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## **Moral Incongruence and Compulsive Sexual Behavior: Results From Cross-Sectional Interactions and Parallel Growth Curve Analyses**

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# Moral Incongruence and Compulsive Sexual Behavior: Results From Cross-Sectional Interactions and Parallel Growth Curve Analyses

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Despite controversies about the diagnosis, the World Health Organization recently elected to include compulsive sexual behavior disorder in the 11th edition of the *International Classification of Diseases*. Both recent and remote works have suggested that various cultural factors such as personal religiousness and morality can influence both the experience and expression of compulsive sexual behaviors. Because prior works have indicated that pornography use is likely to be the most common expression of compulsive sexual behavior, the present work sought to examine whether moral incongruence about pornography use may account for a substantive part of self-reports of compulsive sexual behavior. In 2 studies involving 4 samples, the present work tested the hypothesis that moral incongruence would positively predict self-reported compulsivity in pornography use. In Study 1, across 3 samples (Sample 1,  $N = 467$ ; Sample 2,  $N = 739$ ; Sample 3,  $N = 1,461$ ), including 2 matched to U.S. nationally representative norms (Samples 2 and 3), results indicated that moral incongruence was a substantive and robust predictor of self-reported compulsivity. In Study 2 (baseline  $N = 850$ ), parallel process latent growth curve analyses over the course of 1 year revealed that the trajectories of pornography use, self-reported compulsivity, and moral disapproval of such use covaried together over time. Collectively, these results underscore the contention that personal morality may influence individuals' self-perceptions of their sexual behaviors, which, in turn, may complicate efforts to accurately diagnose compulsive sexual behavior disorder.

## General Scientific Summary




People may report feeling addicted to pornography or sexual behavior for various reasons, but morality and moral distress seem to be key parts of why individuals might think they are addicted to pornography or sexual behavior.

**Keywords:** pornography use, addiction, religion, morality, diagnostic issues

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Notions of compulsive or addictive sexual behavior are controversial, fueling contentious debates in academic literature for several decades now (Gold & Heffner, 1998; Kraus, Voon, & Potenza,

2016; Ley & Grubbs, 2017). Despite these controversies, the World Health Organization, in the development of the 11th edition of the *International Classification of Diseases (ICD-11)*, elected to

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include the diagnosis of compulsive sexual behavior disorder (CSBD; Kraus et al., 2018) as an impulse control disorder. This decision was met with both scathing criticism and effusive praise, generating more public commentary than any other novel diagnosis has (Fuss et al., 2019). Even so, the inclusion of CSBD represents a paradigm shift in how compulsive sexual behaviors (CSBs) are understood and studied. The present work seeks to understand how one controversy around CSBD represents an important consideration in properly understanding the disorder.

### Compulsive Sexual Behavior Disorder in the *ICD-11*

According to the diagnostic criteria laid forth in the *ICD-11*, CSBD is characterized by dysregulation and compulsivity in sexual behaviors. In these cases, sexual behaviors are likely to become a focus of attention and effort to the neglect of health, personal care, responsibilities, or other interests. Additionally, CSBD is characterized by repeated failures to regulate or reduce the behavior and a continuation of the behavior in the face of negative consequences. As is the case with many psychiatric diagnoses, compulsive behaviors must have continued for an extended period of time (6 months) and caused significant clinical distress or impairment in important domains of functioning (e.g., occupational, familial, social, personal, educational). As noted with other diagnostic exclusions (e.g., dementia, substance use, bipolar disorder, side effects of medications), the diagnostic criteria explicitly mention that “distress that is entirely related to moral judgments and disapproval about sexual impulses, urges, or behaviors is not sufficient to meet this requirement” (World Health Organization, 2018). As we explore later, this specific exclusion criterion points to potential diagnostic concerns that may be unique to CSBD.

### Pornography as a Proxy for CSBD

CSBD does not specify that individuals must engage in one specific sexual behavior to qualify for the diagnosis. A range of potentially compulsive behaviors have been cited in prior literature (i.e., frequenting prostitutes, compulsive masturbation, excessive use of phone-sex lines). However, there is strong reason to expect that many who seek treatment for CSBD may report issues with problematic pornography use coupled with compulsive masturbation. In part, this is because pornography use is quite common and its primary use is as a masturbatory aid (Grubbs, Wright, Braden, Wilt, & Kraus, 2019; Perry, 2019b, 2019c; Prause, 2019). That is, from a purely practical standpoint, more people have access to pornography and concomitant masturbation than have access to prostitutes, casual sexual partners, or other sexual services that involve steeper social or financial cost. As such, one would expect CSBD to be manifested as compulsive pornography use in some cases.

Further evidence for the contention that CSBD will be most commonly encountered as problematic pornography use is the field trial for the *Diagnostic and Statistical Manual of Mental Disorder’s* (5th ed.; *DSM-5*; American Psychiatric Association, 2013) proposed diagnosis of hypersexual disorder (Reid et al., 2012). For the development of the *DSM-5*, hypersexual disorder was proposed and subjected to extensive testing. In most regards, this diagnosis was extremely similar to the CSBD diagnosis in the *ICD-11*. Moreover, in field trials for this disorder, the most com-

mon application of the diagnosis was for compulsive pornography use (81% of cases). In short, in four out of every five applications of the proposed hypersexual disorder diagnosis, excessive pornography use was present.

Finally, we note that prior studies of clinicians have found that problematic pornography use is more commonly encountered than CSB is more broadly, despite some evidence that many clinicians view the former as an expression of the latter (Short, Wetterneck, Bistricky, Shutter, & Chase, 2016). In short, compulsive pornography use (and associated masturbation) is likely to be a common expression of the new CSBD diagnosis. By extension, examining pornography use or compulsive pornography use likely represents the most accessible and common behavior for examining CSBD more broadly.

### Controversies in Compulsive Sexual Behavior

Despite the World Health Organization’s decision to include CSBD in the *ICD-11*, the diagnosis remains controversial. Recent reports have suggested that potentially extraneous variables such as therapists’ religious beliefs (Droubay & Butters, 2019; Hecker, Trepper, Wetchler, & Fontaine, 1995) and the client’s sexual orientation (Klein, Briken, Schröder, & Fuss, 2019) may influence whether the diagnosis is applied. Similarly, qualitative work has demonstrated that laypeople have diverse definitions of pornography addiction with varying degrees of scientific accuracy (Perry, 2019a; Taylor, 2019). That is, people often self-diagnose as addicted to pornography without any regard to established criteria for such a diagnosis. Moreover, systematic reviews have noted that there is little consistency in the measurement of pornography-related problems across different studies (Duffy, Dawson, & das Nair, 2016).

Moving beyond definitions alone, there is a great degree of controversy regarding the etiology of self-reported problematic pornography use patterns. Several studies have now indicated that self-reported feelings of compulsivity in or perceived addiction to pornography use are often better accounted for by personal morality and conservative beliefs, rather than actual pornography use (Grubbs & Perry, 2019; Grubbs, Perry, Wilt, & Reid, 2019a). In several samples, both in the United States and abroad, religiousness and moral disapproval of pornography use are known to be associated with greater reports of perceived addiction to pornography or compulsivity in use, which suggests that perceptions of problems with pornography use are likely influenced by personal beliefs (for a review, see Grubbs et al., 2019a; Grubbs, Perry, Wilt, & Reid, 2019b).

