

JUSTIFYING PORNOGRAPHY USE

**Justifying Pornography Use: An Exploratory Analysis of the Moderating Effect of
Relationship Satisfaction**

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Abstract

People may experience moral incongruence when they behave in ways that are inconsistent with their moral beliefs. This is particularly true for individuals that consider themselves religious. There is a significant body of research that explores distressing outcomes of pornography use when individuals morally disapprove of it. One such negative outcome is said to be diminished relationship satisfaction. However, little research considers how low levels of relationship satisfaction may actually promote increased pornography use. The present exploratory study uses a sample of participants in committed relationships to determine if relationship satisfaction moderates the frequency of pornography use and affects moral incongruence pornography users may experience. The results did not support a general assertion that the frequency of pornography use is conditional based upon the level of relationship satisfaction. There are, however, noteworthy results pertaining to female pornography use that are worthy of further research. The analysis also confirms findings from prior moral incongruence studies that identify the mediating role of moral disapproval.

Keywords: problematic pornography use, moral incongruence, pornography and relationships, religion and pornography, relationship satisfaction

Justifying Pornography Use: An Exploratory Analysis of the Moderating Effect of Relationship Satisfaction

Up to 10 percent of pornography users may seek treatment for mental health issues stemming from pornography use (Brand et al., 2019). Pornography use is not recognized as a form of behavioral addiction in the Diagnostic and Statistical Manual (DSM; APA, 2022) but is included in the International Classification of Diseases (ICD) 11 as an impulse-control disorder. Mental health professionals (i.e., counselors, psychologists, social workers) most often utilize the DSM to assess and treat clients who present to counseling (Phillips & Raskin, 2021). The lack of a diagnosable condition in the DSM often leaves mental health care professionals considering which angle or co-occurring condition (i.e., depression, anxiety) to treat to address the presenting issue of pornography use (Brand et al., 2019). Among religious pornography users, faith-based helpers also have difficulty considering various lay treatments to employ (Breed, 2022).

A review of the literature related to religiosity and pornography use shows that people who consider themselves religious tend to consider their sexual behaviors, including pornography use, incongruent with their values, regardless of the actual behavior (Grubbs & Perry, 2019). In essence religiosity may amplify the negative perception of pornography behaviors, even if it does not appear to be problematic in comparison to non-religious pornography users. The result is increased psychological distress symptoms (Grubbs & Perry, 2019). Research consistently shows that religiosity, however, is not directly related to frequency of pornography use (Borgona et al., 2020; Coleman et al., 2023; Cranney & Štulhofer, 2017; Grubbs et al., 2015, Lewczuk et al., 2021). Simply put, religious individuals who consume pornography are viewing it at similarly high rates as those who are non-religious.

Moral Incongruence

Moral incongruence is the experience one has when their behavior is inconsistent with their beliefs, and religiosity is a consistent contributor to moral incongruence pertaining to the use of pornography (Grubbs et al., 2019, Lewczuk et al., 2021, Olmstead et al., 2023).

Individuals who experience moral incongruence may tend to label their behavior as problematic or consider themselves addicted even when it is not excessive compared to other normative sexual behaviors (Coleman et al., 2023, Lewczuk et al., 2021). In other words, moral incongruence may encourage pornography consumers to view their behavior as pathological to explain it.

Grubbs and colleagues (2019) developed a research model, Pornography Problems due to Moral Incongruence (PPMI), to recognize the distress that consumers of pornography may experience as being attributed to moral incongruence rather than perceived addiction. Their intent in developing the model was to steer mental health professionals into developing treatment plans focused on resolving internal conflicts tied to moral incongruence and avoiding reinforcing perceptions of pathology or addiction. They conclude that any treatment focused only on pornography use without investigating moral incongruence is too narrow. Therefore, the authors of the current study are attempting to broaden this investigation to address moral incongruence, along with considering the moderating effect relationship satisfaction might have on moral incongruence. Simply stated, we want to explore how moral disapproval is impacted among individuals who rate their relationship satisfaction lower.

