.00)*
Age at first porn exposure	0.96 (0.93–0.98)*	0.99 (0.97–1.00)
Current relationship status		
Single	1.00	1.00
Dating or in a relationship	1.80 (1.37–2.37)**	1.25 (0.86–1.83)
Married	1.25 (0.97–1.61)	1.53 (1.08–2.16)*
Other	2.21 (0.79–6.17)	0.91 (0.33–2.52)
Target sexual behaviors		
Past-year pornography use frequency	1.10 (1.07–1.13)**	1.05 (1.01–1.09)*
Lifetime range of pornography accessed	1.07 (1.02–1.12)*	1.20 (1.16–1.25)**
Age	1.00 (0.99–1.01)	0.99 (0.98–1.00)*
Age at first porn exposure	0.97 (0.94–1.00)	0.98 (0.97–1.00)
Current relationship status		
Single	1.00	1.00
Dating or in a relationship	1.85 (1.31–2.60)**	0.90 (0.66–1.21)
Married	1.19 (0.86–1.64)	0.79 (0.61–1.03)
Other	1.59 (0.48–5.26)	3.08 (1.35–7.03)*

* $P < .05$; ** $P < .001$.

aOR = adjusted odds ratio.

calling, spanking, and pressuring someone sexually. In addition, significantly more women than men reported experiencing at least one target behavior, such as having been choked, spanked, sexually pressured, or name-calling.

Women were significantly more likely than men to be called a name during sex such as “bitch,” “slut,” or “whore” (26.1% women vs 13.6% men). While the examples of names we gave are gendered and thus may have influenced responses, our team made efforts to identify comparable words more often applied to men but were unable to do so (and indeed, these terms are sometimes applied to men, as our findings demonstrate). Prior research indicates that name-calling is prevalent in porn and that commonly used words are “bitch,” “slut,” and “whore.”³² This same research shows that female targets of these terms are generally depicted as responding positively, which—as the 3AM would predict—may potentially influence viewers to incorporate name-calling into their sexual scripts. Although some people (especially women) use terms such as “slut” and “whore” to refer to themselves or close friends in an effort to reclaim these words,^{33,34} verbal harassment related to sexual behavior (eg, referring to someone as loose, promiscuous, a slut, and so on) is more commonly applied by men to female targets.³⁵ Such harassment or name-calling tends to be viewed as harmful or insulting to women when occurring in schools or social settings.^{35,36} Little is understood about how people experience name-calling as part of partnered sexual experiences.

We were struck that one-fifth of women with oral, vaginal, or anal sex experience reported having been choked as part of sex. As no previous population health studies have assessed the prevalence of choking as part of partnered sexual interactions, we cannot know to what extent this may represent a change in population-level sexual repertoire. However, our experiences teaching undergraduate students suggest that more people may be engaging in choking behaviors as part of sex than in previous decades. Beyond anecdotal experience is earlier research that found that college students’ examples of playful sexual aggression or force were wrestling, restraining, “lightly hitting,” “ripping off clothes,” “pulling hair,” and other assorted behaviors, but choking was not among the dozens of text responses presented.³⁷ Another survey of 734 college students, with data collected between 2006 and 2015, found that only 36% considered choking to be a rough sexual behavior (similar in prevalence to those who considered punching as a rough sex behavior), whereas most considered hair pulling, being pinned down, biting, being tied up, and slapping as rough sexual behaviors.³⁸ Moreover, choking/strangulation was reported as occurring infrequently to participants—far less often than spanking, scratching, being tied up, or being thrown around and only slightly more often than being physically forced to have sex, being forced to do humiliating or degrading things, or having a partner throw, hit, kick, or smash things. We acknowledge that choking and other forms of asphyxiation are not new, have been previously documented in the literature, and have been previously

connected to learning from sexually explicit materials.^{39,40} However, we also note that temporary choking/strangulation has been reported as part of college sexual assaults⁴¹ and in other cases has resulted in death.⁴²

In addition, 27% of women and 31% of men who had sex with men reported that a male partner had tried to have anal sex with them without first asking or discussing. This has implications for sexual assault and coercion as well as risk of sexually transmitted infections, since one cannot negotiate condom use if one has not first been given an opportunity to consent to or express interest in a sexual behavior. Although anal sex has become increasingly prevalent,⁴ it remains an infrequent behavior in male-female dyads and one for which condoms are less often used as compared with vaginal intercourse.^{43,44}

Consistent with prior research, we found that most respondents reported having seen porn and that the mean age of first exposure to porn was in early adolescence for men but in later adolescence for women. Most respondents watched porn on free sites and via a smartphone; print and paid porn sites were uncommon. These findings underscore the value of contemporary content analyses of porn available through free websites.^{15,16} Among respondents who reported having seen porn, more men than women reported having seen each of the porn types assessed (eg, porn showing facials, gang bangs, double penetration, face fucking, simulated rape, among others). More than half of male viewers had seen 5 of the 8 genres queried. While it was least common to have seen porn showing simulated rape, even that was not rare as one-fifth of men reported having seen it as did more than 11% of women.

In regard to the relationship of porn use and dominant/target sexual behaviors, we found relationships with both past-year frequency of porn use and lifetime range of porn use and participants' reporting of dominant and target sexual behaviors. These findings are mostly consistent with findings from convenience samples that have found a relationship between porn use and either engagement in or appeal of dominant sexual behaviors. One difference is that we found a significant relationship between women's engagement in both dominant and target behaviors, whereas an earlier study of heterosexual German women found that greater exposure to pornography was significantly associated with their desire for, or engagement in, submissive but not dominant sexual behaviors. That said, similar to the German study, the pornography-target point estimates for women were larger than the pornography-dominant point estimates. Subsequent research is needed to further investigate the extent of the effect of porn use on engagement in aggressive/rough sexual behaviors.

Strengths and Limitations

Our research has several strengths and limitations. A significant strength is that data were collected from a U.S. nationally representative probability sample and provide population level estimates of a diverse range of sexual behaviors and their associations with porn use. The use of internet-based data collection

is also a strength of our study, facilitating participants' ability to complete the study in a private setting of their choice and easing data collection on sensitive topics. Subsequent research might explore whether certain behaviors are more common with other-gender partners or with same-gender partners. In addition, like most U.S. probability sampling, our survey was limited to noninstitutionalized individuals who had an address and who were able to read and respond to questions in the English language. Our survey was cross-sectional, and thus, findings may be influenced by memory recall (particularly for long-ago events such as age at first pornography use) as well as participants' current feelings about their sexual lives or use of pornography.

Another limitation pertains to the subjective experiences of viewing pornography and the subjective experiences of engaging in sexual behaviors. Subsequent research might examine each in a more nuanced way. For example, it would be useful to understand what proportion of respondents' experiences with any given sexual behavior (eg, vaginal intercourse, spanking, aggressive oral sex, and so on) are consensual, wanted, or pleasurable. How do people feel about the sex that they are having? Furthermore, we acknowledge that our assessment of porn use—while consistent with the literature—could be more detailed. As with partnered sexual behaviors, how much of respondents' porn use was of their own volition? How do they feel when they watch porn? What have they learned from porn that has been helpful and what have they learned that has contributed to challenges in partnered sex? We felt limited by how to even describe certain sexual behaviors as terms such as “rough” and “aggressive” lack the nuance that these diverse behaviors likely reflect. We felt that “dominant” and “target” were the closest fits, but even these terms felt somehow insufficient. In addition, we wish to emphasize that the phrase “pornographic sexual script” makes some sense in that certain behaviors such as aggressive fellatio and anal sex are common in pornography^{43,45}; yet, we are acutely aware that there are differences between porn genres and categories, as described earlier,^{15,16} and thus, there is no single pornographic sexual script. We also did not collect data on respondents' medical antecedents, including psychiatric ones, which may be related to some of the other variables in the study.

Although we lack historical benchmarks to compare many of these sexual behaviors at the population level, we believe that some of these sexual behaviors (eg, choking, aggressive fellatio) may have increased in prevalence over at least the past 10 to 15 years. This is supported by data showing that the greatest lifetime prevalence for most of the behaviors associated with the pornographic sexual script is reported by adults between 18 and 29 years (data not shown). Regardless of whether our data reflect increasing prevalence, they clearly indicate that a substantial percentage of Americans report having engaged in behaviors often perceived as rough, aggressive, and/or associated with sexual harassment or violence (eg, anal sex without first asking or discussing).

In light of our findings, clinicians might consider how to expand conversations with their patients so as to assess diverse sexual behaviors beyond oral, vaginal, and anal sex. Given the dangers of asphyxiation, it is clinically relevant to understand to what extent their patients—and especially their adolescent and young adult patients—may be exploring choking or strangulation as part of sex, behaviors that have been characterized by some individuals as scary (both in being choked and in being asked to choke a partner).²⁵

Clinicians and educators are encouraged to consider the varied ways in which people experience their sexuality. We need to be careful not to stigmatize sexual behaviors or the people who engage in them as the sexual behaviors assessed in this study can be and often are engaged in safely, by mutual consent, and with pleasure. That said, we would be wise not to ignore the prevalence of these sexual behaviors and the ways in which partnered sex in the United States may be shifting. To the extent that our data reflect changes in population-level sexual repertoires, we should ask ourselves what changes are required from us all. If adolescents and young adults are learning sexual behaviors from sexually explicit media such as porn (and perhaps erotic stories), then perhaps this reflects that young people (like older people) simply want to learn how to have pleasurable, exciting sex. How can we support their interests with helpful, engaging, and developmentally appropriate information?

School-based sexuality educators and the policy makers who shape sexuality education—whether in middle school, high school, or college—should consider the ways that young people are exploring their sexuality and the information they seek out. Some have called for the integration of “porn literacy” into sexuality education curricula, teaching adolescents to think critically about the media they consume. People may benefit from a more visible kink community and related workshops, books, classes, and/or forums. Parents may need to engage more deeply in sexuality conversations with their preteen and adolescent children, sharing values and helping them think through what they want from their relationships and sexual interactions. In addition, clinicians and educators may need to expand their advice on safer sex practices to move beyond condoms, lubricants, and consent, to include more information about minimizing risk of injury and preventing death (as with choking behaviors). Researchers might study more diverse sexual behaviors and how they are experienced and shaped, whether through porn, erotica, conversations with friends, or experiences with partners.

In conclusion, findings from this U.S. nationally representative probability survey provide population-level data about diverse sexual behaviors. We found that both dominant and target sexual behaviors were prevalent and that women were more often targets of the behaviors we assessed. Finally, we found associations between the frequency and range of pornography

viewed and the dominant and target behaviors. Clinicians, educators, and researchers have unique and important roles to play in continued understanding of these sexual behaviors in the contemporary United States.

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