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**To cite this article:** Christopher G. Floyd, Samuel Landa, Mark A. Saunders & Fred Volk (2020) The Moderating Influence of Moral Disapproval of Pornography on Couples' Sexual and Relationship Satisfaction, Journal of Sex & Marital Therapy, 46:7, 660-682, DOI: [10.1080/0092623X.2020.1783409](https://doi.org/10.1080/0092623X.2020.1783409)

**To link to this article:** <https://doi.org/10.1080/0092623X.2020.1783409>



Published online: 23 Jun 2020.



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# The Moderating Influence of Moral Disapproval of Pornography on Couples' Sexual and Relationship Satisfaction

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## ABSTRACT

Using an online sample of participants that reported using pornography in the last six months and being in a committed relationship, support was found for a moderated mediation model in which sexual shame and sexual satisfaction mediated the relationship between pornography use and couple satisfaction; this indirect effect was moderated by participants' level of moral disapproval of pornography. Findings suggest that pornography use amongst those who morally disapprove of its use is associated with increased sexual shame, which is associated with decreased sexual satisfaction, leading to subsequent reductions in couple satisfaction. Results expand upon the branch of pornography literature suggesting that the association between pornography use and adverse intra- and interpersonal consequences are conditioned on the degree to which users morally disapprove of their use.

Research concerning the impact of Internet pornography use on committed relationships has largely focused on the possible negative relationship between use patterns and relationship satisfaction outcomes (Schneider, 2000; Willoughby, Carroll, Busby, & Brown, 2016; Maddox, Rhoades, & Markman, 2011; Perry, 2017b, 2018a ). For example, research supports that pornography use may reduce relationship satisfaction (Doran & Price, 2014; Perry, 2016, 2017b) and that pornography use may be associated with romantic partner separation (Duffy, Dawson, & Das Nair, 2016; Perry & Schleifer, 2018). In contrast to these negative findings, recent research has demonstrated robust findings concerning the possible conditions by which pornography use is positively associated with increased levels of personal sexual satisfaction and relationship satisfaction (Kohut, Fisher, & Campbell, 2017; Resch & Alderson, 2014; Weinberg, Williams, Kleiner, & Irizarry, 2010). Noted positive effects of pornography use that have emerged from recent data include positive effects on dyadic communication and relationship quality, with research suggesting that patterns of use between partners may influence romantic partner outcomes (Kohut, Balzarini, Fisher, & Campbell, 2018; Kohut et al., 2017).

Prior research has demonstrated a positive association between pornography use and psychological distress, with findings indicating that high levels of pornography use may be correlated with increased depression and anxiety levels (Levin, Lillis, & Hayes, 2012). More recent research on pornography use and its association with adverse consequences, such as psychological distress, increasingly suggest that the relationship between pornography use and psychological distress

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Statement: The data used in the present study is available upon request. No other sources funded the research.

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may be a product of consumers' level of moral disapproval of pornography use (Grubbs, Exline, Pargament, Hook, & Carlisle, 2015b; Grubbs, Stauner, Exline, Pargament, & Lindberg, 2015a; Grubbs, Volk, Exline, & Pargament, 2014; Grubbs, Wilt, Exline, Pargament, & Kraus, 2017; Guidry, Floyd, Volk, & Moen, 2019; Perry, 2017a; Volk, Thomas, Sosin, Jacob, & Moen, 2016). Research findings suggest that continued pornography use, amongst those who morally disapprove of said use, may be associated with increased distress, feelings of shame related to use (Fisher, Montgomery-Graham, & Kohut, 2019), and decreased relationship satisfaction (Perry, 2018a).

Sexual shame, distress experienced as a product of holding the view that one is unworthy of acceptance as a result of their sexual thoughts, sexual experiences, or sexual behavior (Kyle, 2013), may play a mediating role in the relationship between pornography use and relationship outcomes. Research has demonstrated that sexual shame impacts how individuals navigate their relationships (Arel, 2015), with findings suggesting that sexual shame can lead to adverse relationship outcomes (Mollon, 2005; Kim, Talbot, & Cicchetti, 2009). Research also suggests that when individuals continue to use pornography, despite morally disapproving of said use, it may lead to increased sexual shame (Volk et al., 2016). Further support for shame's adverse impact on relationships can be seen in findings showing that a disposition to experience shame can lead to insecure romantic partner attachment, less adaptive dyadic interaction, and decreased relationship satisfaction (Johnson, Nguyen, Anderson, Liu, & Vennum, 2015).

Research points toward a possible association between moral disapproval of pornography use, sexual shame, sexual satisfaction, and relationship satisfaction. For example, previous research findings have demonstrated a positive relationship between pornography use and shame (Volk et al., 2016), the influence of moral disapproval on the relationship between use and sexual shame (Grubbs et al., 2015b; Hook et al., 2015; Volk et al., 2016), a negative relationship between sexual shame and sexual satisfaction (Gordon, 2018; Yucel & Gassanov, 2010), and a positive association between sexual and relationship satisfaction (Ferron, Lussier, Sabourin, & Brassard, 2017). Research has also suggested that the use of pornography may be predictive of increased cyber infidelity, which in turn may predict both decreased sexual and relationship satisfaction (Ferron et al., 2017). In addition, previous correlational research provides cross-sectional support for a potential sequence by which excessive pornography use amongst those who morally disapprove of pornography use is associated with increased distress and subsequent reductions in relationship quality (Guidry et al., 2019).

With the exception of just a few studies (Grubbs, Perry, Wilt, & Reid, 2019; Guidry et al., 2019; Perry, 2017b), little research has been dedicated to assessing how continued pornography use, despite morally disapproving of use, influences psychological and romantic partner outcomes, and what individual psychological characteristics may attenuate these relationships. As such, the focus of the present research is to assess the degree to which moral disapproval of pornography moderates the relationship between pornography use, mediated by sexual shame and sexual satisfaction, and relationship satisfaction levels in a serial moderated mediation model. In addition, considering that self-forgiveness has been shown to lower distress levels in individuals who experience shame as a product of moral incongruence (Hall & Fincham, 2005) and those who struggle with sexual compulsivity (Hook et al., 2015), the present study explored whether or not possessing the ability to forgive oneself for pornography-related transgressions moderates the effect of use on sexual shame. This research adds to the current research by assessing a comprehensive model that accounts for each of the previously mentioned moderating and mediating variables in the relationship between pornography use and sexual and relationship satisfaction.

### ***Pornography use and committed relationships***

Recently, a number of studies have been focused on both the possible positive and the negative influences of pornography use on relationship satisfaction (Jafarzadeh Fadaki, & Amani, 2015;

Kohut et al., 2017; Perry, 2016). For example, longitudinal research suggests that pornography use may be associated with reduced relationship quality, stability, and satisfaction (Muusses, Kerkhof, & Finkenauer, 2015; Perry, 2017c, Perry, 2018b; Perry & Davis, 2017; Perry & Schleifer, 2018). Further, experimental studies have provided evidence for a potential relationship between pornography use and adverse relationship outcomes (Gwinn, Lambert, Fincham, & Maner, 2013; Lambert, Negash, Stillman, Olmstead, & Fincham, 2012). Consistent with findings of this sort, in a meta-analysis of 50 studies related to the relationship between pornography and relationship satisfaction, Wright, Tokunaga, Kraus, and Klann (2017) found that results from cross-sectional, longitudinal, and experimental studies suggest that men's pornography use may have negative effects on sexual and relationship satisfaction.

A review of the relevant research on the impact of pornography use on relationship satisfaction suggests that the degree to which pornography use is associated with adverse relationship outcomes, such as negative impacts on romantic partner satisfaction (Doran & Price, 2014; Manning, 2006; Perry, 2016, 2017b; Tarver, 2010) and romantic partner separation (Duffy et al., 2016; Perry & Schleifer, 2018), may be contingent on the extent of use and the degree to which individuals morally disapprove of their use (Perry, 2018a). Added support for the claim that pornography consumption is a liability in terms of relationship conflict can be seen in a study by Doran and Price (2014) which, using a large sample of 20,000 married adults, demonstrated that those who indicated that they viewed pornography within the last year were 25% more likely to be separated, 12% less likely to indicate being happily married, and twice as likely to have an affair.

Research suggests that the positive versus negative effects of pornography use may vary as a product of the pattern of use between partners (Kohut et al., 2018; Kohut et al., 2017). This research demonstrates potential differences in shared use, concordant single-use, and discordant solitary use, with findings showing that shared use between partners may have a positive impact on relationships, whereas when partners use pornography alone, it may have a negative impact on relationships (Kohut et al., 2018). Consistent with research of this sort, Willoughby et al. (2016) found, using a sample of 1,755 adult couples, that when there is a difference in pornography use patterns between romantic partners, pornography use may lead to increased male relational aggression and poor couple satisfaction outcomes. Although research suggests that shared pornography use between romantic partners may have a positive effect on relationships, a review of the research concerning gender differences in pornography consumption suggests that this may rarely take place, with research demonstrating that men consume pornography at a significantly higher rate than women do (Albright, 2008; Buzzell, 2005; Carroll et al., 2008; Emmers-Sommer, Hertlein, & Kennedy, 2013; Petersen & Hyde, 2010; Willoughby et al., 2016).

Research has provided evidence for the theory that pornography use on the part of one's romantic partner can lead to relationship dissatisfaction or disharmony (Maddox et al., 2011). When women discover that their romantic partner uses pornographic material and has been dishonest about that use, they report feelings of traumatization (Schneider, 2000) and decreased relationship satisfaction (Resch & Alderson, 2014). In addition, when Perry (2016) tested spousal religiosity as a moderating factor between pornography use and marital satisfaction, results suggested that the negative effect of pornography use on marital satisfaction was higher when the spouse was more religiously devout. As such, the degree to which romantic partners hold views against pornography use may influence the degree to which pornography use is associated with decreased marital satisfaction (Perry, 2016).

### **Sexual satisfaction**

One prevailing explanation for pornography's negative effect on relationship satisfaction is its proposed association with sexual satisfaction. Research suggests that pornography use may be associated with decreased sexual satisfaction as pornography use may lead to a reduction in an

individual's level of enjoyment in sexual behaviors (Sun, Bridges, Johnson, & Ezzell, 2016). In addition, findings have indicated that pornography use may be associated with the development of a preference for pornographic content over real-life sexual excitement, devaluation of sexual communication between romantic partners (Wright, Sun, Steffen, & Tokunaga, 2019), and the development of specific, unrealistic sexual expectations that ultimately lead to reduced sexual satisfaction in subsequent sexual encounters (Morgan, 2011). Exposure to sexually explicit material may, therefore, be associated with decreased sexual and relationship satisfaction as a product of real-life sexual encounters not living up to the unrealistic expectations set by pornography (Morgan, 2011).

The degree to which pornography negatively influences sexual satisfaction may be contingent on the extent of an individual's use. For example, both the frequency of use and the number of types of sexually explicit materials individuals interact with has been shown to be associated with decreased sexual satisfaction (Morgan, 2011). Although occasional pornography viewing may not negatively influence sexual satisfaction, regular, more frequent pornography use may result in decreased satisfaction levels (Rasmussen, 2016). In a study by Wright, Bridges, Sun, Ezzell, and Johnson (2018), which utilized survey data from a sample of U.S. adults, results indicated a curvilinear relationship between personal pornography viewing and sexual satisfaction. Their findings provided evidence that the degree to which pornography use is associated with reduced sexual satisfaction may be contingent on the user's frequency of use. Specifically, findings indicated that viewing pornography less than once a month has little or no effect on sexual satisfaction levels, whereas additional increases in the frequency of viewing may lead to increasing decrements in sexual satisfaction levels (Wright et al., 2018).

Whether or not pornography use is associated with decreased sexual satisfaction may partially depend on differences in use patterns between partners and the way pornography is perceived by partners (Willoughby et al., 2016; Perry, 2017b; Schneider, 2000). Typically, what research has shown to be a mitigating factor in the relationship between pornography use and sexual satisfaction is some level of acceptance from both partners (Brown et al., 2017). Further, research suggests that the associations between pornography use and sexual satisfaction are particularly evident in cases where pornography is used as a solo endeavor (Blais-Lecours, Vaillancourt-Morel, Sabourin, & Godbout, 2016; Brown et al., 2017). Research does suggest that there are times when pornography use can have positive effects on sexual satisfaction, such as when couples view pornography together (Kohut et al., 2017) or if there are openness and honesty about the use of pornography (Resch & Alderson, 2014). However, when partners are not in agreement concerning the use of pornography (Maddox et al., 2011; Willoughby et al., 2016), when there are elements of secret use or hiding use from one's romantic partner (Resch & Alderson, 2014; Schneider, 2000), or pornography is used alone (Maddox et al., 2011), pornography use may lead to decreased sexual satisfaction, which may be subsequently associated with decreased couple satisfaction (Yucel & Gassanov, 2010).

Consistent with research indicating that continued pornography use amongst those who morally disapprove of its use may be associated with increased shame (Fisher et al., 2019; Volk et al., 2019) and decreased marital quality (Perry, 2018a), research suggests that pornography's negative association with sexual satisfaction may be more pronounced for religious individuals, as use among religious users may lead to moral incongruence, cognitive dissonance caused by engaging in sexual behaviors that violate one's values, and shame (Perry & Whitehead, 2019). Further evidence for the influence of individuals' moral perceptions on the relationship between use and sexual satisfaction can be seen in research showing that the negative association between frequency of pornography use and sexual satisfaction is accelerated for those who are religious, suggesting that being religious exacerbates the negative association between use and sexual satisfaction (Perry & Whitehead, 2019; Wright et al., 2018).

### ***Moral disapproval of pornography and sexual shame***

More recently, pornography researchers dedicated to uncovering the negative influence of pornography on users have shifted their focus to pornography consumers' own perceptions concerning their use, as research supports that consumer's perceptions concerning their use may be a better predictor of negative outcomes than use itself (Grubbs et al., 2015a; Grubbs et al., 2014). Evidence for this can be seen in research suggesting that the relationship between use and distress may be contingent on an individual's level of moral disapproval of pornography (Grubbs et al., 2015b; Grubbs et al., 2017; Perry, 2017a; Volk et al., 2016), and research showing that using pornography despite morally disapproving of its use may lead to increased distress and feelings of shame (Fisher et al., 2019). Further, research has also demonstrated that the degree to which pornography use is associated with decreased marital quality may be partially dependent on the consumer's level of moral disapproval of pornography (Perry, 2018a).

The negative effect of individuals' moral attitudes toward pornography on intra- and interpersonal outcomes is possibly more pronounced amongst religious individuals due to religiosity's potential association with increased moral disapproval of pornography (Grubbs et al., 2015b; Grubbs et al., 2019; Perry, 2016; Perry & Whitehead, 2019). As a lack of congruence between one's moral values and sexual behavior, such as pornography use, has been shown to be associated with increased distress (Grubbs et al., 2019) and decreased marital quality (Perry, 2018a), being religious while also using pornography may be associated with increased psychological distress (Grubbs et al., 2019) and adverse relationship outcomes (Doran & Price, 2014; Patterson & Price, 2012; Perry, 2016; Perry & Whitehead, 2019; Wright et al., 2018) due to the effect of moral disapproval. Findings of this sort suggest that it is not pornography use itself that leads to adverse outcomes; rather, it is the degree to which individuals experience "moral incongruence," the experience of physical and emotional distress as a result of behaving contrary to an individual's stated values (Grubbs & Perry, 2018), that may predict adverse outcomes. This theory has been termed the "moral incongruence" theory, which suggests that individuals who violate their moral values by viewing pornography are likely to experience increased shame and cognitive dissonance, which can lead to interpersonal withdrawal and decreased enjoyment from relationships (Perry, 2017a, 2018a).

A review of the literature concerning the possible linkages between pornography use, moral disapproval, sexuality, and adverse relationship outcomes suggests that the degree to which pornography use is associated with decreased sexual satisfaction may depend, in part, on an individual's moral disapproval of pornography (Perry & Whitehead, 2019). A tendency to experience sex-based shame in response to violating one's values may partially explain why religion has been shown to negatively influence sexual satisfaction levels (Burke & Hudec, 2015; Hackathorn, Ashdown, & Rife, 2016; Regnerus, 2007). As stated, research supports a potential relationship between pornography use and increased shame (Volk et al., 2016), with findings showing that moral disapproval of pornography may influence the relationship between use and increased shame (Grubbs et al., 2015b; Hook et al., 2015; Volk et al., 2016), and that sexual shame may be negatively associated with sexual satisfaction (Gordon, 2018; Yucel & Gassanov, 2010). In other words, research indicates that as pornography use increases, sexual shame levels may also increase, which may lead to decreased sexual satisfaction.

Sexual shame is defined as distress experienced as a product of holding the view that one is unworthy of acceptance as a result of their sexual thoughts, experiences, or sexual behavior (Kyle, 2013). Research supports that the experience of sexual shame may impact how people navigate relationships (Arel, 2015), often leading to adverse relationship outcomes (Kim et al., 2009; Mollon, 2005). Sexual shame has been shown to be an unintended consequence of pornography use amongst those who morally disapprove of its use (Volk et al., 2016). This incongruence between an individual's beliefs and behaviors may lead to insecure romantic partner attachment, less adaptive dyadic interaction, and decreased relationship quality (Johnson et al., 2015) due to shame's tendency to lead individuals to withdraw from relationships and decrease individuals' relationship satisfaction (Perry, 2017a, 2018a). Together, findings suggest pornography use, amongst those high in moral disapproval



of pornography, may be associated with the perception that one is addicted to pornography, leading to subsequent increases in sexual shame (Volk et al., 2016) and potential decreases in sexual and relationship satisfaction (Perry, 2016, 2018a; Perry & Whitehead, 2019).

### **Self-forgiveness**

Hall and Fincham (2005) propose that self-forgiveness “emphasizes self-love and respect in the face of one’s own wrongdoing” (p. 621). As stated, research supports that pornography use, especially amongst the religious who morally disapprove of its use, may be associated with increased sexual shame (Grubbs et al., 2015b; Hook et al., 2015; Perry, 2017a, 2018a; Volk et al., 2016). However, little research has explored how various strategies, such as practicing self-forgiveness, could be helpful in reducing the potentially elevated shame levels seen amongst those suffering from compulsive, hypersexual behavior. Some research assessing the buffering effects of self-forgiveness on shame exists, with research showing that when working with persons experiencing shame or perceived moral failure, self-forgiveness has been shown to lower these individuals’ distress levels (Hall & Fincham, 2005). In their meta-analytic review of the relationship between self-forgiveness and physical and mental health, Davis et al. (2015) demonstrated that self-forgiveness may serve as a coping strategy that improves general well-being, with findings showing robust associations between self-forgiveness and distress, such as mental health problems and shame. Hook et al. (2015) explored the role of self-forgiveness in hypersexual behavior using a sample of individuals that reported violating their sexual values. Results showed that self-forgiveness may be negatively associated with shame and hypersexual behavior and that the association between self-forgiveness and hypersexual behavior was mediated by participants’ shame levels. Their findings highlighted the unique role of self-forgiveness in reducing maladaptive sexual shame in those who struggle with hypersexual behavior (Hook et al., 2015).

In light of the research suggesting that self-forgiveness may serve as a coping strategy that can reduce individuals’ shame levels (Davis et al., 2015), that the relationship between self-forgiveness and hypersexual behavior may be mediated by sexual shame (Hook et al., 2015), and the possibility that self-forgiveness can lower distress levels in those experiencing shame as a product of their morally incongruent behavior (Hall & Fincham, 2005), the present research included an exploratory analysis of the possible moderating influence of self-forgiveness on the relationship between pornography use and sexual shame. Specifically, the present study explored the degree to which possessing the ability to forgive oneself moderates the degree to which pornography use is associated with sexual shame. It was expected that individuals high in self-forgiveness would show lower levels of sexual shame as a product of their pornography use, which was expected to be associated with subsequent increases in sexual and relationship satisfaction.

### **Hypotheses**

Drawing on these theoretical perspectives, six hypotheses were developed to assess the proposed moderated mediation model in which the relationship between pornography use and relationship satisfaction, mediated by sexual shame, and then sexual satisfaction is moderated by moral disapproval of pornography. Further, for exploratory purposes, the study included an examination of whether or not self-forgiveness moderated the effect of pornography use on sexual shame. Based on the review above, the following hypotheses were developed related to pornography use and couples’ satisfaction.

They include:

H1: Consistent with the nature of the moderated mediation model, it was hypothesized that pornography use would have a negative effect on relationship satisfaction through the moderating

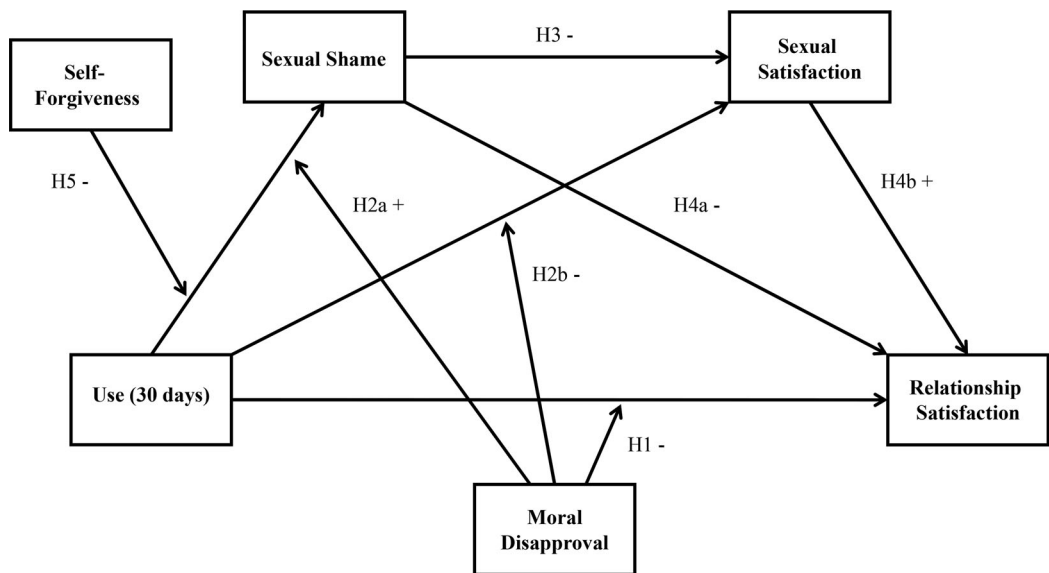


Figure 1. Conceptual model.

effect of moral disapproval (H1). That is that the direct effect of pornography use on relationship satisfaction would vary significantly as a function of moral disapproval. Specifically, it is expected that support would be found for a conditional direct effect of use on relationship satisfaction in which a significant relationship between use and relationship satisfaction is conditioned on higher levels of moral disapproval.

- H2: Pornography use will be associated with increased sexual shame as a product of the moderating influence of moral disapproval (H2a). In other words, it was hypothesized that the direct effect of pornography use on sexual shame would be moderated by moral disapproval, evidencing that this effect varies as a function of moral disapproval. Specifically, it is hypothesized that this effect will be conditioned on high (84<sup>th</sup>) levels of moral disapproval. Consistent with the logic of the mediation pathway, it is also expected that pornography use would be associated with decreased sexual satisfaction as a product of the moderating influence of moral disapproval (H2b). In other words, it was hypothesized that the direct effect of pornography use on sexual satisfaction would be moderated by moral disapproval, evidencing that this effect varies as a function of moral disapproval. Specifically, it is hypothesized that this direct effect will be conditioned on high levels of moral disapproval.
- H3: Sexual shame would be found to have a negative direct effect on sexual satisfaction levels. That is, as sexual shame levels increase, sexual satisfaction levels would diminish.
- H4: Sexual shame would have a significant negative direct effect on participants' relationship satisfaction levels. In other words, high levels of sexual shame would be associated with lower levels of relationship satisfaction (H4a). In addition, sexual satisfaction levels would have a significant positive direct effect on relationship satisfaction (H4b).
- H5: It was hypothesized that pornography use would have a significant direct effect on sexual shame as a product of the moderating influence of self-forgiveness (H5). That is, the direct effect of pornography use on sexual shame will vary significantly as a function of self-forgiveness. Specifically, it is hypothesized that for those high in self-forgiveness, pornography use would be associated with lower levels of sexual shame. In other words, the strength of the effect of pornography use on sexual shame will vary as a function of the degree to which participants have a tendency to forgive themselves for their perceived transgressions.



H6: It is expected that findings would provide support for the proposed moderated mediation model in which the indirect effect of pornography use on relationship satisfaction, through the mediating influence of sexual shame and sexual satisfaction, will be moderated by the degree to which participants morally disapprove of pornography use. That is, it is hypothesized that the indirect effect of pornography use on relationship satisfaction will not only be mediated by sexual shame and sexual satisfaction, but that also that this indirect effect will vary significantly as a function of moral disapproval. Specifically, it is expected that conditional indirect effect of pornography use on relationship satisfaction, through the proposed mediators, will be conditioned on high levels of moral disapproval.

Figure 1 presents a conceptual model of these hypotheses, illustrating a moderated mediation model in which the indirect effect of pornography use on relationship satisfaction, mediated by sexual shame, then sexual satisfaction is moderated by both moral disapproval. This conceptual model also includes an illustration of the hypothesized direct effect of use on sexual shame moderated by self-forgiveness.

## Method

### Participants

The sample included 493 participants, consisting of 220 males (44.6%) and 273 females (55.4%) recruited online from Amazon Mechanical Turk (MTurk). The data utilized for analysis were part of a larger study that included other measures that are not used in the present research. After removing responses that were incomplete, respondents that showed signs of inattentive responding, and participants that did not meet the criteria for the study (did not report using pornography in the last 6 months and being in a committed relationship), the final sample size was 493. Each participant was rewarded one dollar as compensation for participating in the present study.

In terms of relationship status, participants indicated either married/life partner (66.1%) or in a monogamous dating relationship (33.9%). As stated, all participants indicated intentionally using pornography in the last 6 months. The age of the sample ranged from 19 to 72 years, with a mean age of 35. The majority of the participants identified as Caucasian (78.9%), followed by African American (6.9%), Asian (4.9%), Hispanic or Latino (6.7%), Native American (.4%), and other (2.2%).

## Measures

### Pornography use

Pornography use was measured using a single-item questionnaire in which participants were asked to indicate, in terms of frequency, how many times they used pornography in the previous month (i.e., “within the past month, how many times have you intentionally viewed pornography online?”). This single-item pornography use measure required that participants indicate, using a five-point Likert scale, their frequency of use from 1 (0 times) to 5 (more than 10 times). Previous research has utilized this same method of measuring pornography use and found significant associations with psychological distress factors, moral disapproval of pornography, and relationship satisfaction (see Guidry et al., 2019). In order to be eligible for participation, participants had to indicate using pornography in the last six months; however, the independent variable for the present study measured the frequency of pornography use in the last 30 days. As such, participants that indicated not using pornography in the last 30 days but did indicate using pornography in the last six months were still included in the analysis.

