

Psychological, Relational, and Sexual Correlates of Pornography Use on Young Adult Heterosexual Men in Romantic Relationships

Pornography is both prevalent and normative in United States' culture; however, little is known about the psychological and relational affects that it can have on men in romantic relationships. Thus, the purpose of this study was to examine theorized antecedents (i.e., gender role conflict and attachment styles) and consequences (i.e., poorer relationship quality and sexual satisfaction) of men's pornography use among 373 young adult heterosexual men. Findings revealed that both frequency of pornography use and problematic pornography use were related to greater gender role conflict, more avoidant and anxious attachment styles, poorer relationship quality, and less sexual satisfaction. In addition, the findings provided support for a theorized mediated model in which gender role conflict was linked to relational outcomes both directly and indirectly via attachment styles and pornography use. Finally, psychometric support for the Pornography Use Scale developed for this study is provided.

Keywords: pornography, scale, relationship quality, sexual satisfaction, gender role conflict

Pornography refers to the “the explicit description or exhibition of sexual subjects or activity in literature, painting, pictures, books, films, etc., in a manner intended to stimulate sexual excitement rather than aesthetic feelings” (Oxford English Dictionary, 2008). The pornography industry is one of the most lucrative economies, generating an estimated annual income of more than \$13 billion dollars in the United States alone and having greater revenues than Google, Yahoo, Microsoft, Apple, Amazon, eBay, and Netflix combined (Ropelato, 2007). Research indicates that pornography use has increased over the past decade (Ropelato). In addition, males tend to use pornography more than females with differences producing large effect sizes (for a meta-analysis see Peterson & Hyde, 2010). Furthermore,

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men tend to feel more positively about pornography than women (Carroll, Padilla-Walker, Nelson, Olson, McNamara, & Madsen, 2008). With the abundance and wide-spread use of pornography, we have to question how this affects men who are the main “audience” of pornography. However, very little research exists examining the psychosocial, relational, and sexual correlates of men’s pornography use on young adult men in heterosexual romantic relationships. Thus, the purpose of this study is to examine theorized antecedents (i.e., gender role conflict and attachment styles) and consequences (i.e., poorer relationship quality and sexual satisfaction) of men’s pornography use on young adult men in heterosexual romantic relationships.

THEORIZED ANTECEDENTS OF MEN’S PORNOGRAPHY USE

Two correlates and potential antecedents to men’s pornography use are gender role conflict and attachment style. Gender role conflict is defined as a psychological state in which socialized gender roles have negative consequences on others and the self and occurs when restrictive and sexist gender roles result in personal rigidity, devaluation, or even violation of the self or others (O’Neil, Helms, Gable, David, & Wrightsman, 1986). O’Neil et al. posited that fear and devaluation of femininity and sexism in men’s lives produce gender role conflict along several dimensions including “success, power and competition; restrictive emotionality; restrictive affectionate and sexual behavior between men; and conflicts between work and family relations (p. 343).” Gender role conflict has been found to be related to negative and stereotypical thinking about women, hostility towards women, acceptance of rape myths, sexual entitlement, sexually aggressive behavior and/or the likelihood of forcing sex, and positive attitudes toward and tolerance for sexual harassment (for a review, see O’Neil, 2008). Given these findings, it seems logical that men with rigid and restrictive notions of masculinity may have a tendency to view materials that depict women in a sexually stereotypical manner, degrade women, and/or convey the message that women’s bodies may be stared at, touched, and used by a man at any time he so pleases (Kilbourne, 1999).

Male gender role conflict has also been found to be related to problems with attachment including more fearful and avoidant attachment styles, more difficulty with identifying and expressing emotions, less self-disclosure in intimate relationships, more difficulty with intimacy, dysfunctional patterns in romantic relationships, marital discord, and greater dissatisfaction in coupled relationships (for a review, see O’Neil, 2008). Thus, men with high levels of gender role conflict may use pornography as a way to deal with their deficits in interpersonal functioning and to avoid the intimate aspects of a romantic relationship. Given the previous research on gender role conflict and sexism and interpersonal functioning, we hypothesize that gender role conflict will be positively correlated with increased pornography use, because using pornography fits in with traditional notions of masculinity, allows men to feel power and control over women, and creates sexual arousal without the need for interpersonal intimacy.