Relationship Satisfaction and Implications for Moral Incongruence

A finding of The National Couples and Pornography Study was that couples in healthier relationships are less likely to view pornography either individually or together compared to couples in relationships that are moderately healthy or unhealthy (Willoughby et al., 2021). However, the study only confirmed the type of relationships where pornography consumption was most present. Although not tested, the authors of this study theorize that those already in unhealthy relationships may attempt to use pornography to cope with frustrations or dissatisfaction with their partner. Perry (2018) supports this assertion with the finding that the frequency of pornography use is more closely associated with negative marital quality than whether one violates one's moral convictions. Volk et al. (2019) found that pornography consumers will assess their values and beliefs ahead of blaming others as it pertains to their perceived process addiction. A strained relationship may contribute to pornography consumers rationalizing (or "blaming") their behavior so that it reduces feelings of moral incongruence.

Hypotheses

The aim of the present study is to examine the moderating effect of relationship satisfaction on moral incongruence among pornography users, particularly those who consider themselves religious. The assumption is that individuals dissatisfied with their relationship will experience less moral incongruence related to pornography, thus justifying its use.

Hypothesis 1. Religiosity will be positively associated with moral disapproval of pornography.

Hypothesis 2. Moral disapproval will be negatively associated with the frequency of use of pornography.

Hypothesis 3. Moral disapproval will mediate the relationship between religiosity and frequency of use.

Hypothesis 4. We expect the mediating effect of moral disapproval on the relationship between religiosity and frequency of use to be moderated by relationship satisfaction.

Hypothesis 5. We hypothesize that the relationship between religiosity and frequency of use is stronger for males than females at low levels of relationship satisfaction (i.e., we expect males to use pornography more the less satisfied they are, and we expect males to use pornography less the more satisfied they are in their relationship).

Methods

Participants

Participants were recruited online from Amazon's Mechanical Turk (MTurk). The authors conducted this analysis using two datasets organized by date of data collection, one from January 2017 (Study 1) and the other from March 2018 (Study 2). The January 2017 dataset was originally used because all measures were represented. The authors expanded analysis of the data to include March 2018 to capture a larger sample size where all variables were represented simultaneously. The 2017 dataset sample was comprised of 129 participants, of which 54 were male (41.9%) and 75 were female (58.1%). The 2018 dataset sample was comprised of 632 participants, of which 265 were male (41.9%), and 36 were female (58.1%). Participants were included if they reported being in a monogamous dating relationship or married/life partners. All participants responded to questions that captured their demographic information, including age, gender, race, religion, and relationship status, which are included in Table 1.

Table 1*Demographics*

Demographic Variable	Study 1 (n=129)		Study 2 (n=632)	
	n	%	n	%
Gender				
Male	54	41.9	265	41.9
Female	75	58.1	367	58.1
Race				
White	104	80.6	487	77.1
African American/Black	14	10.9	55	8.7
American Indian and Alaska Native	3	2.3	3	.5
Asian	4	3.1	33	5.2
Hispanic, Latino, or of Spanish Origin	4	3.1	39	6.2
Other	0	0	13	2.1
Missing	0	0	2	.3
Relationship Status				
Monogamous dating relationship	36	27.9	207	32.8
Married/life partner	93	72.1	425	67.2
Religion				
Protestant	30	23.3	113	17.9
Catholic	29	22.5	110	17.4
Chrisitan (non-denominational)	40	31	139	22
Mormon	3	2.3	6	.9
Jehovah's Witness	2	1.6	2	.3
Muslim	1	.8	5	.8
Hindu	0	0	8	1.3

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Jewish	5	3.9	13	2.1
Buddhist	2	1.6	6	.9
New Age/Wiccan	3	2.3	20	3.2
None	8	6.2	162	25.6
Other	6	4.7	47	7.4
Missing	0	0	1	.2

Age

18-28	30	23.5	170	27
29-38	48	37.4	250	39.4
39-48	31	24.2	119	18.8
49-58	14	11.1	65	10.2
59+	4	4.7	28	4.7
Mean	36.92		36.25	
Minimum	19		18	
Maximum	67		76	

Data Screening

The authors performed univariate data screening. Although relationship status was not a primary variable, the datasets were screened to ensure that only individuals who reported being in a relationship (i.e., not single) were included. The univariate data screen confirmed that individuals who were not in a relationship also did not complete the CSI-16 measure. In addition, the authors screened for non-attending respondents, and individuals who identified themselves as either male or female. Finally, multivariate data screening was performed. There were no outliers from the January 2017 dataset. There were two outliers from the March 2018 dataset. These individuals were removed from the data.

Measures

Respondents completed multiple surveys beyond the scope of this current study. The authors intentionally focused on measurements aimed at religiosity, moral disapproval, frequency of pornography use, and relationship satisfaction.

Religiosity

Religiosity was measured using the Religious Personal Commitment Inventory 10 (RCIP; Worthington et al., 2003). Participants respond to the RCIP questions using a 5-point Likert scale (i.e., 1 = not at all true, 5= totally true of me), with a higher score indicative of high religiosity. There are 10 questions which gauge personal religious commitment such as, “My religious beliefs lie behind my whole approach to life,” and “I spend time trying to grow in understanding of my faith.”

Pornography Use

The authors intentionally chose to include frequency of pornography use within a one-month timeframe rather than weekly, three month, or six month reporting. Pornography use was measured with a one question response to, “Within the past month, how many times have you intentionally viewed pornography online?” Participants rated their use of pornography by choosing a categorical response, ranging from 0 to 10 or more times. This variable, combined with moral disapproval, is indicative of moral incongruence.

Moral Disapproval

In order to consider moral incongruence, the authors used the Moral Disapproval of Pornography scale (P_MD; Grubbs et al., 2015). P_MD is a 4-item measure that assesses moral disapproval toward pornography use. The items include, “Viewing pornography violates my personal values; I believe that viewing pornography is morally wrong; Viewing pornography

troubles my conscience; and I believe that viewing pornography is inappropriate.” Participants rated their responses using a 7-point Likert scale, with higher scores representing higher levels of moral disapproval.

Relationship Satisfaction

Relationship satisfaction was measured using the Couples Satisfaction Index-16 (CSI-16; Funk & Rogge, 2007). The CSI-16 is a 16-item survey with Likert scales that correspond to the question. The initial question provides a general degree of happiness on a 7-point scale, where 0= extremely unhappy and 6= perfect. The final questions have respondents gauge their relationship in terms of comparisons (i.e., interesting versus boring, bad versus good). The survey is scored by tallying the items, with the higher score representing higher levels of relationship satisfaction.

Analytic Plan

The author’s tested each hypothesis using Hayes PROCESS macro version 4.2 (Hayes, 2022) in IBM SPSS. Two members of the team ran analyses in SPSS simultaneously, while the remaining member took notes to capture results after reviewing each output as a team. The mean centering for all variables was used to identify values.

Results

To test hypothesis 1 (religiosity positively associated with moral disapproval) and hypothesis 2 (moral disapproval negatively associated with frequency of use), correlational analyses were conducted (Table 2). Spearman’s rank-order correlations were completed to examine the relationships between study variables. The data was analyzed using Spearman’s rho (r) since a violation of the assumption of normality was observed by a significant Kolmogorov-

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Smirnov statistic for all variables used. For Study 1, there was a significant positive relationship of moderate strength between religiosity and moral disapproval of pornography use ($r = .39, p < .001$). With the larger sample size of Study 2, the strength of the positive relationship increased and remained significant ($r = .45, p < .001$). There was also a statistically significant, but weak, negative relationship between moral disapproval of pornography use and the frequency of use in the previous 30 days for Study 1 ($r = -.14, p = .019$). In Study 2, the significant negative relationship between the moral disapproval of pornography use and the frequency of use was much clearer ($r = -.32, p < .001$).

Table 2

Spearman's rho

	1	2	3	4	5
(1) RCI-Personal	1	-.159**	.452**	.039	.014
(2) Within the past month, how many times have you intentionally viewed pornography online?	.036	1	-.318**	-.100**	-.450**
(3) Moral Disapproval of Pornography	.392**	-.139*	1	-.082*	.073**
(4) Couples Satisfaction Index-16	.107	-.181*	-.144	1	.060
(5) What is your gender?	-.091	-.401**	-.036	.081	1

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

* Correlation is significant at the 0.05 level (2-tailed).

Lower triangle is Study 1.

Upper triangle is Study 2.