**Table 1.** Pearson's  $r$ , means, and standard deviations.

	1	2	3	4	5	6
(1) 30-Day Use	1					
(2) Self-Forgiveness	-.038	1				
(3) Moral Disapproval	-.396**	.011	1			
(4) Sexual Shame	-.024	-.459**	.206**	1		
(5) Sexual Satisfaction	-.033	.283**	-.060	-.447**	1	
(6) Couples Satisfaction	-.091*	.215**	-.017	-.380**	.629**	1
Mean	2.620	28.361	2.577	2.438	3.487	60.647
SD	1.475	7.060	1.851	.932	.889	17.038
Cronbach's $\alpha$		.82	.96	.85	.96	.78

\*Correlation is significant at the .05 level (2-tailed).

\*\*Correlation is significant at the .01 level (2-tailed).

### ***Moral disapproval of pornography***

Participants' moral disapproval of pornography, the degree to which they morally or ethically objected to the use of pornography, was measured using a 4-item, unidimensional scale developed by Grubbs et al. (2015b). Using a 7-point Likert scale, ranging from 1 (not at all) to 7 (extremely), participants were asked to rate the degree that each statement was "like me." As the present sample includes individuals with a diverse array of religious backgrounds, the religion-neutral adaption of the scale (Volk et al., 2016) was utilized in which the four statements that reference Christianity and sin were modified to include statements concerning the wrongness of pornography. The four religious-neutral statements include: "viewing pornography violates my personal values," "viewing pornography is morally wrong," "viewing pornography troubles my conscience," and "viewing pornography is inappropriate." This measure was scored by taking the average score across all four items. The Cronbach's alpha coefficient was .96 for the current sample, indicating good internal consistency (see Table 1 for descriptive statistics).

### ***Sexual shame***

The Kyle Inventory of Sexual Shame (KISS; Kyle, 2013) was utilized as the measure of sexual shame for the present study. The KISS is a 20-item, unidimensional scale comprised of statements that serve to measure individuals' levels of sexual shame in both the past (e.g., "I feel ashamed about having sex with someone when I didn't want to") and present (Kyle, 2013; e.g., "I feel ashamed about my sexual fantasies"). The items comprising the KISS measure experiential shame by having participants rate their level of agreement with each statement using a 7-point Likert scale, with scores ranging from (1) strongly disagree to (7) strongly agree. The KISS is scored by taking the average score across all items (see Table 1 for descriptive statistics). Scores on the KISS have been shown to provide evidence for internal consistency in previous research (Kyle, 2013). Consistent with this, the Cronbach's alpha coefficient was .85 for the current sample, indicating good internal consistency (see Table 1 for descriptive statistics).

### ***Sexual satisfaction***

Sexual satisfaction was measured using the New Sexual Satisfaction Scale (NSSS) developed by Stulhofer, Busko, and Brouillard (2010). The NSSS is comprised of 20 self-report items that require participants to respond to their level of satisfaction in multiple domains of sexual behavior. The NSSS is comprised of a list of items pertaining to different aspects of sexual satisfaction. Participants are asked to indicate, using a 5-point Likert Scale, their level of satisfaction from (1) not at all satisfied to (5) extremely satisfied for each item. The NSSS measures sexual satisfaction in various domains, such as emotional closeness (e.g., "My partner's emotional opening up during sex"); sexual activity in terms of variety, frequency, intensity, duration, and experimentation (e.g., "The variety of my sexual activity"); and the quality of sexual experience ("The frequency of my orgasms"). Participants' scores on the 20 items were summed and averaged to obtain participants'

total sexual satisfaction score, which ranges from 1 to 5, with higher scores indicating higher levels of sexual satisfaction and lower scores indicating significant sexual dissatisfaction. The Cronbach's alpha coefficient was .96 for the current sample (see [Table 1](#)).

### **Relationship satisfaction**

The Couples Satisfaction Index (CSI) was used to measure participants' relationship satisfaction. The CSI is a 32-item, unidimensional scale developed by Funk and Rogge (2007) that measures participants' level of couples' satisfaction. For the purposes of this study, the brief 16-item version (CSI-16) was used. Like the original CSI, the first item on the CSI-16 measures general happiness with one's relationship and begins with the prompt, "please indicate the degree of happiness, all things considered, of your relationship." Participants are instructed to indicate, using a Likert scale with scores ranging from 0 to 6, their respective level of happiness with the relationship. The following 15-items on the CSI-16 serve to measure participants level of satisfaction in multiple aspects of their relationship, such as perceptions of the strength of their relationship (e.g., "Our relationship is strong") and the degree to which one feels their needs are being met within the relationship (e.g., "How well does your partner meet your needs?"). Participants are instructed to respond using a Likert scale with scores ranging from 0 to 5. The CSI-16 is scored by summing the responses across all 16 items, with scores ranging from 0 to 81, with higher scores indicating greater levels of relationship satisfaction and scores below 51.5, suggesting significant relationship dissatisfaction. The Cronbach's alpha coefficient was .78 for the current sample (see [Table 1](#)).

### **Self-forgiveness**

Self-forgiveness was measured using the Heartland Forgiveness Scale (HFS) developed by (Thompson, Snyder, & Hoffman, 2005). The HFS is a multi-dimensional scale that measures individuals' dispositional forgiveness, general tendency to forgive, and is comprised of 18-items divided into three six-item subscales (Forgiveness of Self, Forgiveness of Others, and Forgiveness of Situations). For the purposes of the present study, only the Forgiveness of Self subscale (HFS-Self) was used to measure the degree to which individuals tend to forgive themselves for their perceived moral failures. The HFS consists of response statements to negative events (e.g., "I hold grudges against myself for negative things I've done" and "It is really hard for me to accept myself once I've messed up"), and participants are asked to indicate the degree to which each response reflects how they would typically respond on a 7-point Likert scale, with scores ranging from 1 (Almost always false of me) to 7 (Almost always true of me). For the HFS-Self subscale, participants' scores on each of the six items of the HFS were added together to calculate their HFS-Self score. The Cronbach's alpha coefficient was .82 for the current sample (see [Table 1](#)).

## **Results**

A series of regression analyses were performed to assess the degree to which sexual shame and sexual satisfaction mediated the relationship between pornography use and couple satisfaction, and to what degree this indirect effect was moderated by moral disapproval. Also, the present study assessed whether or not self-forgiveness moderated the proposed serial mediation model. This was done in order to assess whether or not the direct and indirect effect of pornography use on relationship satisfaction, through the proposed mediators, varies significantly as a function of moral disapproval and or self-forgiveness. That is, whether a conditional direct or indirect effects exists in which significant associations depend on certain values of each of the moderators. Hayes' (2018) process macro (version 3) was used to address each of the previously outlined hypotheses. Hayes' (2018) process macro (version 3) was applied to generate regression coefficients, *p*-values, and confidence intervals (10,000 bias-corrected bootstrap samples) for each of

the necessary regressions for testing the proposed moderated mediation model. All of the included variables were mean-centered. Pearson correlations, means, and standard deviations for each of the model's variables were calculated (see Table 1).

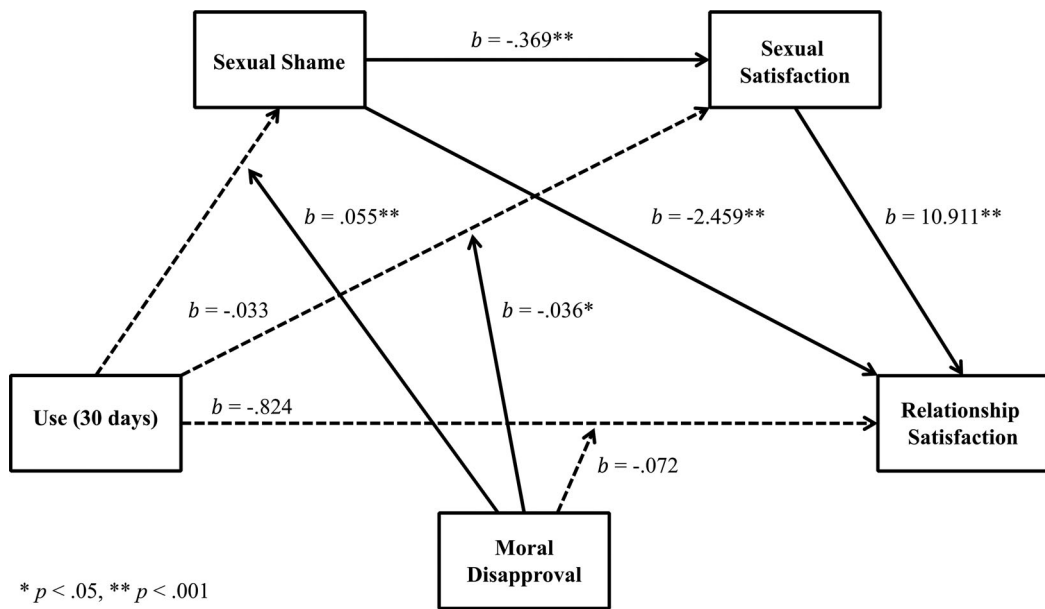
A Pearson  $r$  correlation was utilized to assess the relationship between the variables that comprise the present study's model. As expected, findings showed that users' perception of the frequency of their pornography use was significantly negatively correlated with their relationship satisfaction levels ( $r = -.091, p < .05$ ) and levels of moral disapproval of pornography ( $r = -.396, p < .01$ ). Further, consistent with the expected association between the model's variables, moral disapproval of pornography was found to be significantly positively correlated with sexual shame ( $r = .206, p < .01$ ), sexual shame was found to be significantly negatively correlated with both sexual ( $r = -.447, p < .01$ ) and relationship ( $r = -.380, p < .01$ ) satisfaction, and consistent with expectations, sexual satisfaction was found to be significantly positively correlated with relationship satisfaction ( $r = .629, p < .05$ ). Lastly, as expected self-forgiveness was found to be significantly negatively correlated with sexual shame ( $r = -.459, p < .01$ ).

### Sexual shame

It was hypothesized that pornography use would be associated with increased sexual shame through the moderating effect of moral disapproval (H2a). That is that the direct effect of frequency of pornography use on sexual shame would vary significantly as a function of moral disapproval, suggesting evidence for a significant interaction effect. Specifically, it was hypothesized that this conditional direct effect of pornography use on sexual shame would be conditioned on high levels of moral disapproval (84<sup>th</sup> percentile). Consistent with expectations, process model results indicated that pornography use on its own did not have a significant effect on sexual shame ( $b = .049, SE = .027, CI = [-.004 \text{ to } .102]$ ); however, consistent with expectations, results showed that the effect of use on sexual shame varies significantly, in the hypothesized direction, as a function of moral disapproval ( $b = .055, SE = .015, CI = [.026 \text{ to } .084]$ ). That is, the interaction of frequency of pornography use and moral disapproval transmits a significant effect on sexual shame (see Table 2 and Figure 2). We used the pick-a-point approach (16<sup>th</sup>, 50<sup>th</sup>, and 84<sup>th</sup>) for examining the significant interaction (Cohen, Cohen, West, & Aiken, 2003; Hayes, 2018). Hayes (2018) process macro generated confidence intervals for the conditional effect of pornography use on relationship satisfaction at each level of moral disapproval (16<sup>th</sup>, 50<sup>th</sup>, 84<sup>th</sup>) to estimate the conditional direct effect. For the distribution of the measure of moral disapproval utilized for the present study, the 16<sup>th</sup> percentile represented a score of 1, 50<sup>th</sup> percentile represented a score of 2, and 84<sup>th</sup> percentile represented a score of 4.5, respectively. Further, for the

**Table 2.** Conditional process analysis results for moderated mediation model.

Source	<i>b</i>	<i>se</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
KISS: $R = .527, R^2 = .278, MSE = .632, F(4, 488) = 36.966, p < .001$						
30 Day Use	.049	.027	1.815	.070	-.004	.102
Moral Disapproval (MD)	.145	.022	6.465	<.001	.101	.189
30 Day Use $\times$ MD	.055	.015	3.744	<.001	.026	.084
Sexual Satisfaction: $R = .467, R^2 = .219, MSE = .624, F(5, 487) = 27.239, p < .001$						
30 Day Use	-.033	.027	-1.237	.217	-.086	.020
Sexual Shame	-.369	.045	-8.206	<.001	-.457	-.281
Moral Disapproval (MD)	-.017	.023	-.739	.460	-.063	.029
30 Day Use $\times$ MD	-.036	.015	-2.430	.015	-.065	-.007
CSI: $R = .644, R^2 = .414, MSE = 172.176, F(6, 486) = 57.251, p < .001$						
30 Day Use	-.824	.446	-1.847	.065	-1.700	.053
Sexual Shame	-2.459	.797	-3.085	.002	-4.025	-.893
Sexual Satisfaction	10.911	.753	14.494	<.001	9.432	12.390
Moral Disapproval (MD)	.129	.387	.335	.738	-.630	.889
30 Day Use $\times$ MD	-.072	.247	-.292	.771	-.556	.413

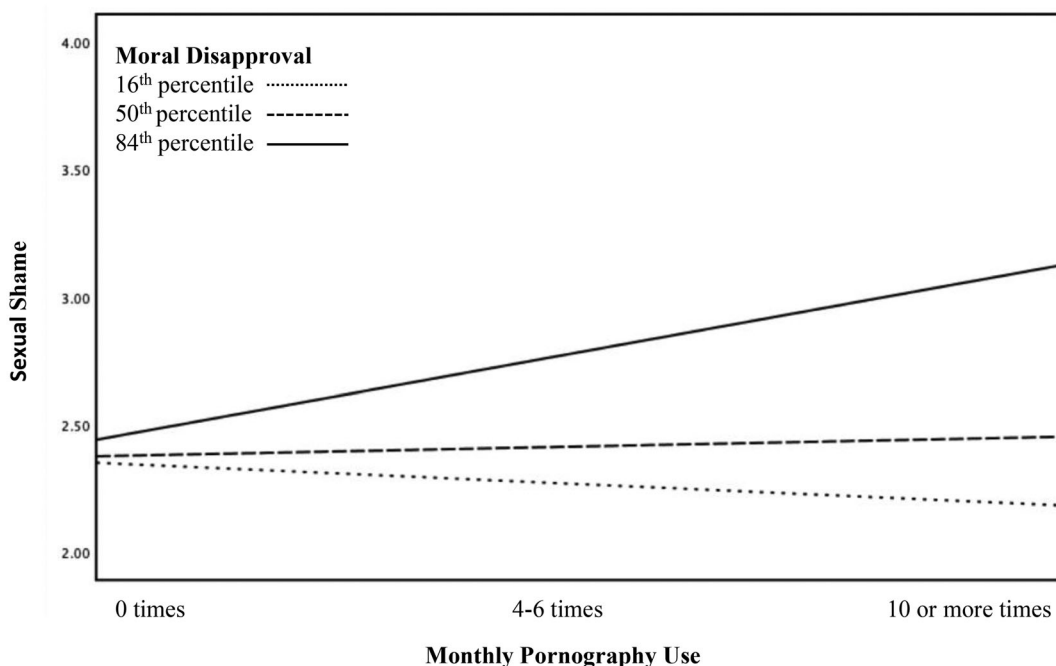


**Figure 2.** Moderated mediation model.

distribution of frequency of pornography use in the last 30 days, the 16<sup>th</sup> percentile represented a frequency of 0 times, 50<sup>th</sup> percentile represented a frequency of 1 to 3 times, and 84<sup>th</sup> percentile represented 10 or more times. A test of the conditional effect of pornography use on sexual shame at values of moral disapproval indicated that at low (16<sup>th</sup> percentile) to moderate (50<sup>th</sup> percentile) levels of moral disapproval, pornography use was not significantly related to sexual shame. In support of what was hypothesized (H2a), findings suggest that the conditional direct effect of pornography use on sexual shame is conditioned on high (84<sup>th</sup> percentile) levels of moral disapproval. That is, a significant conditional direct effect was only found at high levels of moral disapproval (84<sup>th</sup> percentile), as it was the only conditioned slope that had confidence intervals that did not include zero. Figure 3 provides a visual depiction of this conditional direct effect in which a significant effect only occurs at the 84<sup>th</sup> percentile of moral disapproval. Taken together, findings suggest that, amongst those high in morally disapproval of pornography, pornography use is associated with elevated levels of sexual shame (See Figure 3).

### Sexual satisfaction

It was hypothesized that pornography use would be associated with decreased sexual satisfaction through the moderating effect of moral disapproval (H2b). That is that the direct effect of frequency of pornography use on sexual satisfaction would vary significantly as a function of moral disapproval, suggesting evidence for a significant interaction effect. Specifically, it was hypothesized that the conditional direct effect of pornography use on sexual satisfaction would be conditioned on high levels of moral disapproval (84<sup>th</sup> percentile). Similar to findings concerning sexual shame, pornography use on its own was found to not be significantly associated with sexual satisfaction levels ( $b = -.033$ ,  $SE = .027$ ,  $CI = [-.086 \text{ to } .020]$ ); however, consistent with expectations, results showed that the effect of use on sexual satisfaction varies significantly, in the hypothesized direction, as a function of moral disapproval ( $b = -.036$ ,  $SE = .015$ ,  $CI = [-.065 \text{ to } -.007]$ ). That is, the interaction of frequency of pornography use and moral disapproval transmits a significant effect on sexual satisfaction (see Table 2). Again, we used the pick-a-point approach (16<sup>th</sup>, 50<sup>th</sup>, and 84<sup>th</sup>) for examining the significant interaction (Cohen et al., 2003; Hayes, 2018). A test of the



*Note.* for the distribution of moral disapproval, percentiles represent a score of 1.0 (16<sup>th</sup>), 2.0 (50<sup>th</sup>), and 4.5 (84<sup>th</sup>).

**Figure 3.** Interaction effects of pornography use and moral disapproval moderation on sexual shame.

conditional direct effect of use on sexual satisfaction at values of moral disapproval indicated that when moral disapproval was low (16<sup>th</sup> percentile) to moderate (50<sup>th</sup> percentile), pornography use was not significantly related to sexual satisfaction. Consistent with what was hypothesized (H2b), findings suggest that the conditional direct effect of pornography use on sexual satisfaction is contingent on high (84<sup>th</sup> percentile) levels of moral disapproval, indicating that when moral disapproval is high, pornography is associated with decreased sexual satisfaction. Results show that a significant conditional direct effect was only found for the slope representing high levels of moral disapproval (84<sup>th</sup> percentile), as the slope representing high moral disapproval was the only slope that contained confidence intervals that did not include zero. Figure 4 provides a visual of this conditional direct effect in which a significant effect only occurs at the 84<sup>th</sup> percentile. Findings suggest amongst those high in moral disapproval of pornography that pornography use is associated with poorer sexual satisfaction (See Figure 4).

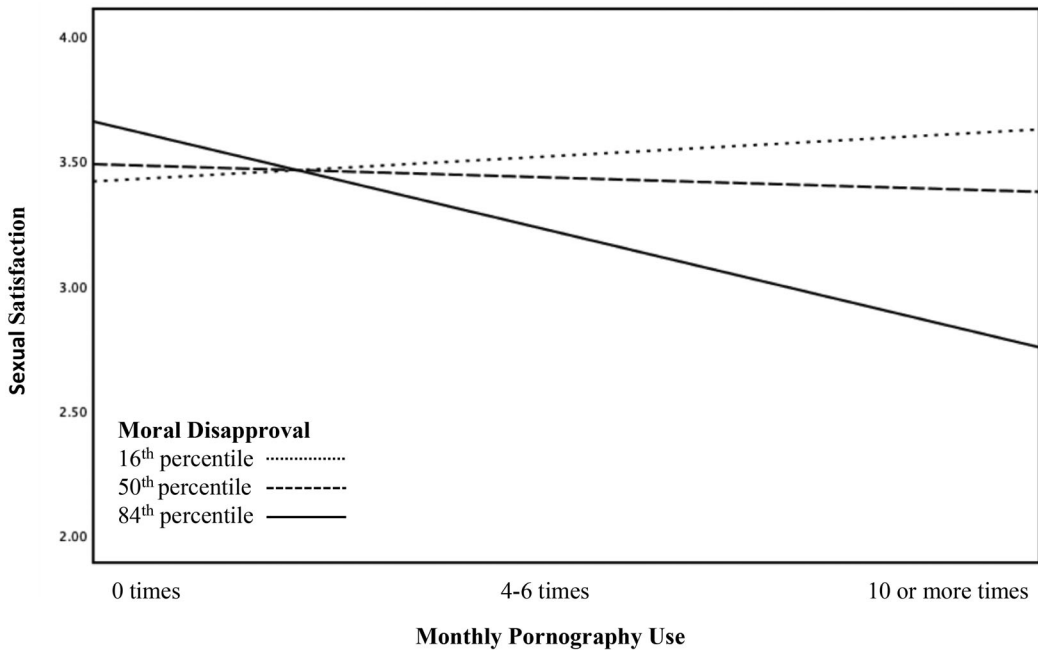
Further, it was hypothesized (H3) that results would suggest that sexual shame has a negative direct effect on sexual satisfaction. In other words, as sexual shame levels increase, sexual satisfaction would diminish. In support of what was hypothesized (H3), findings showed that sexual shame had a significant negative direct effect on sexual satisfaction ( $b = -.369$ ,  $SE = .045$ ,  $CI = [-.457 \text{ to } -.281]$ ); indicating that, amongst those who report using pornography, sexual shame levels are associated with reduced sexual satisfaction.

### Couples satisfaction

#### Sexual shame and sexual satisfaction

It was hypothesized that both sexual shame and sexual satisfaction would be differentially predictive of relationship satisfaction. Specifically, it was hypothesized that higher levels of sexual shame





Note. for the distribution of moral disapproval, percentiles represent a score of 1.0 (16<sup>th</sup>), 2.0 (50<sup>th</sup>), and 4.5 (84<sup>th</sup>).

**Figure 4.** Interaction effects of pornography use and moral disapproval moderation on sexual satisfaction.

would be associated with decreased couples' satisfaction, and higher levels of sexual satisfaction would be associated with increased levels of relationship satisfaction. Consistent with expectations, results showed that sexual shame had a significant negative direct effect on relationship satisfaction ( $b = -2.459$ ,  $SE = .797$ ,  $CI = [-4.025 \text{ to } -.893]$ ), and that sexual satisfaction had a significant positive direct effect on relationship satisfaction ( $b = 10.911$ ,  $SE = .753$ ,  $CI = [9.432 \text{ to } 12.390]$ ). That is, findings provide support for Hypothesis 4a and 4b, suggesting that sexual shame may negatively impact relationship satisfaction and that sexual satisfaction levels influences the degree to which romantic partners are satisfied with their relationship.

In terms of the direct effect of pornography use in the last 30 days on relationship satisfaction levels, findings showed that, on its own, pornography use did not have a significant direct effect on relationship satisfaction ( $b = -.824$ ,  $SE = .446$ ,  $CI = [-1.700 \text{ to } .053]$ ). Also, results indicated that pornography use did not have a conditional direct effect on relationship satisfaction, with findings suggesting that the direct effect of pornography use on relationship satisfaction does not vary significantly based on the moderating effect of moral disapproval ( $b = -.072$ ,  $SE = .247$ ,  $CI = [-.556 \text{ to } .413]$ ). As the interaction of use and moral disapproval was not found to transmit a significant effect of relationship satisfaction, findings did not provide support for Hypothesis 1.

### **Moderated mediation**

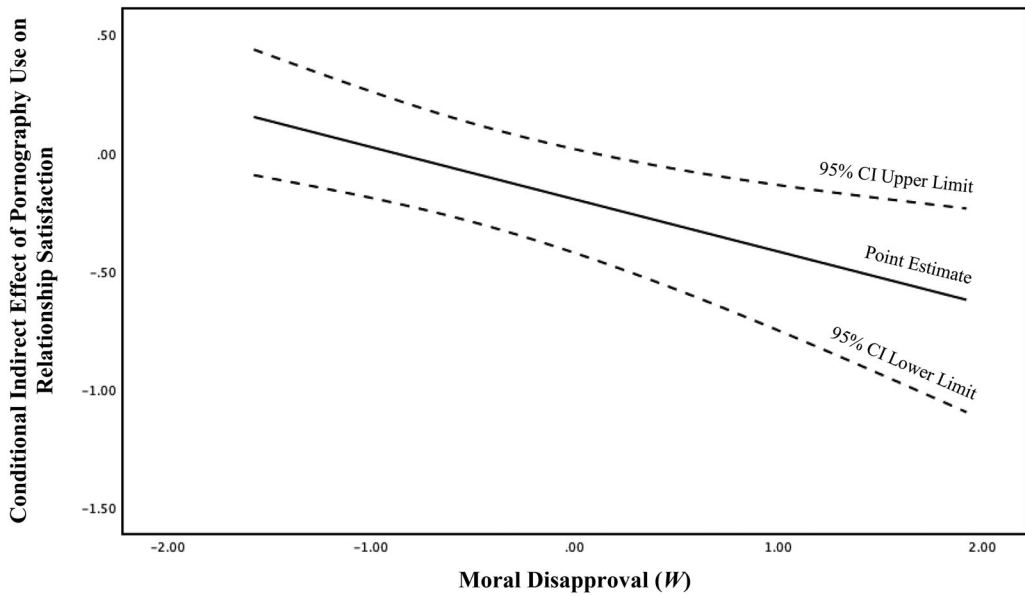
It was hypothesized that the direct effect of frequency of pornography use on sexual shame would vary as a function of self-forgiveness (H5); that is, the interaction of pornography use and self-forgiveness would transmit as significant effect on sexual shame levels. Specifically, it was expected that self-forgiveness would attenuate the strength of the direct effect of pornography use on sexual shame, indicating that, when self-forgiveness was high, pornography use would not be significantly associated with elevated levels of sexual shame. In contrast to what was hypothesized

(H5), findings did not indicate that pornography use had a significant conditional direct effect on sexual shame as a function of self-forgiveness ( $b = -.036$ ,  $SE = .015$ ,  $CI = [-.065 \text{ to } -.007]$ ). Hypothesis 5 was not supported. Further, regression analysis included an examination of whether or not self-forgiveness moderated the indirect effect pornography use on relationship satisfaction. Hayes' (2018) index of partial moderated mediation indicated that the effect of pornography use on relationship satisfaction, through sexual shame and sexual satisfaction, was not significantly moderated by self-forgiveness ( $b = -.023$ ,  $SE = .015$ ,  $CI = [-.053 \text{ to } .005]$ ), indicating that self-forgiveness may not attenuate the degree to which pornography users experience sexual shame and subsequent relational distress.

Although the goal of this study was to assess whether the indirect effect of pornography use on relationship satisfaction through both sexual shame and sexual satisfaction would be moderated by moral disapproval of pornography use (H6), regression analysis also computed indices of moderated mediation for the indirect effect of pornography use on relationship satisfaction separately for each mediator. Hayes' (2018) index of moderated mediation indicated that the indirect effect of pornography use on relationship satisfaction, through sexual shame ( $b = -.135$ ,  $SE = .067$ ,  $CI = [-.284 \text{ to } -.028]$ ) and sexual satisfaction ( $b = -.391$ ,  $SE = .201$ ,  $CI = [-.807 \text{ to } -.018]$ ) was moderated by moral disapproval of pornography. That is, consistent with the logic of the proposed model, the findings support that the indirect effect of pornography use on relationship satisfaction, mediated by sexual shame, is moderated by moral disapproval and that the indirect effect of pornography use on relationship satisfaction, mediated by sexual satisfaction, is also moderated by moral disapproval. Further, findings indicated that not only do these indirect effects vary significantly as a function of moral disapproval but that both the indirect effect of use on relationship satisfaction through sexual shame and the indirect effect of use on relationship satisfaction through sexual satisfaction are conditioned on high (84<sup>th</sup>) levels of moral disapproval.

As stated, we hypothesized that the full indirect effect of pornography use on relationship satisfaction through both sexual shame and then sexual satisfaction would be moderated by moral disapproval of pornography use (H6), providing support for the present study's theoretical model. As expected, Hayes' (2018) index of moderated mediation indicated that the effect of pornography use on relationship satisfaction through sexual shame and sexual satisfaction ( $b = -.221$ ,  $SE = .079$ ,  $CI = [-.387 \text{ to } -.082]$ ) was moderated by moral disapproval of pornography, suggesting that the model's indirect effect varies significantly as a function of moral disapproval. As findings provided evidence of moderation of the indirect effect, a follow up test, using the pick-a-point approach, for probing this moderation of mediation was conducted in which confidence intervals for the conditional indirect effect of pornography use on relationship satisfaction at each level of moral disapproval (16<sup>th</sup>, 50<sup>th</sup>, and 84<sup>th</sup> percentile) were generated to estimate the conditional indirect effect of pornography use at those values. See [Figure 5](#) for a visual depiction of the conditional indirect effect of pornography use ( $X$ ) on relationship satisfaction ( $Y$ ) through sexual shame and sexual satisfaction as a function of moral disapproval ( $W$ ). For clarity, the 16<sup>th</sup>, 50<sup>th</sup>, and 84<sup>th</sup> percentiles of the distribution of moral disapproval represented a score of 1, 2, and 4.5 on the measure of moral disapproval, respectively. Consistent with what was hypothesized, findings indicated that the conditional indirect effect of pornography use on relationship satisfaction, through the putative mediators (sexual shame and sexual satisfaction) was conditioned on high levels of moral disapproval, suggesting the that the moderation of the indirect effect of pornography use on relationship satisfaction is contingent on high moral disapproval.

Results suggest that the indirect effect of pornography use on relationship satisfaction through the proposed mediators is negatively related to the moderator, indicating that when moral disapproval of pornography is high, moral disapproval negatively moderates the mediation pathway. Regression results provide further support that pornography users who continue to use pornography despite strongly disapproving of it morally may be more likely to experience increased levels



**Figure 5.** The conditional indirect effect of pornography use (X) on relationship satisfaction (Y) through sexual shame and sexual satisfaction as a function of moral disapproval (W).

of sexual shame, which might lead to decreased sexual satisfaction, ultimately leading to decreased relationship satisfaction between romantic partners. Results lend support for Hypothesis 6.

## Discussion

Although the present study contributes and extends upon prior research concerning moral incongruence theory, there are some notable methodological limitations, in terms of causal inference, that should preface a discussion of findings. The present study utilized cross-sectional data and data collection occurred at a single point in time; as such, findings are limited by an inability to provide evidence for temporal precedence between the model's variables. It should be noted that the causal direction of the established associations may not be the only valid configuration of the included constructs. Although the model's variable placement is consistent with prior research on and conceptualizations of the influence of moral incongruence on the relationship between pornography use and adverse outcomes, a possibility exists for reversed association and bidirectionality between constructs. For example, some research indicates that the relationship between pornography use and relationship satisfaction may be bidirectional, with findings suggesting that poorer relationship quality is associated with heightened levels of pornography use (Muusses et al., 2015; Peter & Valkenburg, 2009). Still, by providing evidence of covariation between the variables included, model findings shed light on a possible sequence by which pornography use, amongst those who morally disapprove of its use, may influence intra- and inter-personal outcomes, contributing the body of research that has sought to establish covariation between these associated constructs. While findings have significant implications, it is recommended that future research be conducted using experimental methodology in order to provide evidence for the temporal relationships outlined.

The present study aimed to expand on previous research examining the possible mediating and moderating variables in the relationship between pornography use and relationship satisfaction. Specifically, we tested a moderated mediation model in which it was hypothesized that the association between pornography use and relationship satisfaction would be mediated by

participants' sexual shame and sexual satisfaction levels and that this indirect effect would be moderated by participants' moral disapproval of pornography use. For exploratory purposes, we also included self-forgiveness as a moderator of the relationship between pornography use and sexual shame in order to assess whether or not participants' ability to forgive themselves for their perceived moral failures, concerning their pornography use, attenuates the degree to which pornography use will lead to elevated levels of sexual shame.

As previously stated, a Pearson  $r$  correlation was utilized to assess the relationship between the variables that comprise the present study's model. As expected, findings showed that users' perception of the frequency of their pornography use was significantly negatively correlated with their levels of moral disapproval of pornography and their relationship satisfaction levels, moral disapproval of pornography was found to be significantly positively correlated with sexual shame and sexual shame was found to be significantly negatively correlated with both sexual and relationship satisfaction. Consistent with the proposed model sequence, sexual satisfaction was also found to be significantly positively correlated with relationship satisfaction; however, the correlation between the frequency of pornography use and sexual satisfaction was not only non-significant but also notably weak, while the correlation between frequency of use and relationship satisfaction was significant. Similar findings have been found in previous research assessing the relationship between perceptions of the frequency of use and sexual and relationship satisfaction; for example, while Stewart and Szymanski (2012) found a significant negative correlation between women's perceptions of their partner's frequency of pornography use and relationship satisfaction, results showed that the correlation between frequency of use and sexual satisfaction was non-significant. Similarly, Perry and Whitehead (2019) found that, for women, frequency of use was not significantly correlated with sexual satisfaction; however, this correlation was found to be significantly negative amongst male respondents.

Much of the previous research has indicated that pornography use may be associated adverse romantic partner outcomes (Schneider, 2000; Willoughby et al., 2016; Maddox et al., 2011; Perry, 2017b), with findings associating pornography use with reduced relationship satisfaction (Doran & Price, 2014; Perry, 2016, 2017b) and romantic partner separation (Duffy et al., 2016; Perry & Schleifer, 2018). In contrast to these past findings, model results did not provide support for a significant direct effect of pornography use on couples' satisfaction. In addition, no support was found for our first hypothesis (H1) that pornography use would be negatively associated with couples' satisfaction through the moderating influence of moral disapproval. However, the overall regression was found to be statistically significant.

Consistent with the research suggesting that continued pornography use amongst those who morally disapprove its use can lead to increased feelings of sexual shame (Fisher et al., 2019; Volk et al., 2016), support was found for hypothesis H2a, that moral disapproval would moderate the direct effect of pornography use on sexual shame. Findings indicate that amongst those high in moral disapproval of pornography, pornography use may be associated with increased sexual shame due to participants' perceived moral incongruence. Further support was found for hypothesis H2b, that moral disapproval would moderate the direct effect of pornography use on sexual satisfaction. Findings indicated that the relationship between use and decreased sexual satisfaction was conditioned on high levels of moral disapproval of pornography, which is consistent with previous research suggesting that the degree to which pornography use is associated with decreased sexual satisfaction depends, in part, on an individual's moral disapproval of pornography (Perry & Whitehead, 2019). Consistent with expectations, both the direct effect of pornography use on sexual shame and sexual satisfaction were found to be conditioned on high levels of moral disapproval (84<sup>th</sup> percentile).

Congruent with research suggesting that a negative relationship exists between sexual shame and sexual satisfaction (Gordon, 2018; Yucel & Gassanov, 2010), support was found for our third hypothesis (H3), that sexual shame would be associated with decreased sexual satisfaction. In

addition, support was found for our hypothesis that sexual shame would be associated with decreased couples' satisfaction (H4a) and that participants' level of sexual satisfaction would be significantly positively associated with their level of couple satisfaction (H4b). This is consistent with previous research indicating that sexual satisfaction may be significantly associated with couple satisfaction (Ferron et al., 2017).