A second correlate and potential antecedent to men’s pornography use is attachment style. Three distinct patterns of attachment have been found: secure, insecure anxious, and insecure avoidant (Ainsworth, Blehar, Waters, & Wall, 1978). Under the attachment theory framework, romantic love in adulthood includes three behavioral systems: attachment, care

giving, and sexual mating (Shaver, Hazan, & Bradshaw, 1988). In this model, the attachment system develops earliest and influences the sexual system and leads to a reciprocal relationship between the attachment and sexual systems (Birnbaum, Mikulincer, Reis, Gillath, & Orpaz, 2006).

Research suggests that attachment styles can aide in understanding many variances in romantic and sexual relationships. We posit that attachment style will be related to men's pornography use, as attachment style can suggest a certain presence or existence of anxiety and/or avoidance in a close relationship (Zapf, Greiner, & Carroll, 2008). Individuals who have a reasonably low level of anxiety and/or avoidance are often identified as having a secure attachment style. Those with a secure attachment style are inclined to be trusting, experience more warmth and stability in relationships, and are more self-assured and confident about their relationships. In addition, these individuals tend to truly believe, without much worry, that their relationship will persevere and continue overtime (Zapf et al.). Conversely, individuals who have high levels of anxiety and/or avoidance have an insecure attachment style. They are perceived as clingy or needy at times, and often live in fear that their relationship will or could end at any moment. In addition, these individuals may be jealous of their partners, be emotionally unreliable in romantic relationships, and fear or even avoid closeness and intimacy with their partners (Zapf et al.). Thus, it seems likely that men who have more avoidant and/or anxious attachment styles will use more pornography because it provides a medium in which one can become emotionally disengaged from one's partner by focusing energy and emotion into activities that are not part of the individual's ongoing reality or relationship. Those individuals who are avoidant and/or anxious may be uncomfortable with "real" sexual activity on some level, as sex or sexually-related activities can demand physical and psychological closeness.

Previous research indicates that avoidant individuals consistently seek out physical and psychological distance and space from their romantic partners (Birnbaum et al., 2006). By distancing themselves from their partners, they may be essentially deactivating their attachment systems in a couple of ways; either the avoidant individual is fundamentally refraining from sexually activity altogether (Kalichman et al., 1993; Tracy, Shaver, Albino, & Cooper 2003), engaging in fairly emotionless sexual activity in some capacity like casual, short-term relationships (Brennen & Shaver, 1995), or viewing pornography. Those with more avoidant attachment styles have been found to engage in more casual sex and have more accepting attitudes towards sex (Feeney, Noller, & Patty, 1993; Brennan & Shaver 1995). In addition, they have been found to be less interested in romantic relationships universally, have higher breakup rates than securely attached individuals, and experience much less distress after a breakup (Brennen & Shaver; Simpson, 1990).

Anxious attachment is often associated with worry and insecurity about oneself (such as one's sexual attractiveness or acceptability), because the underlying issue for anxious individuals is worry about rejection (Tracy et al., 2003). Individuals who have more anxious attachment styles may have tendencies to view materials like pornography more than securely attached individuals, as they do not have to experience the risk, threat, or anxiety that can come with romantic or sexual rejection. By using or even substituting pornography and "fantasy" relationships for real intimacy, anxiously attached individuals may not have to become vulnerable with a real partner. Thus, we hypothesize that men who are more anxious and/or avoidantly attached will have greater pornography use, because using pornography

allows them to experience some level of emotional and/or sexual gratification without having to risk intimacy or interpersonal rejection.

THEORIZED CONSEQUENCES OF MEN'S PORNOGRAPHY USE

Two correlates and potential consequences of men's pornography use on men are poorer relationship quality and less sexual satisfaction. A number of mostly qualitative studies have examined the potential effects that male pornography viewing can have on a committed relationship, with some of the findings resulting in communication deterioration (Schneider & Schneider, 1996), deterioration of the couple's sexual relationship and intimate life (Bergner & Bridges, 2002), and feelings of shame, resentment, and insecurity (Schneider & Schneider). However, these studies describe the consequences of men's pornography use in terms of the relationship in general and/or specifically on women. For example, results of qualitative studies indicate that when wives discover their husband's heavy pornography use, themes of betrayal, isolation, uncertainty, confusion, and loss of trust in the relationship emerge resulting in significant damage to the relationship (Bergner & Bridges; Zitzman, 2007).