Based on this general trend, recent research has articulated a model of moral incongruence as a possible driving factor in the experience of self-reported problems with pornography use specifically and compulsive sexual behavior more generally. That is, in general population samples, moral disapproval of pornography use among pornography users is often the best predictor of the self-report of feelings of addiction or compulsion (Grubbs & Perry, 2019). Central to this prior work is the notion that moral disapproval, coupled with actual use, leads to dissonance regarding one’s behaviors, which, in turn, leads to self-interpretations of those behaviors that might be more pathological than actual behaviors would indicate. It is important to note that this specific criticism is not lost on the developers of the CSBD diagnosis. As

Kraus and colleagues (2018, p. 109) stated in their introductory description of the new diagnosis:

The proposed diagnostic guidelines also emphasize that compulsive sexual behavior disorder should not be diagnosed based on psychological distress related to moral judgments or disapproval about sexual impulses, urges or behaviors that would otherwise not be considered indicative of psychopathology. Sexual behaviors that are egodystonic can cause psychological distress; however, psychological distress due to sexual behavior by itself does not warrant a diagnosis of compulsive sexual behavior disorder.

That is, the body of research related to moral incongruence as a predictor of self-reported problems with sexual behavior is compelling enough to warrant specific mention as a diagnostic consideration in CSBD. Even so, the exact interplays between these domains are unclear, and an appropriate understanding of moral incongruence is necessary to understand the driving factors that cause individuals to self-identify as having issues with excessive, problematic sexual behavior and what reason(s) led them to seek professional help.

### The Present Study

The primary purpose of the present work was to examine the role of moral incongruence in the experience of self-reported problems with pornography. Given the mention of morality and morality-based distress in the diagnostic criteria for CSBD, there is a clear need for research examining the role that moral incongruence plays in the experience of CSBs. The first way that we examined this was via the interaction of pornography use and moral disapproval of pornography. Whereas earlier works examined how moral disapproval of pornography use and pornography use itself each directly predict self-reported feelings of addiction to pornography (for reviews, see Grubbs et al., 2019a, 2019b), we sought to extend such works by testing the interaction of pornography use and moral disapproval. That is, rather than inferring moral incongruence (i.e., moral disapproval among users), we defined *incongruence* as the interaction of use and disapproval, because this interaction is more consistent with previous definitions of *moral incongruence* (Grubbs et al., 2019a). Although past works have defined *moral incongruence* this way (interaction of disapproval and use), none have examined how such incongruence predicts self-reported dysregulation or self-reports of addiction (Perry, 2018a, 2018b, 2018c). Therefore, this is the first work to examine how the interaction of moral disapproval of pornography and the use of pornography is associated with self-reported problems with or addiction to pornography.

Additionally, we sought to examine trajectories of pornography use, self-reported problems, and moral disapproval of pornography over time. Although prior works have examined longitudinal associations between these constructs (Fernandez, Tee, & Fernandez, 2017; Grubbs, Wilt, Exline, & Pargament, 2018; Grubbs, Wilt, Exline, Pargament, & Kraus, 2018), all prior works relied on analyses at two time points, precluding the examination of trajectories or change. Similarly, although at least one study has examined pornography use and self-reported problems over multiple time points (Grubbs & Gola, 2019) that work was limited to sexually active men only and did not plot the trajectory of moral disapproval. As such, by examining the trajectories of pornogra-

phy use, moral disapproval of pornography use, and self-reported problems with pornography use, we could more fully explore how these related constructs covary together over time.

In short, the present study was designed to more carefully examine the role that morality may play in the experience and expression of self-reported CSB. Given the specific mention of these moral factors in the diagnostic criteria for CSBD, the present work is timely and poised to shed some light on a controversial issue.

### Study 1

To account for the role of moral incongruence itself in predicting self-reported problematic pornography use, we conducted analyses of interaction effects in three samples: a sample of undergraduate students and two nonprobability samples of adults in the United States matched to nationally representative norms.

### Method

**Participants and procedure.** In all samples, sample size was determined by constraints of data collection rather than a priori power analyses. Specifically, sample size for Sample 1 was determined via maximizing participation over the course of two semesters of data collection. Sample sizes for Samples 2 and 3 were determined by standard recruitment criteria for the services employed, as described below.

**Sample 1.** Our first sample consisted of undergraduate students at a large, public university in the Midwest. Data were collected over two semesters. We restricted analyses to those who reported intentionally looking at pornography<sup>1</sup> at least one time within the past 12 months (49.3%). Full descriptive statistics for this sample (age, gender, race, and ethnicity) are available in Table 1. Though the variables and analyses of interest for the present work are novel, portions of this data set have been analyzed elsewhere (Grubbs & Gola, 2019; Grubbs, Grant, & Engelman, 2018).

**Sample 2.** Our second sample consisted of adult Internet users in the United States recruited via the TurkPrime data acquisition platform (Litman, Robinson, & Abberbock, 2017). Using the Prime Panels feature of this service, we targeted a sample of 1,000 adults in the United States, matched to 2010 U.S. Census norms for age, race, gender, income, census region, and ethnicity. Though the variables and analyses of interest for the present work are novel, portions of this data set have been analyzed elsewhere (Grubbs & Gola, 2019; Grubbs, Grant, & Engelman, 2018). We restricted our analyses to those who reported ever intentionally viewing pornography in their adult lives (71%). Full descriptive statistics for this sample (age, gender, race or ethnicity) are available in Table 1.

**Sample 3.** Our third sample was obtained using Qualtrics Omnibus service (QBus). This service allowed us to recruit a sample of 2,000 adults matching U.S. nationally representative norms for age, race, gender, U.S. Census region, and income as of the 2010 Census. Though the variables and analyses of interest for

<sup>1</sup> For all samples, *pornography* was defined as follows: "Pornography refers to any sexually explicit films, video clips, or pictures displaying the genital area, which intends to sexually arouse the viewer; this may be seen on the Internet, in a magazine, in a book, or on television."

Table 1  
*Demographics, Descriptive Statistics, and Pearson Correlations for Study 1*

Variable	<i>M</i>	<i>SD</i>	Internal consistency <sup>a</sup>	1	2	3	4	5
Sample 1: Undergraduate students in the U.S. ( <i>N</i> = 467; 38.5% men) <sup>b</sup>								
1. Average daily pornography use	0.38	0.55		—				
2. Self-reported problems	2.19	1.38	$\alpha = .88, \omega = .89$	.215 <sup>†</sup>	—			
3. Moral disapproval	2.72	1.72	$\alpha = .89, \omega = .89$	-.045	.450 <sup>†</sup>	—		
4. Religiousness	0.00	0.81	$\alpha = .91, \omega = .93$	.056	.183 <sup>†</sup>	.517 <sup>†</sup>	—	
5. Male gender				.002	.299 <sup>†</sup>	.166 <sup>†</sup>	.067	—
6. Age	19.32	2.45						
Sample 2: Adults in the U.S. ( <i>N</i> = 739; 58% men) <sup>c</sup>								
1. Frequency of pornography use	3.56	2.53		—				
2. Self-reported problems	1.80	1.36	$\alpha = .92, \omega = .92$	.454 <sup>†</sup>	—			
3. Moral disapproval	2.90	2.00	$\alpha = .95, \omega = .95$	-.174 <sup>†</sup>	.295 <sup>†</sup>	—		
4. Religiousness	3.88	2.01	$\alpha = .92, \omega = .93$	-.182 <sup>†</sup>	.074 <sup>*</sup>	.517 <sup>†</sup>	—	
5. Male gender				.391 <sup>†</sup>	.304 <sup>†</sup>	-.013	-.025	—
6. Age	47.9	15.81		-.296 <sup>†</sup>	-.276 <sup>†</sup>	-.003	.126 <sup>†</sup>	.03
Sample 3: Adults in the U.S. ( <i>N</i> = 1,461; 59% men) <sup>d</sup>								
1. Frequency of pornography use	3.69	2.41		—				
2. Self-reported problems	1.56	2.53	$\alpha = .90, \omega = .90$	.391 <sup>†</sup>	—			
3. Moral disapproval	3.03	1.97		-.165 <sup>†</sup>	.295 <sup>†</sup>	—		
4. Religiousness	0.76	0.43	$\alpha = .92, \omega = .93$	-.136 <sup>†</sup>	.144 <sup>†</sup>	.291 <sup>†</sup>	—	
5. Male gender				.313 <sup>†</sup>	.153 <sup>†</sup>	-.004	-.075 <sup>†</sup>	—
6. Age	45.51	16.60		-.220 <sup>†</sup>	-.228 <sup>†</sup>	.034	.011	.220 <sup>†</sup>

<sup>a</sup>  $\alpha$  represents Cronbach's alpha;  $\omega$  represents McDonald's omega. <sup>b</sup> 82% Caucasian/White; 13.7% African American, Black; 4.5% Latino/Hispanic; 2.8% Asian/Pacific Islander; 1.1% American Indian/Native American/Alaska Native; 1% Middle Eastern; 1% other/prefer not to say. <sup>c</sup> 74.7% Caucasian/White; 12% African American, Black; 4.5% Latino/Hispanic; 6.4% Asian/Pacific Islander; 3.8% American Indian/Native American/Alaska Native; 1.4% other/prefer not to say. <sup>d</sup> 74% Caucasian/White; 10.8% Black/African American; 10.1% Hispanic/Latino; 2.3% Asian/Pacific Islander; 2.6% other. <sup>†</sup>  $p < .005$ . <sup>\*</sup>  $p < .05$ .

the present work are novel, portions of this data set have been analyzed elsewhere (Grubbs, Kraus, & Perry, 2019). We restricted our analyses to those who reported ever intentionally viewing pornography in their adult lives (73%). Full descriptive statistics for this sample (age, gender, race or ethnicity) are available in Table 1.

#### Measures.

**Problematic pornography use.** For Samples 1 and 2, we used the Cyber Pornography Use Inventory-4 (CPUI-4; Grubbs & Gola, 2019). Developed from the longer Cyber Pornography Use Inventory (CPUI; Grubbs, Sessoms, Wheeler, & Volk, 2010), the CPUI-4 consists of four face-valid statements (items: "I believe I am addicted to Internet pornography"; "I feel unable to stop my use of online pornography"; "Even when I do not want to view pornography online, I feel drawn to it"; and "I have put off things I needed to do in order to view pornography"). Participants rate their agreement with each statement on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*).

For Sample 3, we used the Brief Pornography Screener (Kowalewska, Kraus, Lew-Starowicz, Gustavsson, & Gola, 2019; Sklenarik et al., 2019). This measure requires participants to rate the frequency with which they have experienced a series of pornography-related symptoms and behaviors (e.g., "You have attempted to cut back or stop using pornography, but were unsuccessful") over the past 6 months on a scale of 0 (*never*) to 2 (*very often*). Responses were summed, for a total score ranging from 0 to 10.

**Moral disapproval of pornography.** For Samples 1 and 2, we used the same four items (e.g., "I believe that viewing pornography

is morally wrong") used in prior works examining the role of moral disapproval in predicting problematic pornography use (Grubbs, Wilt, Exline, Pargament, et al., 2018). Responses were recorded on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*), and an average was taken across items.

For Sample 3, we used a single-item measure of moral disapproval: "I believe that pornography use is morally wrong." Participants rated their agreement on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*).

**Pornography use.** For Sample 1, participants estimated their average daily pornography use in hours. For Samples 2 and 3, participants reported the frequency of their pornography use over the past 12 months on a scale of 1 (*never*) to 8 (*once a day or more*).

**Religiousness.** For Sample 1, consistent with prior studies on this topic (e.g., Grubbs, Wilt, Exline, Pargament, et al., 2018), religiousness was measured by taking the average of standardized items measuring both religious belief salience (Blaine & Crocker, 1995) and religious participation (Exline, Yali, & Sanderson, 2000).

For Samples 2 and 3, religiousness was measured via three items: "I consider myself religious," "Being religious is important to me," and "I attend religious services regularly." Participants recorded their responses on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Responses were averaged.

**Analytic plan.** For all three samples, descriptive statistics; coefficients of internal consistency (Cronbach's  $\alpha$  and McDonald's  $\omega$ ); and Pearson correlations between variables of interest, including gender (all samples) and age (Samples 2 and 3 only), were conducted.



Additionally, following these initial calculations, moderation analyses were conducted in which relevant covariates (age, male gender, pornography use, moral disapproval, and religiousness) were entered into Step 1 of a hierarchical regression (and simple slopes were interpreted), with the interaction term for pornography use and moral disapproval entered into Step 2. Analyses of slopes were calculated subsequent to these moderations.

## Results

All descriptive statistics and Pearson correlations for Study 1 are available in Table 1. Results from moderation analyses revealed a consistent pattern (see Table 2). In Step 1 of regression analyses, standardized regression weights ( $\beta$  values) revealed that pornography use and moral disapproval consistently emerged as the most substantive predictors of self-reported problems with pornography use, such that both were predictive of higher levels of self-reported problems. Male gender also consistently predicted self-reported problems. However, in Step 2 of each regression analysis, when the interaction term between pornography use and moral disapproval was entered into the regression, varying amounts of variance were accounted for (i.e., 1.4% of additional variance in Sample 1; 12.3% in Sample 2; and 7.2% in Sample 3). Simple slope analyses revealed that the conditional effect of pornography use on self-reported problems was substantially lower at low levels of moral disapproval of pornography use than it was at high levels of moral disapproval. These conditional effects are summarized in online supplemental Table 1 and online supplemental Figure 1. Consistent with our hypotheses, such findings suggest that moral incongruence (i.e., the interaction of disapproval and pornography use) is a robust and important predictor of self-reported compulsive use of pornography.

## Study 2

Although Study 1 revealed a clear interaction pattern between moral disapproval and pornography use in support of prior literature related to moral incongruence, it did not provide information about how the variables of interest may correspond to one another over time. To model changes in moral incongruence, self-reported problems, and pornography use over time, we conducted a study using four time points. The below study was deemed exempt by the Institutional Review Board of the first author's institution.

## Method

**Participants and procedure.** All participants were recruited via Amazon's Mechanical Turk via the TurkPrime data acquisition platform (Litman et al., 2017). We restricted analyses to those who acknowledged pornography use within 12 months of the first time point ( $N = 850$ ). Those who completed baseline measures were invited to participate in subsequent follow-up studies every 4 months for the next 12 months (three total follow-ups), for a total of four data points over the course of 12 months. All participants who completed the survey at Time 1 were invited to participate in all follow-ups.<sup>2</sup> Demographics for this sample are available in Table 3.

Retention from baseline to the first follow-up was 62% ( $N = 512$ ;  $MI_{\text{interval}} = 121.7$  days,  $SD = 6.2$ ). Retention from baseline to

the second follow-up was 58% ( $N = 477$ ;  $MI_{\text{interval}} = 117.9$  days,  $SD = 2.2$ ). Retention from baseline to the final follow-up was 52% ( $N = 428$ ;  $MI_{\text{interval}} = 121.2$  days,  $SD = 6.0$ ). The mean interval from baseline to the final follow-up was 361.6 days ( $SD = 2.4$ ).

Analysis of those who completed follow-ups and those who did not (using Little's analysis of missing completely at random) revealed no systemic pattern of missingness,  $\chi^2(16, N = 850) = 23.623, p = .098$ , indicating that attrition was at random. As such, for growth curve models, missing data were imputed using full information maximum likelihood estimation. Full descriptive statistics regarding this sample (baseline reports of age, gender, race or ethnicity) are available in Table 3.

### Measures.

**Pornography measures.** We used measures similar to those employed in Study 1, Sample 1, wherein we asked participants to report their average daily pornography use in hours. This daily average was reported at all time points. Additionally, at baseline, we asked participants to indicate how often they had viewed pornography in the past year on a scale of 1 (*not at all*) to 5 (*more than 10 times*). As mentioned above, only those who reported some pornography use in the past year (i.e., response options 2–5) were included in analyses.

To measure self-reported problems, we employed the CPUI-4 detailed in Study 1, Samples 1 and 2. Moral disapproval was measured as the aggregate of three items (i.e., "I believe that viewing pornography is morally wrong," "Viewing pornography troubles my conscience," and "Viewing pornography violates my personal morals"). Responses were recorded on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*).

**Religiousness.** We used the same index reported in Study 1, Sample 1, wherein we aggregated measures of both religious belief salience and religious participation into a solitary, standardized index.

**Analyses.** Consistent with Study 1, we first calculated descriptive statistics, coefficients of internal consistency, and Pearson correlations for all relevant variables across all time points. Following these analyses, we proceeded through the specification of growth curve models using the *lavaan* package (Rosseel, 2012) for R Statistical Software (R Core Team, 2018).

We initially specified unrestricted univariate linear growth curves for each variable of interest: pornography use, self-reported problematic use, and moral disapproval. In all cases, both linear and quadratic growth terms were specified, with linear terms being found to be the most informative and parsimonious. These initial growth curves were then conducted with baseline covariates included as predictors of both the intercept and slope of each model.

Following the specification of univariate latent growth curves, we conducted three separate two-process parallel latent growth curve analyses: pornography use and self-reported problems, pornography use and moral disapproval, and moral disapproval and self-reported problems. As described below, we took an iterative

<sup>2</sup> Analyses were completed using those with at least two time points ( $n = 627$ ) and those with only one time point ( $n = 850$ ). For all analyses, we did not observe meaningful differences in sign, magnitude, or significance of associations (Pearson's correlations) or our final models (parallel-process latent growth curves). As such, we elected to report analyses using the full data set (all who completed baseline measures), rather than restricting the sample to those who had completed data for at least two.

Table 2

Study 1: Hierarchical Regression With Moral Incongruence Interaction Term Predicting Self-Reported Problems With Pornography

Variable	Sample 1		Sample 2		Sample 3	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Age	-.042	-.038	-.247***	-.205***	-.179***	-.163***
Male gender	.221***	.207***	.268***	.261***	.089***	.088***
Pornography use at baseline <sup>a</sup>	.236***	.295***	.281***	.294***	.394***	.386***
Moral disapproval at baseline	.451***	.475***	.353***	.424***	.335***	.343***
Religiousness	-.090	-.109*	-.063	-.083	.109***	.081***
Pornography Use at Baseline <sup>a</sup> × Moral Disapproval at Baseline		.134*		.358***		.270***
R <sup>2</sup>	.302	.316	.351	.474	.323	.395
ΔR <sup>2</sup>		.014		.123		.072
F for ΔR <sup>2</sup>	35.85***	8.60*	79.46***	171.16***	138.71***	172.66***

Note. Data represent standardized betas.

<sup>a</sup> In Sample 1, pornography use was measured as an average of daily use. In Samples 2 and 3, pornography use was measured as frequency of pornography use within the past 12 months.

\*  $p < .05$ . \*\*\*  $p < .001$ .

approach to these analyses, starting with more parsimonious models and progressively exploring added parameters until an appropriate balance of model fit and model information was achieved. Finally, upon finalizing the three two-process parallel process latent growth curve (PLGC) models, we specified a three-process PLGC wherein all three latent curves were plotted together, with baseline covariates included.

## Results

Descriptive statistics and bivariate correlations for all included measures are available in Table 3. Consistent with Study 1, substantial positive associations were observed between religiousness and moral disapproval, between moral disapproval and self-

reported problems, and between self-reported problems and pornography use. The majority of these associations persisted over time as well.

**Single-process growth curves.** To test the longitudinal trajectories of pornography use, self-reported problems, and moral disapproval, we conducted a series of latent growth curve analyses. We began our growth curve analyses by conducting unconditional univariate growth curves for each variable of interest (moral disapproval, average daily use, and self-reported problems). As evident in Table 4, all three linear curves demonstrated excellent fit. The mean intercepts for three curves were significant, as were the variances for the intercepts for all three curves. The latent slope for moral disapproval was significant and positive (demonstrating an

Table 3

Descriptive Statistics and Pearson Correlations for Study 2 Variables

Variable	M	SD	Internal consistency	Pearson Correlations												
				1	2	3	4	5	6	7	8	9	10	11	12	
Moral disapproval																
1. T1	2.49	1.82	$\alpha = .91, \omega = .91$	—												
2. T2	2.73	1.94	$\alpha = .93, \omega = .93$	.839 <sup>†</sup>	—											
3. T3	2.73	1.99	$\alpha = .93, \omega = .93$	.819 <sup>†</sup>	.860 <sup>†</sup>	—										
4. T4	2.79	2.02	$\alpha = .92, \omega = .92$	.809 <sup>†</sup>	.845 <sup>†</sup>	.864 <sup>†</sup>	—									
Self-reported problems																
5. T1	2.18	1.42	$\alpha = .89, \omega = .90$	.481 <sup>†</sup>	.405 <sup>†</sup>	.335 <sup>†</sup>	.367 <sup>†</sup>	—								
6. T2	2.14	1.39	$\alpha = .90, \omega = .91$	.376 <sup>†</sup>	.471 <sup>†</sup>	.365 <sup>†</sup>	.376 <sup>†</sup>	.753 <sup>†</sup>	—							
7. T3	2.13	1.39	$\alpha = .90, \omega = .91$	.374 <sup>†</sup>	.422 <sup>†</sup>	.471 <sup>†</sup>	.447 <sup>†</sup>	.694 <sup>†</sup>	.737 <sup>†</sup>	—						
8. T4	2.11	1.39	$\alpha = .89, \omega = .90$	.360 <sup>†</sup>	.361 <sup>†</sup>	.384 <sup>†</sup>	.477 <sup>†</sup>	.733 <sup>†</sup>	.731 <sup>†</sup>	.833 <sup>†</sup>	—					
Average daily pornography use (hr)																
9. T1	0.61	1.26		.270 <sup>†</sup>	.188 <sup>†</sup>	.123 <sup>†</sup>	.090	.441 <sup>†</sup>	.317 <sup>†</sup>	.290 <sup>†</sup>	.266 <sup>†</sup>	—				
10. T2	0.57	1.13		.166 <sup>†</sup>	.216 <sup>†</sup>	.177 <sup>†</sup>	.142 <sup>†</sup>	.347 <sup>†</sup>	.378 <sup>†</sup>	.323 <sup>†</sup>	.314 <sup>†</sup>	.582 <sup>†</sup>	—			
11. T3	0.51	1.13		.225 <sup>†</sup>	.193 <sup>†</sup>	.215 <sup>†</sup>	.232 <sup>†</sup>	.302 <sup>†</sup>	.345 <sup>†</sup>	.326 <sup>†</sup>	.355 <sup>†</sup>	.420 <sup>†</sup>	.547 <sup>†</sup>	—		
12. T4	0.54	1.16		.090	.108*	.113*	.178 <sup>†</sup>	.196 <sup>†</sup>	.250 <sup>†</sup>	.228 <sup>†</sup>	.266 <sup>†</sup>	.324 <sup>†</sup>	.443 <sup>†</sup>	.368 <sup>†</sup>	—	
13. Religiousness	-.001	0.70	$\alpha = .92, \omega = .94$	.373 <sup>†</sup>	.377 <sup>†</sup>	.400 <sup>†</sup>	.366 <sup>†</sup>	.203 <sup>†</sup>	.238 <sup>†</sup>	.200 <sup>†</sup>	.138 <sup>†</sup>	.295 <sup>†</sup>	.201 <sup>†</sup>	.285 <sup>†</sup>	.143 <sup>†</sup>	—
14. Male gender				-.074*	-.140 <sup>†</sup>	-.210 <sup>†</sup>	-.163 <sup>†</sup>	.316 <sup>†</sup>	.283 <sup>†</sup>	.236 <sup>†</sup>	.254 <sup>†</sup>	.123 <sup>†</sup>	.138 <sup>†</sup>	.133 <sup>†</sup>	.075	
15. Past-year frequency	4.15	1.28		-.343 <sup>†</sup>	-.345 <sup>†</sup>	-.370 <sup>†</sup>	-.359 <sup>†</sup>	.176 <sup>†</sup>	.179 <sup>†</sup>	.123 <sup>†</sup>	.092	-.019	.043	-.011	-.030	
16. Baseline age	33.98	9.87		.010	.138 <sup>†</sup>	.093*	.134 <sup>†</sup>	-.159 <sup>†</sup>	-.114 <sup>†</sup>	-.097*	-.074	-.145 <sup>†</sup>	-.136 <sup>†</sup>	-.088	-.076	

Note.  $\alpha$  represents Cronbach's alpha;  $\omega$  represents McDonald's omega. T1 = Time 1 (baseline measurement;  $N = 850$ ; 52.3% men; 78.9% White/Caucasian, 10.3% African American/Black, 7.3% Latinx/Hispanic, 7.4% Asian/Pacific Islander, 2.6% American Indian, 1% Other); T2 = Time 2 (4-month measurement;  $N = 512$ ); T3 = Time 3 (8-month measurement;  $N = 477$ ); T4 = Time 4 (12-month measurement;  $N = 428$ ).

<sup>†</sup>  $p < .005$ . \*  $p < .05$ .

Table 4  
Univariate Growth Models

Latent intercepts and slopes	<i>M</i>	<i>SE</i>	<i>p</i>	Variance	<i>SE</i>	<i>p</i>
Pornography use						
Intercept	0.62	0.04	<.001	1.10	0.10	<.001
Slope	-0.03	0.02	.147	0.06	0.02	.004
Intercept-slope covariance	-0.16	0.04	<.001			
Model fit	$\chi^2(5, N = 850) = 9.41, p = .094; CFI = .990, TLI = .988, RMSEA = .031, SRMR = .038$					
Moral disapproval						
Intercept	2.66	0.059	<.001	3.13	0.17	<.001
Slope	0.04	0.02	.01	0.02	0.02	.099
Intercept-slope covariance	-0.01	0.04	.810			
Model fit	$\chi^2(5, N = 850) = 4.46, p = .485; CFI = 1.00, TLI = 1.00, RMSEA = .000, SRMR = .012$					
Self-reported problems						
Intercept	2.17	0.05	<.001	1.52	0.10	<.001
Slope	-0.02	0.02	.184	0.043	0.013	.001
Intercept-slope covariance	-0.03	0.03	.326			
Model fit	$\chi^2(5, N = 850) = 11.66, p = .040; CFI = .995, TLI = .994, RMSEA = .038, SRMR = .017$					

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.

unconditional trend toward greater levels of disapproval over time), though its variance was not significant. In contrast, the latent slopes for pornography use and self-reported problems were not significant, though the variance terms for each were. Finally, the covariance between latent intercept and latent slope was significant for only pornography use, and this covariance was negative, indicating that greater pornography use at baseline was predictive of decreasing use over the course of a year.

Subsequent to unconditional univariate latent growth curves (LGCs), we conducted univariate LGCs with covariates (age and gender, as well as baseline religiousness, frequency of pornography use, moral disapproval, self-reported problems, and average daily pornography use) included as predictors of both latent slopes and latent intercepts. These results are specified in Table 5. Generally speaking, latent intercepts were well predicted by covariates,

but latent slopes were more inconsistent. Notably, average use at baseline predicted decreases in self-reported problems over time.

**Two-process parallel process growth curves.** To test the relationships between the trajectories of pornography use, self-reported problems, and moral disapproval, we conducted a series of parallel process latent growth curve analyses. We began by conducting three separate two-process PLGC models for each combination of variables and concluded by specifying a three-process PLGC for all three.

**Self-reported pornography problems and pornography use.** Our specified linear PLGC model for self-reported problems and pornography use revealed that the intercepts for both self-reported problems and pornography use were significant, but the mean slopes for each were not (see Table 6). However, for both latent slopes and intercepts, the variances were significant.

Table 5  
Univariate Growth Curves With Baseline Predictors

Variable	Pornography use		Self-reported problems		Moral disapproval	
	Slope	Intercept	Slope	Intercept	Slope	Intercept
<i>M</i> ( <i>SE</i> )	-0.003 (0.137)	0.927 (0.278)***	0.214 (0.115)	0.284 (0.267)	0.232 (0.104)*	2.57 (0.298)***
Variance ( <i>SE</i> )	0.067 (0.020)***	0.777 (0.087)***	0.047 (0.013)***	0.777 (0.071)***	0.023 (0.013)	1.15 (0.091)***
Slope-intercept correlation	-.617***		.021		.064	
Standardized path estimates						
Age	.052	-.112*	.025	-.059	-.107	-.069*
Male gender	.115	.030	-.024	.239***	.098	-.035
Frequency at baseline	.041	-.137***	-.192*	.149***	-.069	-.166***
Average pornography use at baseline	—	—	-.227*	.326***	-.422***	.008
Self-reported problems	-.370***	.467***	—	—	-.237*	.506
Moral disapproval at baseline	-.037	.002	-.113	.461***	—	—
Religiousness	-.084	.221***	.038	.025	.259*	.275
<i>R</i> <sup>2</sup>	.176	.364	.105	.531	.280	.436

Note. Model 1 fit:  $\chi^2(17, N = 850) = 24.31, p = .111$ ; comparative fit index (CFI) = .988, Tucker-Lewis index (TLI) = .979, root-mean-square error of approximation (RMSEA) = .024, standardized root-mean-square residual (SRMR) = .029. Model 2 fit:  $\chi^2(17, N = 850) = 25.80, p = .078$ ; CFI = .994, TLI = .990, RMSEA = .027, SRMR = .012. Model 3 fit:  $\chi^2(17, N = 850) = 30.17, p = .025$ ; CFI = .993, TLI = .987, RMSEA = .033, SRMR = .018. \*  $p < .05$ . \*\*\*  $p < .001$ .



Table 6

*Study 2: Intercept, Slope, and Model Fit Statistics for Parallel Latent Growth Curve Models Without Covariates*

Latent growth curve intercept/slope	<i>M</i>	<i>SE</i>	<i>p</i>	Variance	<i>SE</i>	<i>p</i>
Two-process parallel growth curve						
Pornography use and self-reported problems (SRP)						
Pornography use intercept	-0.302	0.225	.180	0.580	0.052	<.001
Pornography use slope	0.005	0.104	.964	0.040	0.011	.001
SRP intercept	-1.118	0.195	<.001	0.446	0.038	<.001
SRP slope	0.132	0.081	.180	0.025	0.006	<.001
Model fit	$\chi^2(42, N = 850) = 53.85, p = .104; CFI = .996, TLI = .993, RMSEA = .020, SRMR = .018$					
Moral disapproval and self-reported problems						
Moral intercept	0.828	0.200	<.001	0.624	0.045	<.001
Moral slope	0.081	0.020	<.001	0.012	0.005	.021
SRP intercept	-0.621	0.189	.001	0.491	0.041	<.001
SRP slope	0.164	0.054	.003	0.028	0.006	<.001
Model fit	$\chi^2(45, N = 850) = 57.77, p = .096; CFI = .997, TLI = .995, RMSEA = .020, SRMR = .017$					
Moral disapproval and pornography use						
Pornography use intercept	-1.190	0.145	<.001	0.467	0.047	<.001
Pornography use slope	0.089	0.072	.220	0.042	0.011	<.001
Moral intercept	-0.040	0.132	.764	0.472	0.037	<.001
Moral slope	0.090	0.020	<.001	0.014	0.006	.012
Model fit	$\chi^2(41, N = 850) = 57.74, p = .074; CFI = .996, TLI = .993, RMSEA = .021, SRMR = .020$					
Three-process parallel growth curve						
Moral disapproval, pornography use, and self-reported problems						
SRP intercept	-0.031	0.200	.875	0.617	0.047	<.001
SRP slope	0.129	0.055	.019	0.027	0.006	<.001
Pornography use intercept	-0.098	0.199	.622	0.594	0.053	<.001
Pornography use slope	0.036	0.071	.616	0.041	0.011	<.001
Moral intercept	0.976	0.199	<.001	0.637	0.045	<.001
Moral slope	0.043	0.048	.378	0.014	0.005	.010
Model fit	$\chi^2(48, N = 850) = 81.52, p = .002; CFI = .994, TLI = .991, RMSEA = .025, SRMR = .021$					

*Note.* CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root-mean-square error of approximation; SMSR = standardized root-mean-square residual.

We noted significant, positive, and sizable correlations between both latent intercepts and between both latent slopes (see Table 7). Additionally, we noted that there were not significant associations between either latent intercept and either latent slope.

**Moral disapproval and pornography use.** For our linear PLGC model for moral disapproval and pornography use (see Table 6), we noted that the intercepts for both variables were significant, and the mean slope for moral disapproval was also significant. Additionally, we noted that the variances for both latent slopes and latent intercepts were significant. We noted significant, positive, and sizable correlations between both latent slopes and between both latent intercepts (see Table 7). However, we also noted that the latent intercept for pornography use was significantly negatively associated with the latent slope for moral disapproval, suggesting that greater use at baseline was associated with slower increases in moral disapproval of pornography.

**Moral disapproval and self-reported pornography problems.** In initial calculations for the PLGC between moral disapproval and self-reported problems, the model covariance matrix was improperly specified and failed to converge. As such, we chose to allow the residual variances within time points (e.g., baseline moral disapproval with baseline self-reported problems) to covary and

then examined model comparisons to see whether such covariances both improved model fit (e.g., significant difference in  $\chi^2$ ) and still provided more information (e.g.,  $\Delta$ Bayesian information criterion [BIC]  $\approx >6$ ; Fabozzi, Focardi, Rachev, & Arshanapalli, 2014; Kass & Raftery, 1995).

Sequential testing of plausible models was conducted, wherein the fit of each model was compared to the fit of the prior model. Allowing residual covariance within time points at Time 1 (T1) significantly improved fit ( $\Delta\chi^2 = 13.5, p < .001$ ) and provided modest improvement in BIC ( $\Delta$ BIC = 7). Allowing residual covariance within time points at T1 and T2 substantially improved fit over residual covariance only at T1 ( $\Delta\chi^2 = 43.83, p < .001$ ) and provided substantial improvement in BIC ( $\Delta$ BIC = 27). Allowing residual covariance within time points at T1–T3 again improved fit over residual covariance only at T1 and T2 ( $\Delta\chi^2 = 20.82, p < .001$ ) and provided substantial improvement in BIC ( $\Delta$ BIC = 14). However, allowing residual covariance within time point for all four time points did not produce a meaningfully more informative model, despite a significant improvement in fit ( $\Delta\chi^2 = 7.28, p = .007; \Delta$ BIC = 1). As such, we retained the model allowing residual covariances at T1, T2, and T3.

Within this final model, we noted significant and substantial correlations between the latent slopes ( $r = .715, p < .001$ ) and

Table 7

*Covariances and Correlations Between Latent Intercepts and Slopes for Parallel Process Growth Curve Models Without Exogenous Baseline Covariates*

Latent slopes and intercepts	Self-reported problems (SRP)		Moral disapproval		Pornography use	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Two-process parallel growth curve						
Moral disapproval and self-reported problems						
SRP intercept	—	-.012	.545 <sup>†</sup>	-.118		
SRP slope	-.001	—	-.038	.715 <sup>†</sup>		
Moral intercept	.302 <sup>†</sup>	-.005	—	-.115		
Moral slope	-.009	.013 <sup>†</sup>	-.010	—		
Pornography use and self-reported problems						
SRP intercept	—	-.018			.571 <sup>†</sup>	-.124
SRP slope	-.002	—			-.128	.487 <sup>†</sup>
Pornography use intercept	.291 <sup>†</sup>	-.015			—	-.395 <sup>†</sup>
Pornography use slope	-.017	.015 <sup>†</sup>			-.060 <sup>†</sup>	—
Moral disapproval and pornography use						
Moral intercept			—	.015	.015	-.043
Moral slope			.001	—	-.462 <sup>†</sup>	.781 <sup>†</sup>
Pornography use intercept			.007	-.034 <sup>†</sup>	—	-.505 <sup>†</sup>
Pornography use slope			-.006	.018 <sup>†</sup>	-.075 <sup>†</sup>	—
Moral disapproval, pornography use, and self-reported problems						
SRP intercept	—	-.094	.546 <sup>†</sup>	-.343 <sup>*</sup>	.627 <sup>†</sup>	-.086
SRP slope	-.015	—	-.041	.800 <sup>†</sup>	-.160 <sup>*</sup>	.427 <sup>†</sup>
Moral intercept	.476 <sup>†</sup>	-.007	—	-.345 <sup>†</sup>	.144 <sup>†</sup>	-.004
Moral slope	-.030 <sup>*</sup>	.013 <sup>†</sup>	-.031 <sup>†</sup>	—	-.322 <sup>†</sup>	.603 <sup>†</sup>
Pornography use intercept	.500 <sup>†</sup>	-.024	.120 <sup>†</sup>	-.033 <sup>†</sup>	—	-.326 <sup>†</sup>
Pornography use slope	-.016	.015 <sup>†</sup>	-.001	.011 <sup>†</sup>	-.057 <sup>†</sup>	—

Note. Covariance data appear below the diagonal; correlations ( $r$ ) appear above the diagonal.

<sup>†</sup>  $p < .005$ . \*  $p < .05$ .

intercepts ( $r = .545$ ,  $p < .001$ ) for both growth trajectories. Additionally, we noted significant and positive correlations between residuals within time points at Time 1 ( $r = .223$ ,  $p < .001$ ), Time 2 ( $r = .415$ ,  $p < .001$ ), and Time 3 ( $r = .344$ ,  $p < .001$ ). Collectively, these robust associations across and within time points suggests that these variables are extremely closely related.

**Three-process parallel growth curve models.** As is illustrated in Figure 1 and summarized in Tables 6 and 7, we combined the above three models into a single, three-process PLGC model, which demonstrated excellent fit. Of note, as indicated in Table 6, the slope for self-reported problems in this model was significant, as was the intercept for moral disapproval. The variances for all latent slopes and intercepts were also significant. As is summarized in Table 7, we observed positive and substantial correlations among all latent intercepts and among all latent slopes. We also observed negative associations between the latent slope of moral disapproval and the latent intercepts for self-reported problems and pornography use. We similarly observed a sizable negative correlation between the latent slope of pornography use and the latent intercept of pornography use. Collectively, these findings indicate that greater use of pornography at baseline is associated with decreases in self-reported problems, pornography use, and moral disapproval over time. Furthermore, moral disapproval, pornography use, and self-reported problems seem to covary together quite robustly over time. Finally, moral disapproval and self-reported problems seem to covary strongly both over time and within time,

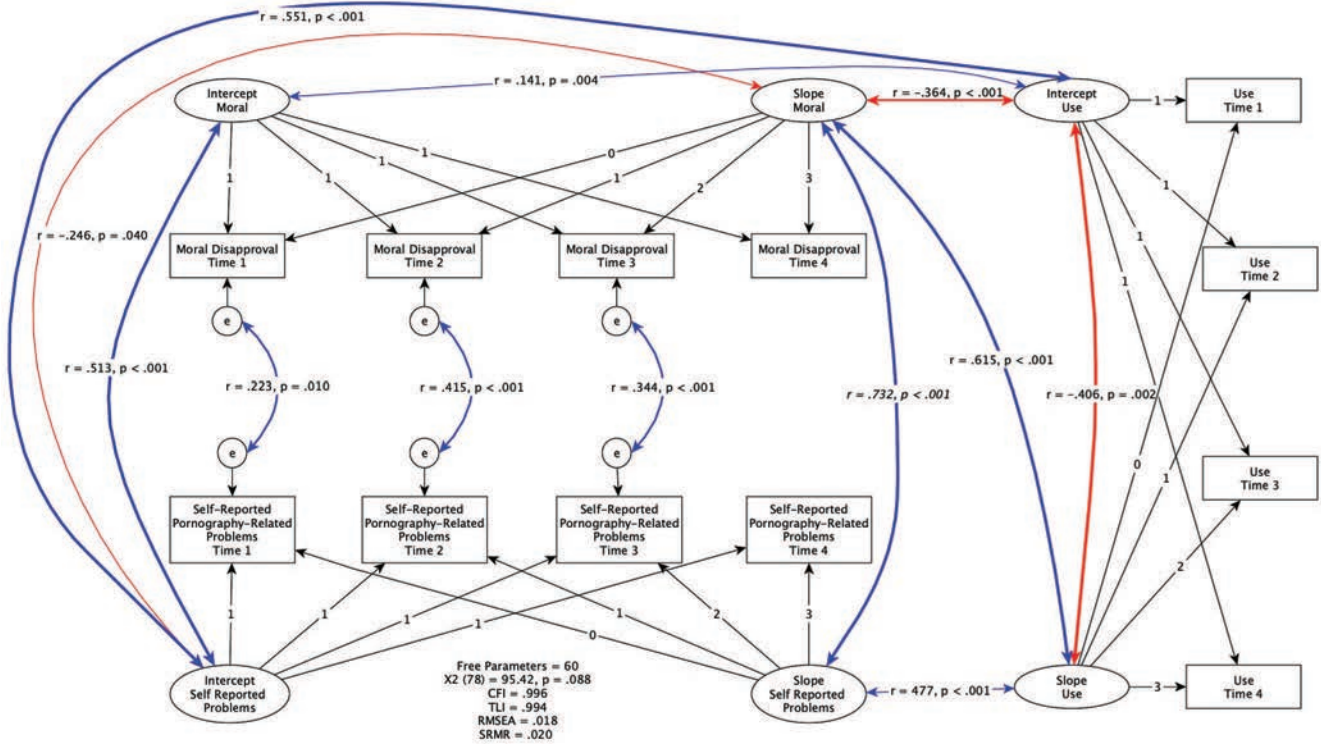
suggesting an extremely robust relationship between the two domains.

## General Discussion

At the outset of this work, we sought to more fully account for the role of moral incongruence in the experience of pornography related problems specifically and the experience of compulsive sexual behavior more generally. Given the recent inclusion of the CSBD diagnosis in the *ICD-11*, this work particularly timely. We also sought to examine how the trajectories of pornography use, self-reported pornography-related problems, and moral disapproval of pornography use corresponded over time. Below, we briefly summarize our findings and discuss the implications as well as study limitations of the present work.

## Summary and Integration of Findings

A sizable literature has documented associations between moral disapproval of sexual behavior and self-reported compulsivity or addiction to those behaviors (for a review, see Grubbs et al., 2019a). Several prior works have speculated that such moral disapproval was an indication of moral incongruence, because such works were measuring moral disapproval of sexual behavior among people engaging in such activities. The present work extends past works by estimating moral incongruence more directly as the interaction of moral disapproval of pornography use and



*Figure 1.* Three-process parallel growth curve for pornography use, self-reported problems, and moral disapproval. Blue lines indicate positive correlations, and red lines indicate negative correlations. Baseline covariates were included as predictors (i.e., age, gender, religiousness) but omitted from the diagram for clarity. CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root-mean-square error of approximation; SMSR = standardized root-mean-square residual. See the online article for the color version of this figure.

pornography use itself and by examining the trajectories of these constructs over time.

In Study 1, across three samples, including two that were matched to U.S. nationally representative norms, results clearly indicate that the interaction of moral disapproval and use is associated with substantially greater report of self-appraised compulsivity or addiction. Consistent with prior literature, in all three samples, the simple main effects of pornography use and moral disapproval were positive and significant. Moral disapproval and use are both clearly related to self-reports of problems related to use. However, the interaction of these two terms seems to be particularly important. Specifically, we found that the interaction of both average daily use and moral disapproval and the interaction of frequency of use and moral disapproval were associated with greater reports of self-reported problems, using a combination of well-validated measures. We also noted considerable discrepancies in the effect sizes of these interactions across samples. The discrepancy in the effect sizes between our first samples may be a result of how we measured pornography use (i.e., average daily use in Sample 1 and pornography use frequency in Samples 2 and 3). However, Sample 1 was also less representative than other samples, being composed of college students who were younger and more likely to be women.

Regarding the interpretation of the observed interactions, given the nature of the data, the directionality of such interactions re-

mains unclear. We have interpreted the interaction throughout as an indication that pornography use is much more strongly associated with self-reported problems at higher levels of moral disapproval, because this is consistent with prior empirical and theoretical work. However, a converse interpretation is also possible. That is, it is plausible that pornography use amplifies the links between moral disapproval and self-reported problems. In this interpretation, moral disapproval is more likely to predict self-reported problems when pornography use is sufficiently high to produce feelings of moral incongruence. In either case, however, both of these interpretations (i.e., that moral disapproval better predicts self-reported problems at high levels of use or that use better predicts self-reported problems at high levels of moral disapproval) bear similar implications: Moral incongruence (the interaction of use and disapproval) is a particularly powerful predictor of self-reported problems with pornography.

These findings become more complex when examined longitudinally. That is, over time, pornography use, moral disapproval of pornography use, and self-reported problems with pornography use all covaried together substantially. Increases in one corresponded to increases in both others. Such covariance among all factors suggests that moral disapproval may, in some cases, be related to one’s own use habits. That is, it is plausible that moral disapproval among users may be a function of distress over use, rather than simply a source of distress. Individuals who use ex-

cessively might not only feel out of control but also feel that their behavior is morally wrong. Future work should specifically examine the extent to which personal moral disapproval (i.e., disapproving of one's own behaviors) versus third-person disapproval (i.e., disapproving of anyone viewing pornography) plays distinct roles in predicting self-reported problems.

We also noted that moral disapproval covaried with self-reported problems both across time points and within time points. Although the intercepts for these variables demonstrated clear distinctions, the trajectories of these variables were extremely highly correlated both within and across time.

Collectively, these findings suggest that morally based distress about compulsive sexual behavior (at least in the form of compulsive pornography use) is likely a common feature of self-reported problems with sexual behavior. Consistent with prior theoretical reviews (Brand, Antons, Wegmann, & Potenza, 2019; Wright, 2019), case reports (Kraus & Sweeney, 2019), and empirical analyses (Walton, 2019), it appears that moral disapproval of sexual behavior might be integral to self-reported problems with such behavior. Distinguishing between moral distress over such behavior and self-reported problems with such behavior may be difficult, underscoring a need for rigorous assessment and measures of the diagnostic criteria of CSBD that assess for signs of clinical impairment in functioning. As noted elsewhere (Kraus & Sweeney, 2019), not all those who seek treatment for CSBD will meet diagnostic criteria despite reported distress from problematic pornography use. Teasing apart objective (e.g., failed attempts to quit or stop; impairment in important domains of functioning such as occupation, familial, social, personal, or educational) versus subjective factors (e.g., feelings of guilt or shame) is an enduring need in future research.

We also note that, somewhat unexpectedly, greater initial use of pornography seems to be associated with decreases in pornography use, in self-reported pornography problems, and in moral disapproval of pornography use. That is, although greater initial pornography use was concurrently associated with greater self-reported problems, over time, it actually predicted decreases in self-reported problems. Potentially, this could be the result of a ceiling effect, but given the positive skew of the variable and the overall low levels of use reported by most people, this seems unlikely. It is also plausible that high levels of use at baseline are found only among people currently experiencing problems with pornography viewing and that, over time, they are more likely to regress to normal levels of use. Further longitudinal studies of the role of use in predicting changes in self-perception and behavior are needed.

Ultimately, all of these factors point toward the need for more research into the cultural contexts of compulsive sexual behavior disorder and the professionals who might be encountering it in clinical work. Recent work in the field of social work (Droubay & Butters, 2019) has demonstrated that more religious therapists are more likely to view pornography use as evidence of a mental health problem. This is consistent with much older research demonstrating that more religious marriage and family therapists are more likely to diagnose patients as having a "sexual addiction" (Hecker et al., 1995, p. 261). In contrast, work within clinical psychology has found that professionals are less likely to diagnose individuals with lesbian, gay, bisexual, transgender, and queer identities as having

compulsive sexual behavior disorder than they are to diagnose heterosexual, cis-gendered individuals, even when the patients exhibit the same symptoms (Klein et al., 2019). Research examining CSBD among women is also sorely lacking (Kowalewska et al., 2019). In sum, the present work contributes to a body of research demonstrating that cultural and moral identities on the part of mental health professionals and patients are important to consider when evaluating the presentation, assessment, and diagnosis of compulsive sexual behavior disorder. The diagnostic criteria for CSBD already mention the need to attend to moral distress, and if clinicians accurately apply the criteria, the role of morally based distress may be properly accounted for. Although the present work was focused on members of the general population, rather than professionals or treatment-seeking individuals, the findings of this work reiterate the need for thorough assessment and fidelity to diagnostic criteria.

### Limitations

All of the above discussion must be considered in light of a few key limitations. Primarily, the data for the present work were exclusively derived from community- and population-level samples, which may vary substantially from treatment-seeking samples. This is a clear limitation on the generality of our findings. Additionally, the present work relied on self-reported behaviors and perceptions of behavior, both of which are known to be unreliable in some circumstances (Ellis, Davidson, Shaw, & Geyer, 2019). Both of the above points (nonclinical samples and self-reported data) are likely to be addressed as more clinical studies are conducted regarding the new CSBD diagnosis.

We also note that the present work did not examine whether moral disapproval of pornography use and moral incongruence were related to specific types of pornography use. That is, one can easily imagine that moral distress over pornography use may vary substantially based on the content of such use. Illegal, taboo, or paraphilic forms of pornography may provide stronger feelings of incongruence in comparison to more mainstream forms of pornography. Future work should consider the role of content itself in driving some of the above-described associations.

The present work, though diverse and roughly representative of the U.S. population, is limited to the United States. Prior works have indicated that religiousness, moral incongruence, and pornography use may have different relationships in non-U.S. samples (i.e., Germany: Baranowski, Vogl, & Stark, 2019; Malaysia: Fernandez, et al., 2017; Poland: Gola, Lewczuk, & Skorko, 2016; or Croatia: Kohut & Štulhofer, 2018). Finally, we note that we examined only one potentially compulsive sexual behavior (problematic pornography use). Although CSBD is most likely to manifest as such behavior, other behaviors for which there are more social stigmas (e.g., frequenting prostitutes; infidelity) may be differently related to moral incongruence and related constructs.

### Conclusion

The novel diagnostic criteria for CSBD in the *ICD-11* note that CSBD-related symptoms such as distress or impairment cannot be the sole result of moral incongruence or religious distress (Kraus et al., 2018). This is an important caveat given the body of prior



research documenting that moral incongruence is clearly a contributing factor to self-reports of pornography-related problems. The results of the present study suggest that simply distinguishing between the two might not be an entirely straightforward endeavor. In a series of nonclinical samples, moral incongruence seemed to play a vital role in the experience of pornography-related problems. The trajectories of self-reported problems and self-reported moral disapproval of pornography use were strongly correlated over time. Moreover, although self-reported problems and actual pornography use behaviors also covaried together positively, baseline levels of both variables actually predicted decreases in both slopes over time. More simply, greater feelings of addiction and greater use of pornography both predicted decreases in pornography use and decreases in self-reported feelings of addiction. Collectively, this body of evidence strongly suggests that the links between self-reported feelings of dysregulation or addiction, self-reported use of pornography, and moral disapproval of pornography maintain complex relationships that do not easily integrate with prior literature on other addictive behavior patterns.

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