In contrast to previous research indicating that self-forgiveness may lower distress levels in individuals who experience shame as a product of moral incongruence (Hall & Fincham, 2005) and those who struggle with sexual compulsivity (Hook et al., 2015), no support was found for our hypothesis (H5) that the relationship between pornography use and sexual shame would be moderated by self-forgiveness. That is, findings did not support our expectation that the direct effect of pornography use on sexual shame would decrease as a function of the moderating influence of self-forgiveness, as the interaction of pornography use and self-forgiveness did not have a significant effect on participants' sexual shame levels. Further, self-forgiveness was shown not to be a significant moderator of the indirect effect of the model.

Although findings are limited in terms of establishing cause-and-effect, based on the index of moderated mediation, support was found for the present study's moderated mediation model in which the indirect effect of pornography use on decreased relationship satisfaction, through the mediating influence of sexual shame and sexual satisfaction, is moderated by participants' level of moral disapproval of pornography. Findings lend support for hypothesis (H6) that a potential sequence may exist in which pornography use, amongst those high in moral disapproval of pornography, is associated with increased sexual shame, which is associated with decreased sexual satisfaction, leading to a subsequent reduction in couples' satisfaction. That is, findings suggest that the indirect effect of the model varied significantly as a function of moral disapproval and that his indirect effect was conditioned on high levels (84<sup>th</sup>) of moral disapproval.

Although an abundance of research exists suggesting that pornography use is associated with subsequent decrements in relationship satisfaction (Doran & Price, 2014; Perry, 2016, 2017b), contrasting research suggests that under certain conditions pornography use can lead to increased sexual and relationship satisfaction (Kohut et al., 2017; Resch & Alderson, 2014; Weinberg et al., 2010). In light of these contrasting findings concerning the conditions by which pornography use is either adaptive or maladaptive, it is incumbent on researchers to examine the possible conditions by which pornography is associated with negative outcomes. Further, there is an apparent need for experimental research on this association, as the body of research that currently exists is primarily cross-sectional, which fail to provide strong evidence of causality.

One possible explanation for the relationship between pornography use and psychological distress is consumers' level of moral disapproval of pornography (Grubbs et al., 2015b; Grubbs et al., 2017; Perry, 2017a; Volk et al., 2016). This has been termed the "moral incongruence" theory (Grubbs & Perry, 2018), and research supports that using pornography while morally disapproving of its use also exacerbates users' shame levels (Fisher et al., 2019; Guidry et al., 2019; Hook et al., 2015; Volk et al., 2016; Volk et al., 2019), which is associated with decreased sexual (Gordon, 2018; Yucel & Gassanov, 2010) and relationship satisfaction (Ferron et al., 2017; Johnson et al., 2015). Of specific interest to the present research, prior research supports that the degree to which pornography use is associated with decreased relationship quality is, in part, dependent on the users' extent of use and their degree of moral disapproval of pornography (Perry, 2018a). Consistent with this, the present study's findings are consistent with previous research demonstrating a negative relationship between pornography use and relationship satisfaction amongst individuals high in moral disapproval of pornography (Perry, 2018a; Guidry et al., 2019). Further, our findings add support to research suggesting that pornography use, especially amongst those who morally disapprove of its use, is associated with increased sexual shame (Fisher et al., 2019; Volk et al., 2016) and decreased sexual satisfaction (Perry & Whitehead, 2019).

The present study's model was based on 1) a previous model indicating that high pornography use amongst those high in moral disapproval of pornography is associated with increased distress, leading to decreased relationship satisfaction (Guidry et al., 2019); and 2) research associating moral disapproval of pornography with increased sexual shame (Volk et al., 2016; Hook et al., 2015; Grubbs et al., 2015b), sexual shame with decreased sexual satisfaction (Gordon, 2018; Yucel & Gassanov, 2010), and low sexual satisfaction with decreased couple satisfaction (Ferron et al., 2017). Findings lend support to the "moral incongruence" theory, demonstrating support for a possible sequence by which excessive pornography use amongst those who morally disapprove of pornography use is associated with increased sexual shame and subsequent reductions in sexual satisfaction, which is associated with decreased relationship satisfaction (Guidry et al., 2019). That is, findings point toward individuals' moral disapproval of pornography as the determining factor in whether or not pornography use will be associated with decreased sexual and relationship satisfaction.

Findings have unique implications for religious individuals, as research shows the relationship between pornography use and adverse relationship outcomes tends to be stronger for those who report being religious (Doran & Price, 2014; Patterson & Price, 2012; Perry, 2016). Specifically, findings show that being religious exacerbates the negative association between use, sexual satisfaction (Perry & Whitehead, 2019; Wright et al., 2018), and relationship satisfaction (Perry, 2016).

## Limitations

Despite the significant findings concerning the present study's moderated mediation model, which extends previous research on the factors influencing the relationship between pornography use and relationship outcomes, the study has limitations that are worth noting. First, our model utilized cross-sectional data. Due to this, causality cannot be inferred between the model's various constructs. Considering that the theoretical framework of our model implies temporal precedence and that cross-sectional data, rather than longitudinal or experimental data, was utilized, the validity and reliability of findings are limited. Although the temporal relationships between the model's constructs were strongly supported by empirical literature, it is recommended that future research test the present study's model using a longitudinal design, as a longitudinal design would allow for measurement of the strength of the associations between the model's variables over time. Still, in order to provide sufficient justification for the causal arrangement of variables in the present study's model, future experimental research is needed in order to provide support for the theoretical model proposed.

Further, the sample used for the purposes of this study consisted primarily of Caucasian respondents (78.9%). As such, the study's findings may not be generalizable to other ethnic groups less pronounced in our sample. In addition, the data utilized for this study was collected online; as such, it is possible that specific populations were less likely to have participated, which could reduce the generalizability of the sample. In addition, the present study did not ask romantic partners to specify whether or not they engaged in shared, concordant, or discordant use, which has been shown to play a role in positive versus negative relationship outcomes (Kohut et al., 2018). Also, self-report measures were utilized. As pornography use is a sensitive subject that individuals often shy away from discussing honestly, respondents may have felt drawn to provide socially desirable responses. Further, considering that shame was included as a mediator in our model, those with high levels of shame may have provided inaccurate responses in order to avoid experiencing shame, as research shows that individuals with excessive levels of shame may attempt to hide or conceal their shame from others (Elise, 2008). As such, the present study's findings may have been limited by dishonest, inaccurate participant responses.

Furthermore, our chosen measure of sexual shame includes items that measure sexual shame in relation to various sexual behaviors, rather than sexual shame specific to pornography use. The KISS (Kyle, 2013) measures sexual shame levels in relation to participant's previous sexual



thoughts or behaviors; however, a noted limitation of the KISS is that it is comprised of some items that confound cause and effect (Lim, 2019). Findings would have benefited from the use of a sexual shame measure specific to pornography use; however, no validated measures of this sort currently exist. A measure of sexual shame specific to pornography use would have greatly limited the possibility of confounds related to the association between pornography use and sexual shame. As such, a need exists for a coherent conceptual measure of sexual shame specific to pornography use that excludes items that measure sexual shame in relation to additional sexual behaviors. Despite the limitations discussed, the present research provides more in-depth insight into the possible mediating and moderating factors in the relationship between pornography use and decreased relationship satisfaction.

## Conclusion

The current research provides added support for previous research demonstrating that the relationship between pornography use and relationship satisfaction may be contingent on users' level of moral disapproval of their pornography use (Perry, 2018a), that sexual shame may be an unintended consequence of pornography use amongst those who continue to use it despite morally disapproving of their use (Fisher et al., 2019; Volk et al., 2016), and that sexual shame may be negatively associated with sexual (Gordon, 2018; Yucel & Gassanov, 2010) and relationship satisfaction (Ferron et al., 2017). Results underscore the possibility that individuals that use pornography while morally disapproving of its use are at increased risk of experiencing sexual shame (Volk et al., 2016; Volk et al., 2019) and decreased relationship quality (Perry, 2018a) due to resulting perceptions of moral incongruence. Further, findings suggest that pornography use, coupled with high levels of moral disapproval, may predict subsequent reductions in sexual satisfaction, which may be associated with decreased relationship satisfaction. Findings from our moderated mediation analysis are consistent with a previous model by Grubbs et al. (2019) that suggests that the source of adverse psychological and relationship outcomes associated with pornography may be consumers' subjective moral disapproval of pornography use.

Taken together, findings provide cross-sectional support for a moderated mediation model in which sexual shame and sexual satisfaction mediate the relationship between pornography use in the last 30 days and couples' satisfaction, and the strength of this indirect effect is moderated by participants' level of moral disapproval. The significant indirect effect of our model highlights the influence subjective moral judgments may have on individuals' psychological health and interpersonal relationships. As such, findings highlight the apparent need for additional studies, both longitudinal and experimental, assessing pornography use and its associated consequences. Despite the significant findings, this study was cross-sectional; as such, researchers should be wary of making causal claims concerning the relationships included in the model. Still, as the current body of research assessing the influence of moral disapproval on the association between pornography use and the adverse outcome is correlational in nature, a need exists for experimental research in order to provide evidence of causality. The significant findings concerning our model have clinical implications for the assessment and care of individuals seeking treatment for problematic pornography use and associated relationship distress.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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