Hypothesis 3 (moral disapproval mediates the relationship between religiosity and frequency of use) was tested through regression analysis of a simple mediation model. The direct effect of the independent variable, religiosity, on the dependent variable, frequency of pornography use in the previous 30 days, was not significant in Study 1 ($b = .08$, $SE = .10$, $p = .423$) or Study 2 ($b = .01$, $SE = .05$, $p = .793$). The indirect effect of religiosity on frequency of pornography use through moral disapproval for Study 1 was also not significant ($b = -.04$, $SE = .05$, 95% CI = [-.13 to .05]); however, the indirect effect was significant in Study 2 ($b = -.21$, $SE = .03$, 95% CI = [-.26 to -.16]). Therefore, there was evidence of moral disapproval of pornography use mediating the effect of religiosity on the frequency of pornography use in the previous 30 days but only in Study 2. The structural model accounted for less than 1% percent of the variance of frequency of pornography viewing in Study 1 and 2% of the variance in Study 2.

Hypothesis 4 theorized that moral disapproval's mediation of the effect of religiosity on frequency of pornography use was conditional based upon relationship satisfaction. The analysis was completed with the same mediation model developed for hypothesis 3 and the addition of relationship satisfaction as a proposed moderator for the a, b, and c prime (c') paths. For Study 1, neither the interaction of religiosity and relationship satisfaction along the a path ($b = .00, p = .862, \Delta R^2 = .00$) nor the interaction of moral disapproval and relationship satisfaction along the b path ($b = .00, p = .763, \Delta R^2 = .00$) was significant. The direct effect of religiosity on frequency of pornography use was also not significantly moderated by relationship satisfaction ($b = .00, p = .844, \Delta R^2 = .00$). The process was repeated for the Study 2 dataset with similar results. Neither the interaction of religiosity and relationship satisfaction along the a path ($b = .00, p = .139, \Delta R^2 = .00$) nor the interaction of moral disapproval and relationship satisfaction along the b path ($b = .00, p = .151, \Delta R^2 = .00$) was significant. The direct effect of religiosity on frequency of pornography use was also not significantly moderated by relationship satisfaction for Study 2 ($b = .00, p = .678, \Delta R^2 = .00$). However, although never reaching significance, the direct effect of religiosity on frequency of use did increase as the level of relationship satisfaction increased from low ($b = .01, p = .921$) to high ($b = .05, p = .472$) while the conditional indirect effect also strengthened but in a negative direction as relationship satisfaction increased from low ($b = -.16, 95\% \text{ CI} = [-.26, -.07]$) to high ($b = -.27, 95\% \text{ CI} = [-.36, -.20]$). The structural model accounted for 5% percent of the variance of frequency of pornography viewing in Study 1 and 13% of the variance in Study 2.

The intent for hypothesis 5 (a stronger relationship between religiosity and frequency of use for males at low levels of relationship satisfaction) was to explore the possibility that low

relationship satisfaction impacts the frequency of men's use of pornography more than women.

Conditional process analysis was conducted using a moderated moderated mediation model (Figure 1). In Study 1, the interaction of religiosity, relationship satisfaction, and gender was not significant along the a path ($b = -.02, p = .353, \Delta R^2 = .01$) or the b path ($b = .00, p = .754, \Delta R^2 = .00$). However, for the c' path, there was a significant interaction between religiosity and the moderators ($b = .04, p = .030, \Delta R^2 = .03$). The Hayes (2022) PROCESS macro generated confidence intervals for the conditional direct effect of religiosity on the frequency of pornography use at each level of relationship satisfaction (16th, 50th, and 84th percentiles) separated by gender. The output provided some unexpected results. For men, the effect on frequency of use weakened as relationship satisfaction increased from low ($b = .35, p = .277$) to moderate ($b = -.07, p = .758$) to high ($b = -.30, p = .308$); however, the effects were not significant. For women, the result was the opposite. The conditional direct effect of religiosity on frequency of use increased from a negative effect at the lowest level of relationship satisfaction ($b = -.11, p = .612$) to positive as relationship satisfaction increased. The positive effect on frequency of pornography use was strongest and reached significance at the highest level of relationship satisfaction ($b = .43, p = .038$).

Unlike the results from Study 1, there was evidence of moderated moderation along the a path in Study 2 ($b = .01, p = .019, \Delta R^2 = .01$). When analyzing the effect of relationship satisfaction based on gender, the interaction was significant for females ($b = .01, p = .006$) but not for males ($b = .00, p = .485$). The conditional effects of religiosity on moral disapproval were significant ($p < .001$) at all levels of relationship satisfaction. For males, the conditional effect of religiosity on moral disapproval weakened as relationship satisfaction increased. However, for

females religiosity became a stronger predictor of moral disapproval of pornography use as relationship satisfaction increased from low ($b = .55, p = <.001$) to medium ($b = .79, p = <.001$) to high ($b = .94, p = <.001$). The interaction of moral disapproval with the moderators along the b path was insignificant ($b = .01, p = .224, \Delta R^2 = .00$) as well as the interaction of religiosity with the moderators along the c' path ($b = .00, p = .442, \Delta R^2 = .00$). The complete results can be found in Table 3. This regression model was a much better fit for the data and accounted for 23% of the variance of frequency of pornography viewing in Study 1 and 31% of the variance in Study 2.

Table 3*Conditional Process Analysis Results for Moderated Moderated Mediation Model.*

<i>Source</i>	<i>b</i>	<i>se</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Study 1						
Moral Disapproval: $R = .572$, $R^2 = .328$, $MSE = 2.638$, $F(7, 121) = 8.420$, $p < .001$						
Religiosity (X)	.824	.132	6.255	<.001	.563	1.084
Relationship Satisfaction (W)	-.036	.010	-3.718	<.001	-.054	-.017
Gender (Z)	-.356	.300	-1.186	.238	-.950	.238
X*W	-.002	.008	-.274	.784	-.019	.014
X*W*Z	-.016	.017	-.933	.353	-.050	.018
Frequency of Use: $R = .477$, $R^2 = .227$, $MSE = 1.662$, $F(11, 117) = 3.129$, $p = .001$						
Religiosity (X)	.103	.123	.839	.403	-.140	.346
Moral Disapproval (M)	-.052	.074	-.703	.484	-.198	.094
Relationship Satisfaction (W)	-.015	.008	-1.796	.075	-.031	.002
Gender (Z)	-1.031	.251	-4.115	<.001	-1.528	-.535
M*W	.001	.004	.126	.900	-.008	.009
M*W*Z	-.003	.009	-.314	.754	-.021	.015
X*W*Z	.035	.016	2.198	.030	.003	.066
Study 2						
Moral Disapproval: $R = .521$, $R^2 = .271$, $MSE = 2.538$, $F(7, 624) = 33.168$, $p < .001$						
Religiosity (X)	.770	.054	14.268	<.001	.664	.876
Relationship Satisfaction (W)	-.005	.004	-1.395	.164	-.012	.002
Gender (Z)	.124	.129	.966	.335	-.128	.377
X*W	.005	.003	1.695	.091	-.001	.011
X*W*Z	.014	.006	2.348	.019	.002	.026

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Frequency of Use: $R = .554$, $R^2 = .307$, $MSE = 1.485$, $F(11, 620) = 24.957$, $p < .001$

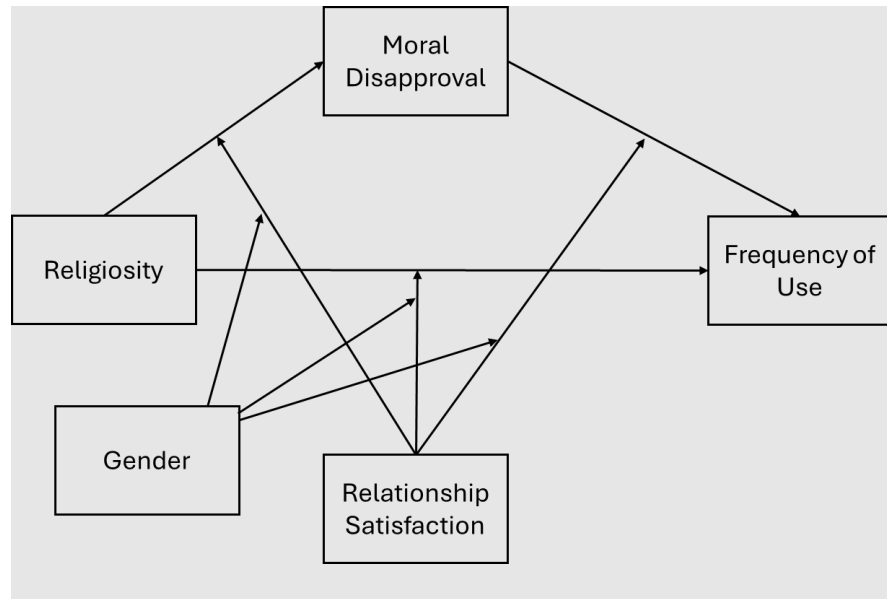
Religiosity (X)	.007	.048	.155	.877	-.087	.102
Moral Disapproval (M)	-.263	.031	-8.486	<.001	-.324	-.202
Relationship Satisfaction (W)	-.009	.003	-3.246	.001	-.014	-.003
Gender (Z)	-1.190	.099	-12.043	<.001	-1.384	-.996
M*W	-.002	.002	-1.338	.181	-.006	.001
M*W*Z	.005	.004	1.217	.224	-.003	.012
X*W*Z	-.004	.005	-.769	.442	-.015	.007

In looking more specifically at whether low relationship satisfaction impacted the frequency of male use of pornography more than female, a two-way ANOVA was conducted that examined the effect of gender and relationship satisfaction on the frequency of pornography use in the previous 30 days. The means and standard deviations for frequency of pornography use are provided in Table 4. The tests of between-subjects effects showed there was insufficient evidence to reject the null hypothesis of the interaction effect of relationship satisfaction and gender, [$F(3, 754) = .656, p = .580, \text{partial } \eta^2 = .00$]. There was, however, a significant main effect for gender, [$F(1, 754) = 100.96, p = <.001, \text{partial } \eta^2 = .12$] but there was not a significant variance in frequency of pornography use at different levels of relationship satisfaction, [$F(3, 754) = 1.98, p = .115, \text{partial } \eta^2 = .01$]. The combined three effects accounted for approximately 21% of the variance in reported frequency of pornography use. Simple main effects analysis indicated that the frequency of pornography use was significantly higher for males than for females at all levels of relationship satisfaction. So, to address the hypothesis directly, at the lowest level of relationship satisfaction, male reported pornography use ($M = 3.71, SD = 1.61$) was significantly higher than female reported use ($M = 2.00, SD = 1.01$) thus providing evidence to reject the null hypothesis.

Table 4*Descriptive Statistics*

Dependent Variable: Frequency of pornography use within the past month

What is your gender?	Relationship Satisfaction	Mean	Std. Deviation	N
Male	High	3.28	1.478	201
	Medium-High	3.59	1.358	81
	Low-Medium	3.68	1.442	28
	Low	3.71	1.611	17
	Total	3.42	1.456	327
Female	High	2.05	1.191	274
	Medium-High	2.26	1.244	94
	Low-Medium	2.11	1.147	47
	Low	2.00	1.026	20
	Total	2.10	1.190	435
Total	High	2.57	1.453	475
	Medium-High	2.87	1.457	175
	Low-Medium	2.69	1.470	75
	Low	2.78	1.566	37
	Total	2.66	1.464	762

Figure 1*Moderated Moderated Mediation Model***Discussion**

A primary focus of this study was to explore a connection between relationship satisfaction and moral incongruence. Other research established that the use of pornography affects relationship satisfaction in negative ways. There is evidence of increased risk of divorce (Doran & Price, 2014), feelings of infidelity (Crawford et al., 2024), decreased sexual satisfaction (Floyd et al., 2020), and psychological distress (Guidry et al., 2020). The negative outcomes were particularly significant when individuals considered pornography use inconsistent with their moral views (Lee & Grubbs, 2023). But to our knowledge, this is the first study to explore the time-order sequence of relationship satisfaction affecting the frequency of pornography use rather than the inverse. Certain aspects of this study confirm prior research. Consistent with past findings, we conclude that considering oneself religious does not directly affect the frequency of viewing pornography, a poorly understood discrepancy. However, as

expected, religiosity predicts moral disapproval of pornography and moral disapproval has a significant negative relationship with frequency of use. Through testing of a simple mediation model, we found support for the indirect effect of religiosity on the frequency of pornography use through moral disapproval. This is important as it confirms the base conceptual model, but only with sufficient statistical power. Study 1 had insufficient power to detect the changes indicative of moral disapproval's mediation role. The sample size of Study 2 ($n = 632$) was, however, sufficient as in other research (Grubbs et al., 2015). Therefore, we found evidence to support each of the first three hypotheses.

Exploring the role of relationship satisfaction was not an easy task and the complexity became more apparent as the study progressed. The expectation was that as relationship satisfaction decreased, any moral incongruence pornography users experienced would decline. For this to be true, as the level of relationship satisfaction decreases, moral disapproval must also decrease, and the frequency of pornography use must simultaneously increase. In the present analysis of moderated mediation, the relationship between all predictor and outcome variables was the same at all levels of relationship satisfaction. Therefore, without consideration for any other variables, there was not sufficient evidence to conclude that relationship satisfaction influenced the magnitude of the direct effect of religiosity on frequency of pornography use or the indirect effect through moral disapproval. The result was true for both Study 1 and Study 2, so it was not a question of statistical power. The low percentage of variance (R^2) accounted for by the regression model likely indicated it was underspecified. Consequently, the exploratory analysis continued by considering whether the moderation was moderated by gender.

It was previously suggested that pornography consumption and relationship satisfaction were unrelated for women (Bennett-Brown & Wright, 2022). Assuming that to be valid, it was hypothesized that the impact of relationship satisfaction on religiosity predicting the frequency of pornography use would be stronger for males who were dissatisfied with their relationship than females. It also meant that we predicted males would use pornography more the less satisfied they were in their relationship and would use pornography less the more satisfied they were. The introduction of gender provided a much better fit for the data but yielded some unexpected results. The only interaction in Study 1 that was significant was a positive relationship along the c' path between religiosity and relationship satisfaction when considering gender. This indicated there was moderated moderation of the direct effect of religiosity on the frequency of pornography use. Further analysis of the conditional direct effects indicated that a positive relationship between religiosity and frequency of use was significant for women at the highest level of relationship satisfaction. Interestingly, as relationship satisfaction increased, the positive effect of religiosity on frequency of use also increased until it reached significance. Hence, for women, the more religious they considered themselves and the higher their relationship satisfaction, the higher their frequency of pornography use. Although never reaching statistical significance, the effect was negative for men and consistent with what was hypothesized. As relationship satisfaction increased, the negative effect of religiosity on frequency of pornography use also increased. A determination was made to repeat the analysis with the larger sample size of Study 2 to determine if the outcomes persisted.

The second round of statistical analysis did not yield the same results. The interaction with the moderating variables was not significant along the c' path as in Study 1, but it was

significant along the a path. Closer examination revealed the interaction was again only significant for females. Relationship satisfaction significantly moderated the effect of religiosity on moral disapproval of pornography for females with the positive association strengthening as relationship satisfaction increased. However, this was only moderately insightful given the lack of significant interactions along either the b or c' paths. This significant interaction only accounted for an additional 1% of the variance in the dependent variable. Nonetheless, going back to the hypothesis that the effects were strongest for males experiencing low relationship satisfaction, the analysis of variance supported the assumption that gender was a significant predictor of the outcomes. Males consumed pornography at significantly higher levels than females. This was true at all levels of relationship satisfaction and not just at the low level as hypothesized. Despite a reversal in the negative and positive relationships from Study 1 to Study 2, the effects on frequency of use were still larger for males than females.

A final step in the exploratory analysis was to consider covariates that may have been affecting the results. The first variable we controlled for was religion. That variable identified the specific faith or denomination of the study participants. A second variable considered was age. When the analysis was completed with religion and age as covariates, the pattern of statistical significance was fundamentally the same. An additional consideration was whether participants who were not pornography users, and would likely not view pornography, were affecting the outcomes. We defined non-pornography users as individuals who did not view pornography within the last six months. Data analysis with the exclusion of non-pornography users yielded no meaningful change in the results.

Limitations

The samples in this research consisted of Amazon's Mechanical Turk (MTurk) data. In the past, MTurk has been deemed a reliable source of statistical data, with many researchers utilizing the MTurk data. There began to be evidence of some potential 'bot' activity in 2018 that caused some alarm about the validity and accuracy of the collected data. The article by Hauser et al. (2023) indicated there are methods to work past these issues but says, "Unfortunately, these solutions are presently insufficient for ensuring high-quality data on MTurk." Regardless of these potential issues post 2018 and knowing our team did not collect the data directly from participants, we are dependent on the data collection process of MTurk. The data we used from MTurk is from 2017 and 2018 and is believed to be reliable. With appropriate funding, it would be ideal to perform this work again with other datasets to see if our findings are consistent or if variations would become apparent.

Post analysis, we realized a challenge of including religiosity as an independent variable limited the scope of applicability and possibly the model's specificity. An alternate approach of focusing on views of pornography use rather than religiosity may be a better fit for the available data. Lee and Grubbs (2023) did this to a certain extent when they analyzed factors beyond traditional measures of religiousness to focus more on conservative sexual values a person may hold regardless of their religiosity. Rather than the independent variable being "Religiosity" it may have produced more expansive findings had the independent variable been "views on pornography use" and "Religiosity" a moderator. Though this limiting factor is in the present study, the research remains a value to propel thoughts to the next level of consideration.

Implications and Future Research

The current study helps consider the effects of relationship satisfaction as a moderator for paths leading to the frequency of pornography use. This research's efforts were to understand better the potential paths that lead to increased or decreased pornography use frequency. A direct implication of this work is in alignment with other research that has seen religious pornography users' frequency of use as almost the same as that of nonreligious pornography users. Moral disapproval therefore is a contributor to increased distress and has psychological implications for those who enter treatment for perceived addiction (Wilt et al., 2016). The research indicates there is a disconnect between religious teachings and actual practice (Breed, 2022). Additional research is needed to help those in the religious and counseling communities to understand these discrepancies better.

An area that the authors consider worthy of further thought and additional research are the unexpected findings associated with women's pornography use in this study. When relationship satisfaction increased for women, this moderated the positive effect on the relationship between religiosity and frequency of pornography use. This variation did not appear for the men in the Study 1 data set (though statistically insignificant, it had a negative effect for men). These findings show the potential that women with higher levels of relationship satisfaction indeed have lower levels of moral disapproval, and by implication, potentially increase their pornography frequency of use. For women who considered themselves religious, as religiosity increased, so did their frequency of use.

This unexpected dynamic would be an excellent area for further research to determine if the findings persist with other data sets, and if so, what are the potential cognitions that lead to these outcomes. Future questions could be: Do religious women use pornography as an

educational tool to help close a knowledge gap that is not provided by their religious upbringing?

Are these religious women attempting to fill some gaps in knowledge that may include pain during sex, normalizing same sex attraction, frequency of sex, mentorship, etc.? Additionally, it would be an interesting approach for future work to duplicate this research while delineating specific religious affiliations rather than using a more generalized category for religiosity and explore variations in dating and marriage relationships.

Conclusion

One aspiration of the current work was to determine the viability of aiming treatment with an outcome of improving romantic relationships to address problematic pornography use, and thus reducing moral incongruence. Regardless of a person's religious commitment, there is a desire for people to operate congruent with their worldview. Moral incongruence is a source of distress that we hope to help alleviate. This supports the intent behind the PPMI model (Grubs et al., 2019) discussed earlier. By opening the door to alternate treatment options, mental health professionals may be able to capture a larger portion of the population whose relationships are negatively impacted by pornography. The current work has laid a foundation for future research that can lead to a better understanding of how people in general and, more specifically, religious people's relationship satisfaction acts as a moderator for the impact of religiosity on the frequency of pornography use as mediated by moral disapproval. The team expected to see a decrease in moral disapproval when relationship satisfaction was low. Though this was the team's clear expectation, the data set we used did not support this finding; instead, as discussed, some counterintuitive findings were present. The data from the present research should assist future researchers in identifying some potential variations that need further testing and thought.

This work has opened the door to research whether pornography use is being used as an educational tool even though its use may be considered taboo or even sinful from the perspective of religious organizations.

Declaration of Interest Statement

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

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