Four quantitative studies have explored the links between pornography use and relational outcomes. In a U.S. based study of 1291 unmarried individuals in romantic relationships, individuals who reported viewing erotic magazines, movies, and websites alone reported less relationship quality than those who never viewed sexually explicit materials; however the effect size was small (Maddox, Rhoades, & Markman, 2011). Relatedly, in a general population survey of 531 U.S. Internet users, men and women who reported being in a happy marriage were 61% less likely to have visited a sexually explicit website during the past month than those who were not in a happy marriage (Stack, Wasserman, & Kern, 2004). Finally, pornography use was negatively related to relationship satisfaction among a sample of 326 male college students (Morgan, 2011), and a sample of 217 U.S. coupled heterosexual male Internet users (Bridges & Morokoff, 2011).

In addition to the relationship quality, sexual satisfaction may also be negatively affected by men's pornography use in heterosexual romantic relationships. Previous research has found that there is typically more emotional satisfaction and even physical pleasure in an exclusive, monogamous relationship than with more than one partner at a time (Laumann, Gagnon, Michael, & Michaels, 1994). Men's use of pornography can be seen as medium for engaging in sexual activities outside the primary coupled relationship. In a study by Zillman and Bryant (1998), college students were exposed to nonviolent pornography videos over the course of several weeks to assess for sexual satisfaction in their own intimate relationships. Results from their study found that, after pornography consumption, participants uniformly reported less sexual satisfaction with their intimate partners, namely with their partner's physical appearance, sexual performance, affection, and sexual curiosity. In addition, participants attributed more importance to sexual activity with diminished emotional involvement. Relatedly, Maddox et al. (2011) found that participants who reported viewing erotic websites, magazines, and movies alone reported less sexual satisfaction than those who never viewed sexually explicit materials. Finally, Morgan (2011) found that frequency of viewing pornography was negatively related to sexual satisfaction among college men.

In a qualitative study, women who had discovered their male partners pornography use reported that their male partners seemed more withdrawn and secretive and that the quality

of their sexual relationships had deteriorated (Bergner & Bridges, 2002). Finally, a study examining sexually suggestive content in videogames found that playing videogames that include themes of sexual objectification may prime thoughts associated with sex and further promote viewing women as sexual objects, which in turn may lead to sexually inappropriate behavior toward women in real-life social situations (Yao, Mahood, & Lenz, 2010). However, it is important to acknowledge that not all published literature endorses a harms-based framework. For example, some research suggests that exposure to some forms of pornography is related to less sexual anxiety and more sexual self-esteem and genital self-esteem among Canadian college men (Morrison, Ellis, Morrison, Bearden, Harriman, 2006; Morrison, Harriman, Morrison, Bearden, & Ellis, 2004)

Overall, the little research that does exist seems to suggest that pornography use can negatively affect romantic relationships in both emotional and sexual ways. However, this research is limited by heavy use of qualitative studies using small samples, which limits the generalizability of findings. In addition, the handful of quantitative studies that have been conducted are limited by the use of measures, typically one item, that lack psychometric (e.g., validity and reliability) support (c.f., Bridges & Morokoff, 2011; Maddox et al., 2011; Morgan, 2011; Morrison et al., 2006; Stack et al., 2004). Furthermore, these measures fail to distinguish between frequency of pornography use and problematic pornography use, that is when the amount of use becomes a concern to self and/or others and results in secondary problems (e.g., life and relationship problems) related to that use.

CURRENT STUDY

In sum, pornography is both prevalent and normative in United States' culture; however, little is known about the psychological, relational, and sexual influences that it can have on young adult men in heterosexual romantic relationships. The purpose of this study is to examine our theorized correlates of male pornography use described above. In addition, we will examine a model in which attachment styles and pornography use mediate the relations between gender role conflict and relational and sexual satisfaction. More specifically, we will examine the following hypotheses:

HYPOTHESIS 1: Greater gender role conflict, more avoidant attachment styles, and more anxious attachment styles will be related to more pornography use. In addition, more pornography use will be related to poorer relationship quality and less sexual satisfaction.

HYPOTHESIS 2: Gender role conflict will be directly and indirectly related to relationship quality and sexual satisfaction. That is, gender role conflict will lead to more anxious attachment and more avoidant attachment, which in turn will lead to more pornography use, which in turn will lead to poorer relationship quality and less sexual satisfaction.

METHOD

Participants

The initial sample comprised 436 participants who completed an online survey. Eighteen participants who failed one or more of the three validity checks (e.g., For this item, click the

button labeled red), six self-identified female participants, 21 participants who reported they were not currently in a romantic relationship, three participants who were over 30 years old, six participants who reported being in a romantic relationship less than 3 months, 4 self-identified sexual minority men, and five participants with substantial missing data (more than 10% of one measure) were eliminated from the dataset, which resulted in a final sample of 373 male participants.

Male participants ranged in age from 18 years to 29 years, with a mean age of 19.16 years ($SD = 1.75$). The sample was 4% African American, 4% Asian American/Pacific Islander, 1% Latino, 89% White, 1% Multiracial, and 1% Other. Participants school status was 68% 1st year undergraduates, 18% Sophomores, 10% Juniors, and 4% Seniors. Twenty six percent of participants were first generation college students. Participants reported being a member of the following social classes: 4% wealthy, 35% upper middle, 43% middle, 11% lower middle, 6% working class, and 1% poor. Relationship length ranged from .25 to 7.25 years, with a mean of 1.32 years ($SD = 1.16$).

Measures

Men's use of pornography. To date, there have been no validated scales that measure men's pornography use. Studies examining pornography use typically use a one item question to assess frequency of use and studies on problematic pornography use have been qualitative in nature. Thus, men's pornography use was assessed via a scale developed for this study, the Pornography Use Scale that includes items assessing frequency of use and problematic use. See Appendix A for final scale items and response options. Means scores are used with higher scores indicating more pornography use.

To provide initial evidence of content validity, 16 items (8 assessing frequency of use and 8 assessing problematic pornography use) were developed by the authors based on a review of the literature using PsychInfo and Google Scholar searches for pornography, sexually explicit material, and sexual media. In addition, we reviewed research on sexual addiction, sexual compulsivity, and other addictions (e.g., alcohol and drug abuse). For frequency of use, we were interested in assessing frequency of use for the three most popular types of pornography: videos/DVDs, the Internet, and magazines (Cooper, Delmonico, & Burg, 2000; Ropelato, 2007), across a variety of time frames (e.g., viewing time per sitting, per week, per month). For problematic use, we were interested in assessing when the amount of use becomes a concern to oneself and/or to others and results in secondary problems (e.g., life and relationship problems) related to that use. Finally, we were interested in creating a measure that adequately covered the content domain but was short enough to use in large-scale research studies.

Our initial item pool was reviewed by two doctoral level counseling psychologists and one doctoral level counselor educator. Based on feedback for the initial scale items, two items were deleted: one because it was a double barreled question [i.e., How often have you either unintentionally/accidentally or deliberately, been exposed to sexual/pornographic content in magazines, videos, the internet or while online (e.g., web pages, search results, e-mail/attachments, spam, pop-up's, chat rooms, file sharing, etc...)?], and the second because it was developed for the problematic pornography use subscale but overlapped conceptually with the frequency of use subscale (i.e., I believe that I use pornography more than what would be considered a "normal" or "average" amount).

To establish structural validity for the remaining 14 item Pornography Use Scale, an exploratory factor analyses using principal axis factoring with promax rotation was conducted. The chi-square test of sphericity was significant ($p < .001$), which indicates that the data was appropriate for factor analysis (Kahn, 2006). The Kaiser-Meyer-Oklin (KMO) measure of sampling adequacy yielded a value of .88, which indicates that the sample size was large enough to evaluate the factor structure (Kahn). Five criteria were used to determine the number of factors to be extracted and rotated for the final solution: (a) parallel analysis, (b) Velicer's minimum average partial (MAP) test, (c) a minimum loading of three items on each factor, (d) percentage of total variance explained by each factor, and (e) interpretability of the solution, using a factor loading cutoff of .32 and no cross-loadings with less than .15 difference from an items' highest factor loading (Kahn; Worthington & Whittaker, 2006).

Results of the parallel analysis indicated a three-factor solution and Velicer's MAP test indicated a two-factor solution. Therefore, we studied solutions of two and three factors. Because we assumed that the factors would be correlated we used promax rotation. The three-factor solution was poorly defined with only two items so we went with the two-factor solution. All the problematic pornography use items loaded on Factor 1 (eigenvalue = 6.18) and accounted for 44% of the variance. All of the pornography frequency of use items loaded on Factor 2 (eigenvalue = 2.61) and accounted for 19% of the variance. Table 1 shows factor loadings, possible range, means, and standard deviations for the Pornography Use Scale items. Factor loadings ranged from .37 to .92 for the frequency of use subscale and .60 to .88 for the problematic use subscale.

Internal consistencies (alpha) for scores were .88 for the frequency of use subscale and .91 for the problematic use subscale. Initial evidence for construct validity was provided by positive correlations between the frequency of pornography use and problematic pornography use subscales ($r = .42, p < .05$) and between The Internet Sex Screening Test online sexual compulsivity (modified for pornography use in the current study) subscale (Delmonico & Miller, 2003; alpha = .68) and frequency of pornography use ($r = .27, p < .05$) and problematic pornography use subscales ($r = .71, p < .05$). In addition, discriminant validity was supported by demonstrating that the pornography use subscale and problematic pornography use subscale were conceptually distinct from relationship length ($r_s = -.12, p < .05; .02, p > .05$) and social desirability responding assessed via the short form of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlow, 1960; Reynolds, 1982; alpha = .61; $r_s = -.15, -.11, p_s < .05$).

Men's gender role conflict. Gender role conflict was assessed using the Gender Role Conflict Scale (O'Neil et al., 1986), which consists of 37 items assessing masculine role conflict along four dimensions: Success, Power, and Competition (e.g., "Moving up the career ladder is important to me"); Restrictive Emotionality (e.g., "I have difficulty telling others I care about them"); Restrictive Affectionate Behavior Between Men (e.g., "Affection with other men makes me tense"); and Conflict Between Work and Family Relations (e.g., "I feel torn between my hectic work schedule and caring for my health"). Each item is rated on a 6-point Likert scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Mean scores are used with higher scores indicating more gender role conflict. O'Neil reported that alphas for the four factors ranged from .75 to .85. Alpha for the current sample was .92.

Table 1
Items, Factor Loadings, Possible Range, Means, and Standard Deviations for Pornography Use Scale

Item No.	Item	Factor 1	Factor 2	Possible Range	Mean (SD)
10	My use of sexually explicit materials/ pornography (including online, magazines, DVD/videos) has interfered with certain aspects of my relationship.	.88	-.07	1-5	1.86 (1.18)
9	My use of sexually explicit materials/ pornography (including online, magazines, DVD/videos) has interfered with certain aspects of my life.	.87	.00	1-5	1.93 (1.18)
13	My use of sexually explicit materials/ pornography has negatively affected me.	.86	-.11	1-5	2.10 (1.29)
12	My use of sexually explicit materials/ pornography is a problem in my romantic relationship currently.	.78	-.04	1-5	1.64 (1.02)
11	sometimes wish I would stop using sexually explicit materials/pornography.	.68	.05	1-5	2.83 (1.44)
14	I believe I am addicted to sexually explicit materials/pornography.	.61	.18	1-5	1.64 (1.03)
8	I use sexually explicit materials/pornography (including online, magazines, DVD/videos) more than I would like to.	.60	.25	1-5	2.71 (1.41)
5	More specifically, how frequently do you view sexually explicit/pornographic material (such as magazines, movies, and/or Internet sites)?	-.03	.92	0-5	1.73 (1.39)
3	How frequently do you view sexual explicit materials/pornography via the Internet?	.03	.90	0-5	1.85 (1.37)
4	Taken together, how frequently do you view sexually explicit/pornographic material (such as magazines, movies, and/or Internet sites)?	-.04	.84	0-4	1.25 (1.08)
6	Taken together, how many hours per week do you view sexually explicit/pornographic material (such as magazines, movies, and/or Internet site)?	-.02	.83	0-5	.72 (.86)
7	When using/viewing sexually explicit/pornographic materials (including online, magazines, DVD/videos/movies) in one sitting, I spend approximately ____ amount of time doing such.	.05	.66	0-5	1.28 (.96)
2	How frequently do you view sexual explicit materials/pornography via adult videos, movies, and/or films?	.07	.42	0-5	.66 (1.10)
1	How frequently do you view sexual explicit materials/pornography via adult magazines (e.g. Playboy, Hustler)?	.09	.37	0-5	.42 (.91)

Note: Factor 1 = Problematic Pornography Use; Factor 2 = Frequency of Pornography Use.

Attachment styles. Attachment was measured by the Experiences in Close Relationships Scale (Brennan, Clark, & Shaver, 1998), which consists of 18 items assessing attachment anxiety and 18 items assessing avoidant anxiety. Participants rate how well each statement

illustrates their typical feelings in romantic relationships. Example items include “I worry about being abandoned” and “I tell my partner just about everything.” Each item is rated on a 7-point Likert-type scale, ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Mean scores are used with higher scores indicating more attachment anxiety and attachment avoidance. Brennan et al. reported alphas of .91 and .94 for scores on the Anxiety and Avoidance subscales, respectively. Alphas for the current sample were .85 for attachment anxiety and .91 attachment avoidance.

Relationship quality. Relationship quality was assessed using the Dyadic Adjustment Scale (Spanier, 1976), which consists of 32 items reflecting the quality of adjustment in romantic relationships along four dimensions: Dyadic Consensus, Dyadic Satisfaction, Dyadic Cohesion, and Affectional Expression. Participants are asked to rate the extent of agreement between themselves and their partner on a variety of items such as “Philosophy of life” and “leisure time interests and activities.” Response options vary with 28 of the items being rated on a 6-point Likert scale from 1 to 6, 1 item being rated on a 7-point Likert scale from 0 to 6, and 2 items being rated on a 2-point Likert scale from 1 to 2. Mean scores are used with higher scores indicating greater relationship quality. Reported alpha for scores on the DAS was .96 (Spanier). Alpha for the current sample was .90.

Sexual satisfaction. Sexual satisfaction was assessed with the sexual satisfaction subscale of the Multidimensional Sexuality Questionnaire (Snell, Fisher, & Walters, 1993), which consists of 5 items measuring the tendency to be highly satisfied with the sexual aspects of one’s life. Examples items are “I am very satisfied with the way my sexual needs are currently being met” and “My sexual relationship is very good compared to most.” Each item is rated on a 5-point Likert scale ranging from 1 (*not at all characteristic of me*) to 5 (*very characteristic of me*). Mean scores are used; higher scores indicate more sexual satisfaction. Reported alpha scores on the sexual satisfaction subscale was .90 (Snell et al.). Alpha for the current sample was .93.

Procedure

Participants were recruited through a department of psychology’s human research pool at a large Southern public university. Participants completed an online web-based survey located on a secure fire wall protected server accessed via a hypertext link. Once respondents went to the first page and read the informed consent they indicated consent to take the survey by clicking a button. Then they were directed to the webpage containing the survey. The survey included a demographic questionnaire and the aforementioned randomly ordered measures. Participants received course credit for their undergraduate course and were also eligible to enter a participant raffle awarding a \$100 Amazon gift certificate to one randomly selected respondent. We used a separate course credit/gift certificate raffle database so there was no way to connect a person’s on-line course credit/gift certificate raffle submission with his submitted survey.

RESULTS

Means, standard deviations, and inter-correlations among pornography use and theorized antecedents and relational outcomes are shown in Table 2. Consistent with hypothesis 1, both frequency of pornography use and problematic pornography use were related to greater gender role conflict ($r = .19$ and $r = .13$, respectively), more avoidant attachment styles ($r = .24$ and $r = .24$, respectively), more anxious attachment styles ($r = .22$ and $r = .25$, respectively), poorer relationship quality ($r = -.19$ and $r = -.19$, respectively), and less sexual satisfaction ($r = -.10$ and $r = -.18$, respectively).

To test hypothesis 2, our theory driven mediation model (see Figure 1), structural equation modeling (SEM) was used. Following Weston and Gore's (2006) recommendation for a two-step approach to analysis, we used the Amos 5.0.1 program to estimate parameters for the measurement model via confirmatory factor analysis (CFA) and for the later simultaneous estimation of the measurement and structural equation models. Our sample size of 373 met Weston and Gore's recommendation for a minimum sample size of 200 for any SEM. Examination of skewness and kurtosis for each variable indicated sufficient univariate normality (i.e., skewness < 3, kurtosis < 10; Weston & Gore). Mardia's coefficient of multivariate kurtosis indicated some degree of multivariate non-normality (obtained value = 49.28; critical ratio = 19.83); however, Lei and Lomax (2005) have found that parameter estimates and most model fit indices are robust to non-normality given maximum-likelihood estimation and a sample size of 100 or more participants. Thus, we proceeded with our analyses using maximum-likelihood estimation.

Because the χ^2 statistic and goodness of fit indexes such as the GFI and NFI are easily distorted by factors extrinsic to actual model misspecification (e.g., number of indicators per factor, sample size), the adequacy of the measurement and structural model fit was based on the following goodness-of-fit indexes that minimize the effect of extrinsic factors: comparative fit index (CFI), Tucker Lewis index (TLI), incremental fit index (IFI), root mean square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR; Hu & Bentler, 1999). Models with CFI, TLI, and IFI goodness of fit indexes of .95

Table 2

Means, Standard Deviations, and Correlations among Pornography Use and Theorized Antecedents and Relational Outcomes

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Frequency of Pornography Use	1.13	.84	—					
2. Problematic Pornography Use	2.10	.98	.42*	—				
3. Gender Role Conflict	3.69	.69	.19*	.13*	—			
4. Anxious Attachment	3.74	1.14	.22*	.25*	.39*	—		
5. Avoidant Attachment	2.66	.98	.24*	.24*	.37*	.22*	—	
6. Relationship Quality	4.44	.54	-.19*	-.19*	-.15*	-.27*	-.55*	—
7. Sexual Satisfaction	3.88	1.02	-.10*	-.18*	-.13*	-.32*	-.30*	.40*

Note. * $p < .05$.

or greater, RMSEA values below .06, and SRMR values below .08 indicate an excellent fitting model (Hu & Bentler; Weston & Gore, 2006). Models with CFI, TLI, and IFI values between .90 and .94, RMSEA values between .06 and .10, and SRMR values between .08 and .15 indicate an adequate fit to the data when models are not complex and samples sizes are smaller than 500 (Weston & Gore).

In the confirmatory model, the two pornography scales (frequency and problematic use) were constrained to load onto the Pornography Use factor. As recommended by Russell, Kahn, Spoth, and Altmaier (1998) three measured indicators (parcels) for gender role conflict, attachment anxiety, attachment avoidance, and relationship quality were created. Because the sexual satisfaction scale had only five items, only two parcels were created. First, for each scale an exploratory factor analysis was conducted using the maximum likelihood method of extraction, and a single factor was specified to be extracted. Second, items were rank-ordered according to the magnitude of the factor loadings. Third, items were successively assigned (from the highest to the lowest factor loading) to each of parcels in order to equalize the average loadings of each parcel on its respective latent factor. Finally, for each parcel, items were averaged to arrive at a mean total score. Parcels were then used to estimate their respective latent variable (i.e., gender role conflict, attachment anxiety, attachment avoidance, relationship quality, and sexual satisfaction) within the SEM analyses. The six factors were permitted to correlate with one another. Fit statistics for the measurement model indicated an excellent fit of the data: CFI = .98, TLI = .98, IFI = .98, RMSEA = .050, and RMR = .028. In addition, each measure significantly loaded on its intended latent factor. Absolute factor loadings ranged from .63 to .66 for pornography use, .87 to .92 for gender role conflict, .90 to .92 for anxious attachment anxiety, .89 to .90 for avoidant attachment, .83 to .94 for relationship quality, and .89 to .94 for sexual satisfaction. