

**Age of First Exposure as a Predictor of Increased Pornography Use, Sexual Shame, and
Decreased Sexual Satisfaction of Self and Partner: A Serial Mediation Model**

Anita Woods and Porscha Doyle

Department of Counselor Education and Family Studies, Liberty University

Author Note

Anita Woods 0000-0003-4406-659X

Porscha Doyle 0009-0009-5834-1127

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Correspondence concerning this article should be addressed to Anita Woods, Department of Counselor Education and Family Studies, Liberty University, 1971 University Blvd., Lynchburg, VA, 24515. Email: awoods38@liberty.edu.

Abstract

There are supported, existing mediation models within studies that have explored pornography use, sexual shame and relationship satisfaction. This study adds to the depth of that mediation model by adding the age of first exposure as the predictor and insecure partner attachment as an exploratory moderator. Participants (n = 301) included men and women who have viewed pornography at an early age, had also viewed pornography within the last six months, and were in monogamous relationships, either married or dating. Though the age of first exposure was negatively correlated with increased pornography use, increased pornography use was positively correlated with sexual shame and romantic partner anxiety as well as avoidant partner attachment. Sexual shame was negatively correlated with sexual satisfaction for self and partner while positively correlated with romantic partner anxiety. Romantic partner avoidance was positively correlated with sexual satisfaction and romantic partner anxiety was negatively correlated with sexual satisfaction with self.

Keywords: pornography, age of first exposure, sexual shame, sexual satisfaction

Age of First Exposure as a Predictor of Increased Pornography Use, Sexual Shame, and Decreased Sexual Satisfaction of Self and Partner: A Serial Mediation Model

Despite the studies that exist focused on pornography usage and behavioral outcomes, there is still a need for research to understand the relationship between age of first usage, increased pornography use, sexual shame, and sexual satisfaction. Regardless of whether the first exposure to pornography was intentional, accidental or forced, the outcomes have been shown through studies to have a negative impact on the individual such as violent pornography use, inability to control impetuosity or emotions, and lack of self-esteem (Marshall & Miller, 2024; Peter & Valkenburg, 2016). Continued or increased pornography use is also a predictor of mental disorders such as body dysmorphia and depression (Marshall & Miller, 2024; Saevik & Konijnenberg, 2023). The goal of this study is to continue the research into the serial mediation model of increased pornography use, sexual shame, and sexual satisfaction of self and partner. This will be done by adding the predictor of age of first exposure and analyzing an exploratory moderator of insecure partner attachment.

As the world continues to make technological advances, it creates easier access to the internet for consumers of all ages. This easy access has led to more digital platforms such as mobile phones, watches, tablets, laptops, gaming systems, and apps such as Pornhub. The increase in internet access has progressed how pornography can be consumed. For example, a preliminary analysis based on objective website traffic in Poland conducted by Lewczuk et al. (2021) found a significant number of individuals in Poland had increased their usage of online pornography (Lewczuk et al., 2021). Their analysis estimated that online internet consumption of pornography had increased 301% from October 2004 to October 2016 (Lewczuk et al., 2021). There were also findings from national studies in Australia, Poland, Norway and the United

States found that 70 to 90% of adult populations report viewing pornography at least one time in their lives (Bóthe et al., 2022). These same studies also revealed romantic relationships use of pornography at similar percentages, 71 to 92% (Bóthe et al., 2022). Few studies have focused on the effects of pornography on romantic relationships (Bóthe et al., 2022). With technology being a catalyst for such increases, many individuals are using pornography more frequently.

Frequency of Use

Because online pornography use has increased over the years, it is natural to think that easy access would make viewing pornography addictive. However, despite many studies there is still no definitive answer as to when consuming pornography becomes excessive or pathological (Alarcon, 2019). A cross-sectional analysis in Sweden was performed to assess the frequency of pornography use and sexual health outcomes. Of the 14,135 participants between the ages of 16 to 84, 68.7% of men and 27% of women consumed pornography (Malki et al., 2021). Of the men between the ages 24-26, 17.2% consumed pornography daily, 24.7% consumed pornography 3-5 days a week, and 23.7% consumed pornography 1-2 days a week. Of the women ages 16-24, only 1.2% consumed pornography daily, 3.1% consumed pornography 3-5 days a week, and 8.6% consumed pornography 1-2 times a week (Malki et al., 2021). This study also reported that 38% of men and women's use of pornography by themselves or their partner had positive effects on their sex lives and only 8.7% of men and women reported negative effects on their sex lives (Malki et al., 2021). These results confirm that the consumption of pornography is high with the highest consumption being 3-5 days a week for men and 1-2 times a week for women.

One of the studies by Cerniglia and Cimino (2024) found that increased pornography usage of adolescents resulted in a lack of emotional awareness and the inability to control impulses. In addition, they found that boys that consumed high amounts of pornography

experienced more attention and aggression issues, while girls experienced more somatic and social problems (Cerniglia & Cimino, 2024). While social norms believe that the consumption of pornography is mostly by men whose primary use is for masturbation, studies have found that both men and women use pornography equally for masturbation and prefer use alone rather than with a partner (Campbell & Kohut, 2017).

Sexual Shame

Sexual shame is a shame that is developed from an aversion to or embarrassment from one's own reflection of their sexual identity (Saevik & Konijnberg, 2023). This shame includes three factors: relational, internalization, and sexual inferiority (Saevik & Konijnberg, 2023). Relational sexual shame involves relationship with another and feelings regarding others. Internalized sexual shame involves feelings of humiliation about self, including body image. Sexual inferiority shame consists of feeling inadequate about not meeting individual expectations that were built on societal or cultural norms (Saevik & Konijnberg, 2023). The output of sexual shame has been found to be body dysmorphia, self-anger, relationship dysfunction, hypersexuality and sexual addictions (Saevik & Konijnberg, 2023).

Sexual shame is believed to occur in children and adults. Some research proposes that several parents are reluctant to discuss sexuality with their children (Young-Peterson et al., 2024). In these cases, children are reluctant to be open about their initial sexual experiences for fear of reprisal and or shame of the behavior (Young-Peterson, et al., 2024). Behaviors such as secretive pornography usage, masturbation and sexual acts learned and performed may result in shame and negative internalization of self (Young-Peterson, et al., 2024). Harboring such secrets could also manifest into experiencing shame (Young-Peterson, et al., 2024).

Sexual shame as a product of pornography use is defined as anxiety because of the fear of social rejection of the individual's sexual beliefs, practices, and behaviors. Sexual shame is believed to be an adverse mediating factor in sexual relationships outcomes (Floyd, et al., 2020). Current research finds that shame determines how individuals approach relationships (Floyd, et al., 2020). The increase in pornography use could precipitate the establishment of cyber relationships which could theoretically diminish both sexual and relationship satisfaction (Floyd, et al., 2020). While this study reflects a negative relationship between the consumption of pornography and sexual shame, other studies have reported positive effects. For example, a diverse sample of 1,274 Norwegian and Swedish participants reported that young male adults experienced an improvement in their sexual self-esteem due to using pornography (Koletić et al., 2021).

Sexual Satisfaction

There have been no studies conducted that can definitively describe the correlation between relationship satisfaction and sexual satisfaction (Quin-Nilas, 2019). To determine the relationship of both relationship and sexual satisfaction, a longitudinal study was conducted using 1,456 midlife American marriages over a 20-year period. What this study found was that while relationship satisfaction improved over time sexual satisfaction declined (Quin-Nilas, 2019). Though this study shows the two factors were interconnected, their trajectories don't always parallel each other. What the trajectories did show is that the initial high levels of sexual satisfaction protected the relationship satisfaction sustainability in later years (Quin-Nilas, 2019). Based on this outcome, there is still more that needs to be understood about how the use of pornography affects monogamous relationship's sexual satisfaction in the individual and their partner.

In the Swedish study above, participants that were experiencing sexual dissatisfaction due to consumption of pornography had the common variable of consuming pornography more than three times a week. The participants reported issues such as experiencing unhappiness with current sex life and not engaging in sex in the desired position or act (Malki et al., 2021).

Previous studies of the consumption of pornography have shown that it has a negative effect on the individual's sexual relationships (Campbell & Kohut, 2017). Consumption of pornography was found to manifest in both partners with the following characteristics: lack of trust in partners, unrealistic expectations of a nurturing and loving relationship, disillusionment of exclusive relationships and the acceptance of promiscuous behavior (Campbell & Kohut, 2017).

In a 2017 study by Perry, pornography consumption of married Americans was examined to see how their consumption may have been related to their spouses' religious commitment.

Pornography use among those couples was shaped by spousal influence, personal beliefs and practices, and relational behaviors, not necessarily their spouses' religiosity (Perry, 2017).

Additionally, couples who practice religious unity through spiritual relationship building found a higher level of acceptance of pornography consumption by their partners (Perry, 2017). **Age of**

First Exposure

Only a few studies have been conducted that address the age of first pornography exposure. Of these studies, research efforts have reported that early exposure to pornography leads to negative effects of usage (Marshall & Miller, 2024; Peter & Valkenburg, 2016). Miller and Marshall (2024) conducted a study of 924 participants from universities in the southern United States to examine the relationship between age and type of first exposure in relation to problematic use of pornography into adulthood. Within the study's demographics, the average age of first exposure to pornography was 14 years old, and the two higher types of first exposure

were accidental (38.2% for men and 57.2% for women) and intentional (30% for men and 18.3% for women). The age range of first exposure spanned from 4 years old to 25 years old. Marshall and Miller found significant differences in the exposure categories of intentional versus accidental use. Those with intentional first exposure, initiated pornography use as a coping mechanism to deal with life factors such as the various forms of sexual victimization (Marshall & Miller, 2024). Intentional users also reported substantially more problematic use into adulthood, including the use of pornography to avoid problems, to develop sexual scripts, and the use of violent pornography (Marshall & Miller, 2024).

Peter and Valkenburg (2008) explored characteristics of sexual self in adolescence: sexual uncertainty and attitudes toward sexual exploration. With a population of 2,343 Dutch adolescents aged 13 to 20, it was found that adolescents exposed to sexually explicit material on the internet had more sexual uncertainty and significant positive attitudes regarding uncommitted sexual exploration (Peter & Valkenburg, 2008). For the purposes of their study, Peter and Valkenburg defined an adolescent's sexual uncertainty as their inability to state clear sexual beliefs and values. When defining attitudes towards uncommitted sexual exploration, Peter and Valkenburg referred to positive and negative attitudes. If an adolescent had a positive attitude towards uncommitted sexual exploration, they placed a high value on sexual experimentation (Peter & Valkenburg, 2008). If it was the opposite, and an adolescent had a negative attitude towards uncommitted sexual exploration, they did not believe sexual exploration was an important developmental function (Peter & Valkenburg, 2008). This study by Peter and Valkenburg found that the exposure and use of sexually explicit internet material was correlated with recreational attitudes toward sex and sexually permissive attitudes, in addition to the

primary variables of sexual uncertainty and attitudes towards uncommitted sexual explorations (Peter & Valkenburg, 2008).

Peter and Valkenburg furthered their research on adolescents and pornography use by completing a review of 20 years of research surrounding its prevalence, predictors and implications (Peter & Valkenburg, 2016). The research concerning prevalence differed significantly over findings in this study. One major reason was the development of the internet from 1995 to 2015, and even now these findings are outdated. Some predictors of adolescent pornography use were found to be demographics (e.g., gender, sexual orientation, education), internet behaviors (e.g., frequently online, greater computer skills), norm-related variables (e.g., breaks rules, uses substances), personality characteristics (e.g., low self-control, gender orientation, sensation seeking), and sexual interest (e.g., greater interest, prior use of sexual content) (Peter & Valkenburg, 2016). Additional predictors were developmental competence, pubertal maturation, and sexual experience (Peter & Valkenburg, 2016). Implications of their findings, that are most relevant to this study included the need for longitudinal studies, theory building and testing, developmental perspective, and social and cultural norms (Peter & Valkenburg, 2016).

Present Study

There are multiple factors that can predict the frequency of pornography, sexual shame, and sexual satisfaction, and literature has supported the posited variables. The purpose of this study is to further the research into the proposed serial mediation model of increased pornography use, sexual shame, and sexual satisfaction of self and partner. This will be done by adding the predictor of age of first exposure and analyzing an exploratory moderator of insecure

partner attachment. Former research has yet to study if the age of first exposure to pornography is participatory of the posited pathway.

Hypotheses

Four hypotheses were developed on the moderated mediation model in which the association between first age of exposure and sexual satisfaction, mediated by frequency of use in the last 30 days and sexual shame (see Figure 1 for Conceptual Model). They include the following:

H1a. Age of first exposure will have a significant positive effect on frequency of pornography use.

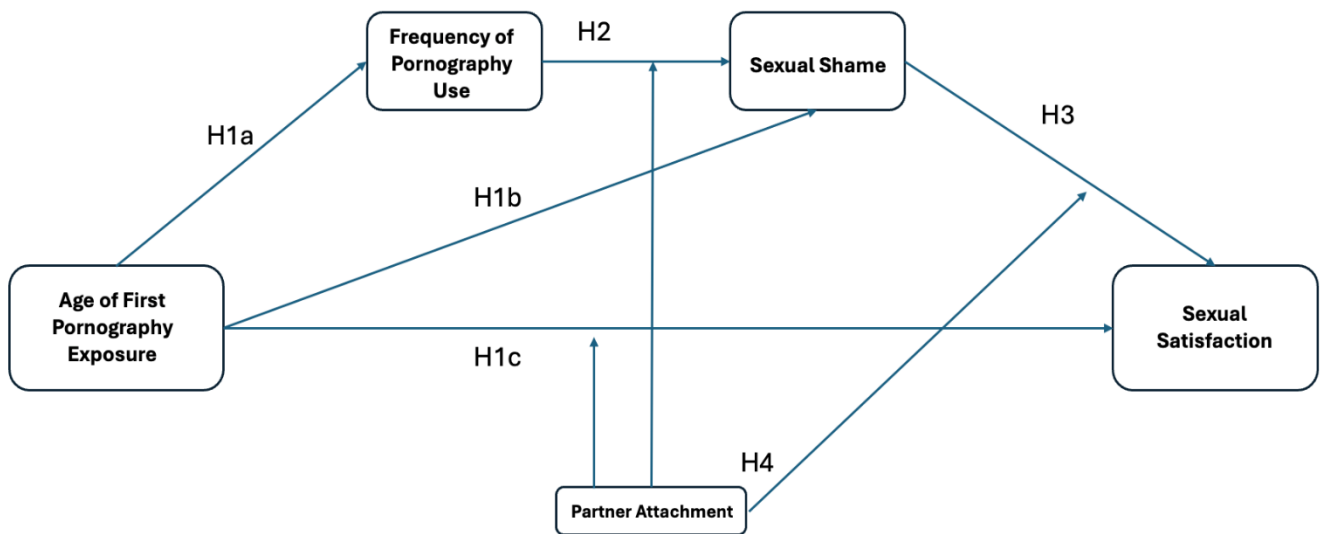
H1b. Age of first exposure will have a negative effect on sexual shame.

H1c. Age of first exposure will have a negative effect on sexual satisfaction.

H2. High frequency of pornography use will have a positive effect on sexual shame.

H3. High sexual shame will have a negative effect on sexual satisfaction.

H4. Insecure attachment styles (e.g., anxious and avoidant) will negatively moderate sexual shame and sexual satisfaction.

Figure 1. *Conceptual model.***Method*****Participants and Procedure***

Participants in this study were chosen from Mechanical Turk (MTurk) during the periods of Spring 2016 and January 2017. Participants were awarded \$1 for completing the assessment questionnaire. The sample encompasses men and women who viewed pornographic material at an early age, with any frequency of use after exposure. Participants were also limited to men and women who were in monogamous relationships; being married or dating. In this study, pornographic material is defined as material of sexual content including nudity and sexual activity viewed through media such as videos, printed material and internet sites. The participants consisted of 125 males and 176 women. Participant's relationship status was married/life partner (n=213) and monogamous dating relationship (n=88). The sample mean age for the test population was 35.89 with an age range of 18-84. The participant sample was primarily Caucasian/White (n=254) and included African American/Black (n=19), Hispanic, Latino or of Spanish origin (n=12), Asian (n=7), American Indian and Alaskan Native (n=6) and

Other (n=3). The participants' mean age of first exposure to pornography was 14.02 years of age with the earliest as age 4 and a maximum age exposure of 38. Participant's response for average monthly pornography use was reported as 17.3% at 10 times or more a month, 7.3% at 7-9 times a month, 16.3% at 4-6 times a month, 21.6% at 1-3 times a month, and 37.5% at 0 times a month.

Table 1.
Demographic Description of Study Participants (N=301)

	Total	
	<i>N</i>	%
Gender		
Male	125	41.5
Female	176	58.5
Race/Ethnicity		
Caucasian/White	254	84.4
African American/Black	19	6.3
American Indian/Alaskan Native	6	2.0
Asian	7	2.3
Hispanic/Latino	12	4.0
Other	3	1.0
Relationship Status		
Married/Life Partner	213	70.8
Monogamous Dating Relationship	88	29.2
Past Month Pornography Use		
0 Times	113	37.5
1 – 3 Times	65	21.6
4 – 6 Times	49	16.3
7 – 9 Times	22	7.3
10 or More Times	52	17.3

Table 2.
Participants' Age & Age of First Exposure to Pornography

	<i>N</i>	<i>Min</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>
What is your age?	301	18	84	35.89	10.354
How old were you when you were first exposed to pornography?		4	38	14.02	4.182

Measures

Frequency of Pornography Use. The participants' monthly frequency of pornography use was measured with a single item (e.g., "within the past month, how many times have you intentionally viewed pornography online?") where the participants were asked to reveal their frequency of use in the preceding 30 days, using a 5-point Likert scale. Participants chose from the following responses: (1) 0 times, (2) 1-3 times, (3) 4-6 times, (4) 7-9 times, or (5) 10 or more times.

Kyle Inventory of Sexual Shame (KISS9). The Kyle Inventory of Sexual Shame-9 (KISS9) was developed by Jang Soon Lim (2019) and utilized nine questions that were selected from the original Kyle Inventory of Sexual Shame (KISS; Kyle, 2013) measurement tool. It contained 20 items focused on identifying the characteristics of sexual shame (Lim, 2019). However, the KISS (2013) contained questions that could be construed as causal, rather than identifying which characteristics of shame the participant was experiencing (Lim, 2019). The KISS9 further allowed researchers and clinicians to identify potential moderators to sexual shame (Lim, 2019).

The participants sexual shame was measured using the nine items of the KISS9. Using a Likert scale, participants were asked to rate their level of consensus with the statements (e.g., "I feel ashamed of my sexual abilities" and "I replay painful events from my sexual past over and over in my mind"). Participants chose responses from a 6-point Likert scale ranging from the following choices: (1) strongly disagree to (6) strongly agree. The assessment score was calculated by totaling the responses. The higher the score attained, the greater levels of sexual

shame the individual was experiencing. The Cronbach's alpha coefficient was 0.887 for this measure, indications of good internal consistency (see Table 3).

New Sexual Satisfaction Scale (NSSS). The New Sexual Satisfaction Scale (NSSS) is a self-report, comprehensive measurement tool that assesses sexual satisfaction for both individual and dyadic relationships (Štulhofer et al., 2010). This assessment tool was designed using clinical and therapeutic expertise in sexology, focusing on various multiple aspects of sexual behavior like sexual sensations, sexual activity, emotional closeness, and awareness and focus (Štulhofer et al., 2010). The NSSS proposes a two-dimensional framework: ego-centered and partner/sexual activity-centered. Ego-centered focuses on individual experiences, and partner/sexual activity-centered focuses on the partner's frequency and types of sexual activities as well as the individual's experiences and sensations (Štulhofer et al., 2010). The NSSS is a Likert-type scale composed of 20 questions with responses ranging from 'not at all satisfied' to 'extremely satisfied'.

The participants were asked to rate their level of sexual satisfaction (e.g., "The quality of my orgasms" and "The pleasure I provide to my partner"), using a 5-point Likert scale. Participants chose from the following responses: (1) not at all satisfied, (2) a little satisfied, (3) moderately satisfied, (4) very satisfied, or (5) extremely satisfied. Questions 1-10 were the Ego-Centered subscale, and addressed the individual self, while 11-20 were the Partner and Activity-Centered subscale and addressed the partner. The Cronbach's alpha coefficient for NSSS Ego was 0.932 and for the NSSS Partner was 0.942 for the current sample, indications of good internal consistency (see Table 3 for Cronbach's alpha coefficients by subscale).

Experience of Close Relationships – Relationship Structures Revised (ECR-RS). The Relationship Structures questionnaire of the Experience of Close Relationships-Revised (ECR-

RS) is a 36-Item, self-report assessment tool that measures adult attachment within four kinds of relationships: mother, father, friends, and romantic partners (Fraley et al., 2011). The assessment focuses on the insecure attachment styles of anxiety (fear of rejection or abandonment) and avoidance (discomfort of closeness to others or being intimate) within each of the relationship domains (Fraley et al., 2011). Though there are four attachment styles, the assessment purposely does not measure for secure or unspecified attachment because it is presumed that unspecified exists through both high anxiety and high avoidance scores.

This study utilized the short version of the ECR-RS with nine questions, where statements 1-6 represented avoidance and statements 7-9 represented anxiety. This study used romantic partner subscale. The participants were asked to rate their attachment orientation (e.g., “I usually discuss my problems and concerns with my partner” and “I often worry that this person may abandon me”), using a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. The Cronbach’s alpha coefficient for the ECR-RS Avoidance was 0.891 and for the ECR-RS Anxiety was 0.934 for the current sample, indications of good internal consistency (see Table 3 for Cronbach’s alpha coefficients by subscale).

Results

In this study, we presumed that the age of first exposure pornography use would result in low sexual satisfaction. Developmentally, when maturing and experiencing puberty, adolescents’ interests in sexuality is enhanced (Peter & Valkenburg, 2016). However, adolescents are still navigating sexual orientation, gender orientation, puberty, and value systems to name a few. Considering previous literature on the frequency of pornography use, sexual shame, and sexual satisfaction, we posited a serial mediation model with frequency of pornography use and sexual shame mediating the relationship between age of first exposure to pornography and sexual

satisfaction. We hypothesized the age of first exposure would have a significant positive effect on frequency of pornography use; a negative effect on sexual shame; and a negative effect on sexual satisfaction. We also hypothesized high frequency of pornography use would have a positive effect on sexual shame; high sexual shame would have a negative effect on sexual satisfaction; and insecure attachment styles (e.g., anxious and avoidant) will negatively moderate sexual shame and sexual satisfaction.

This study found that age of first exposure to pornography was anticipatory of frequency of pornography use, frequency of pornography use was anticipatory of sexual shame, sexual shame was anticipatory of sexual satisfaction. The total effect of age of first exposure on sexual satisfaction was not significant ($\beta = .024, t = 1.530, p = .127$), nor was the direct effect ($c'; \beta = .016, t = 1.005, p = .316$). The paths are indicated in Figure 2. When controlling for insecure attachment styles, there were two significant indirect effects with a 95% bias corrected bootstrap confidence interval (see Table 5). The total indirect effect was significant (CI = .000, .018), again, indicating age of first exposure influenced sexual satisfaction through the mediating effects of frequency of use and sexual shame. Age of first exposure was significantly and negatively correlated with the frequency of pornography use ($\beta = -.078, t = -4.393, p = .000, CI [-.113, -.043]$). Frequency of pornography use in the last 30 days was significantly and positively correlated with sexual shame ($\beta = .124, t = 2.023, p = .044, CI [.003, .246]$). Sexual shame had a significant negative effect on sexual satisfaction on the NSSS Ego subscale ($\beta = -.195, t = -4.075, p = .000, CI [-.289, -.101]$) and on the NSSS Partner ($\beta = -.133, t = -2.839, p = .005, CI [-.225, -.041]$). Romantic partner anxious attachment had a significant, positive effect on frequency of use and sexual shame. Yet it had a significant negative effect on sexual satisfaction on the NSSS Ego subscale and the NSSS Partner subscale. Romantic partner unspecified

attachment had a significant positive effect on sexual shame. Although age of first exposure did not have a direct effect, the posited serial mediation model was reinforced.

Table 3.
Correlation Matrix – Pearson’s r, means and standard deviation

	1	2	3	4	5	6	7
(1) First Exposure	1						
(2) 30-day use	-.226**	1					
(3) Sexual Shame KISS9	-.099	.196**	1				
(4) ECR-RS Romantic Partner Avoidance	-.026	-.149**	.014	1			
(5) ECR-RS Romantic Partner Anxiety	-.073	.218**	.469**	-.098	1		
(6) New Sexual Satisfaction Scale – Self	.018	-.020	-.366**	.200**	-.300**	1	
(7) New Sexual Satisfaction Scale – Partner	.106	-.198**	-.315**	.339**	-.422**	.689**	1
<i>M</i>	14.020	2.450	3.003	4.852	2.697	3.512	3.374
<i>SD</i>	4.182	1.479	1.434	.668	1.915	.929	1.022
Cronbach’s α	N/A	N/A	.887	.891	.934	.932	.942

** . Correlation is significant at the 0.01 level (2-tailed).

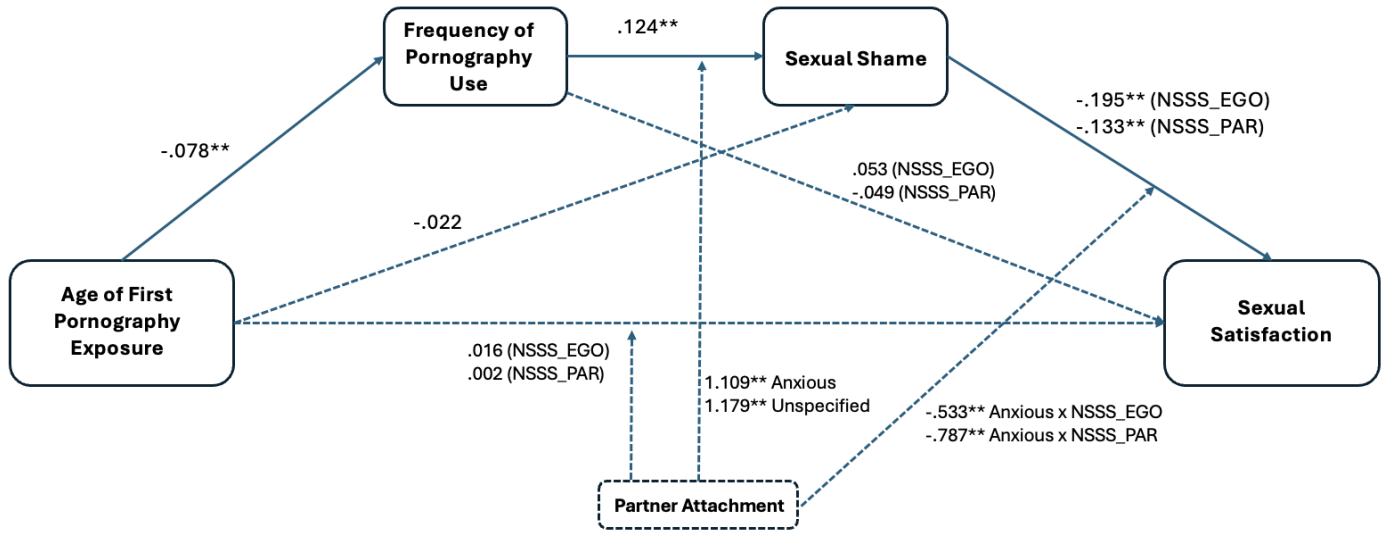
Table 4.
Serial Mediation Model

Source	<i>b</i>	<i>se</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Frequency of Use $R = .3127$, $R^2 = .0978$, $F(4, 275) = 8.794$, $p < .001$						
First Exposure	-.078	.018	-4.393	<.001	-.113	-.043
Avoidant Attachment	-.184	.237	-.773	.440	-.651	.284
Anxious Attachment	.691	.202	3.419	<.001	.293	1.089
Unspecified Attachment	.244	.304	.804	.422	-.354	.843
Sexual Shame (KISS9) $R = .425$, $R^2 = .181$, $F(5, 274) = 11.49$, $p < .001$						
First Exposure	-.022	.019	-1.106	.269	-.061	.017
Frequency of Use	.124	.062	2.023	.044	.003	.246
Avoidant Attachment	.151	.239	.632	.528	-.320	.623
Anxious Attachment	1.109	.204	5.438	<.001	.708	1.511
Unspecified Attachment	1.179	.286	4.132	<.001	.618	1.742
Sexual Satisfaction Partner (NSSS_PAR) $R = .476$, $R^2 = .227$, $F(6, 273) = 14.496$, $p < .001$						
First Exposure	.016	.016	1.005	.316	-.016	.048
Frequency of Use	-.049	.042	-1.180	.239	-.131	.033
Sexual Shame (KISS9)	-.133	.044	-2.839	.005	-.225	-.041
Avoidant Attachment	.099	.149	.666	.506	-.194	.392
Anxious Attachment	-.787	.159	-4.954	<.001	-1.099	-.474
Unspecified Attachment	-.121	.197	-.615	.539	-.508	.266
Sexual Satisfaction Self (NSSS_EGO) $R = .438$, $R^2 = .192$, $F(6, 273) = 11.089$, $p < .001$						
First Exposure	.002	.017	.094	.925	-.031	.034
Frequency of Use	.053	.038	1.415	.158	-.021	.127
Sexual Shame (KISS9)	-.195	.048	-4.075	<.001	-.289	-.101
Avoidant Attachment	.010	.169	.060	.952	-.324	.344
Anxious Attachment	-.533	.144	-3.693	<.001	-.816	-.249
Unspecified Attachment	.012	.181	.069	.945	-.343	.368

Table 5.
Significant Indirect Effects

Pathway	<i>effect</i>	<i>se</i>	LLCI	ULCI
P_FIRSTE→Fre_Use1→KISS9→NSSS_EGO	.0019	.0011	.0000	.0045
P_FIRSTE→Fre_Use1→KISS9→NSSS_PAR	.0013	.0009	.0000	.0034

Figure 2. Serial mediation model.



Discussion

Initially, the purpose of this study was to validate that the age of first exposure will have a significant positive effect on pornography consumption. In addition, that high frequency of pornography consumption leads to a high level of sexual shame. High levels of sexual shame will result in lower levels of sexual satisfaction in monogamous relationships. Lastly the study was to examine the effect of relationship attachment as an exploratory moderator. This model supports findings from Malki that increased pornography consumption decreases sexual relationship satisfaction (Malki, et al., 2020). In contrast with other studies, our research did not find that the age of first exposure to pornography was positively correlated to more frequent consumption. Also, sexual shame was found to be a primary mediator, negatively affecting sexual satisfaction. The study found that the exploratory moderator of anxious relationship attachment acted as a covariate correlating to higher usage and higher shame causing less satisfaction.

Limitations and Implications

There are several limitations in this study. The sample used for this study was gathered from an online mechanism called MTurk and is from the 2016 to 2017 timeframe. Because MTurk provides crowdsourced data, it creates a deficit in participant diversity. For example, 84.4% of participants in this study were Caucasian creating the inability to translate findings across all ethnicities. Also, the MTurk participant pool is repetitive. Because several of the MTurk participants responded to multiple surveys in similar studies, it jeopardizes this study's external validity. Another limitation is that MTurk participants are paid for completion of surveys. Thus, there is a risk of resulting false negatives because some participants may rush through surveys for completion and payment rather than taking time to input valid answers (Stritch, et al., 2017).

This is a cross-sectional model with correlational data. Based on this we cannot conclude causal relationships. Theoretically age of first exposure has to precede all other variables. However, all other variables can be examined in different mediating orders and outputs. We built our model based on past studies. Future research could exclude participants who had zero pornography usage within thirty days to six months providing a clearer picture of the effects of consistent pornography use. Also, future research could explore social and cultural norms such as same sex and/or gender identity factors.

Conclusion

The goal of this study is to continue the research into the serial mediation model of increased pornography use, sexual shame, and sexual satisfaction of self and partner adding the predictor of age of first exposure and analyzing an exploratory moderator of insecure partner attachment. This research has added additional support for the studies that have found that

increased pornography use mediates increased shame and decreased sexual satisfaction. In addition, it has focused more on the effect of pornography use and anxious relationship attachment as a covariate that was found to result in decreased sexual satisfaction. While sexual shame may be an unintentional result of increased pornography use due to social and moral beliefs, individuals continue to consume pornography despite the feelings of shame (Floyd, et al., 2020). There's still more research that needs to be conducted to understand the effects pornography has on the age of first use. Because children cannot be employed in studies, researchers have to rely on adult participants and their memories of their childhood and adolescent behaviors. Another gap in research is the need to understand pornography and the anxious partner attachment style including what factors contribute to sexual dissatisfaction.

References

- Alarcón, R., Iglesia, J. I., Casado, N. M., & Montejo, A. L. (2019). Online Porn Addiction: What We Know and What We Don't-A Systematic Review. *Journal of clinical medicine*, 8(1), 91. <https://doi.org/10.3390/jcm8010091>
- Böthe, B., Vaillancourt-Morel, M.-P., & Bergeron, S. (2022). Associations between pornography use frequency, pornography use motivations, and sexual wellbeing in couples. *Journal of Sex Research*, 59(4), 457–471. <https://doi.org/10.1080/00224499.2021.1893261>
- Campbell, L., & Kohut, T. (2017). The use and effects of pornography in romantic relationships. *Current Opinion in Psychology*, 13, 6–10. <https://doi.org/10.1016/j.copsyc.2016.03.004>
- Cerniglia, L., & Cimino, S. (2024). Pornography consumption in pre-/early adolescents: A study on the links with emotion regulation and internalizing/externalizing symptoms. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 43(34), 27414–27422. <https://doi.org/10.1007/s12144-024-06380-z>
- Floyd, C. G., Landa, S., Saunders, M. A., & Volk, F. (2020). The moderating influence of moral disapproval of pornography on couples' sexual and relationship satisfaction. *Journal of Sex & Marital Therapy*, 46(7), 660–682. <https://doi.org/10.1080/0092623X.2020.1783409>
- Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The experiences in close relationships—Relationship Structures Questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment*, 23(3), 615–625. <https://doi.org/10.1037/a0022898>

- Koletić, G., Štulhofer, A., Hald, G. M., & Træen, B. (2021). Self-Assessed Effects of Pornography Use on Personal Sex Life: Results from a Large-Scale Study of Norwegian Adults. *International journal of sexual health: official journal of the World Association for Sexual Health*, 33(3), 342–356.
<https://doi.org/10.1080/19317611.2021.1918310>
- Kyle, S. E. (2013). *Identification and treatment of sexual shame: Development of a measurement tool and group therapy protocol*. (Unpublished doctoral dissertation) American Academy of Clinical Sexologists, San Antonio, TX.
- Lewczuk, K., Wójcik, A., & Gola, M. (2022). Increase in the Prevalence of Online Pornography Use: Objective Data Analysis from the Period Between 2004 and 2016 in Poland. *Archives of sexual behavior*, 51(2), 1157–1171.
<https://doi.org/10.1007/s10508-021-02090-w>
- Lim, Jang Soon. (2019). "Developing the Refined Sexual Shame Inventory: Validation Study of the Kyle Inventory of Sexual Shame". *Doctoral Dissertations and Projects*. 2108.
<https://digitalcommons.liberty.edu/doctoral/2108>
- Malki, K., Rahm, C., Obert, K., & Ueda, P. (2021). Frequency of pornography use and sexual health outcomes in Sweden: Analysis of a national probability survey. *Journal of Sexual Medicine*, 18, 1735-1751. <https://doi.org/10.1016/j.jsxm.2021.08.003>
- Marshall, E. A., & Miller, H. A. (2024). Age and type of first exposure to pornography: It matters for girls and boys. *Deviant Behavior*, 45(3), 377–393.
<https://doi.org/10.1080/01639625.2023.2248338>
- Perry, S. L. (2017). Spousal religiosity, religious bonding, and pornography consumption. *Archives of Sexual Behavior*, 46(2), 561–574. <https://doi.org/10.1007/s10508-016-0896-y>

- Peter, J., & Valkenburg, P. M. (2008). Adolescents' exposure to sexually explicit internet material, sexual uncertainty, and attitudes toward uncommitted sexual exploration: Is there a link? *Communication Research*, 35(5), 579–601.
<https://doi.org/10.1177/0093650208321754>
- Peter, J., & Valkenburg, P. M. (2016). Adolescents and pornography: A review of 20 years of research. *Journal of Sex Research*, 53(4–5), 509–531.
<https://doi.org/10.1080/00224499.2016.1143441>
- Quin-Nilas, C. (2019). Relationship and sexual satisfaction: A developmental perspective on bidirectionality. *International Association for Relationship Research*, 37(2), 624–646.
<https://doi.org/10.1177/0265407519876018>
- Sævik, K. W., & Konijnenberg, C. (2023). The effects of sexual shame, emotion regulation and gender on sexual desire. *Scientific reports*, 13(1), 4042. <https://doi.org/10.1038/s41598-023-31181-y>
- Stritch, J. M., Pedersen, M. J., & Taggart, G. (2017). The opportunities and limitations of using mechanical turk (MTURK) in public administration and management scholarship. *International Public Management Journal*, 20(3), 489–511.
<https://doi.org/10.1080/10967494.2016.1276493>
- Štulhofer, A., Buško, V., & Brouillard, P. (2010). Development and bicultural validation of the New Sexual Satisfaction Scale. *Journal of Sex Research*, 47(4), 257–268.
<https://doi.org/10.1080/00224490903100561>
- Young-Petersen, B., Willoughby, B. J., Otani, J. K., & Seedall, R. B. (2024). The impact of timing of pornography exposure on adulthood outcomes of life satisfaction, sexual

attitudes, and sexual behavior. *Sexual Health & Compulsivity*, 31(2), 123–141.

<https://doi.org/10.1080/26929953.2024.2322745>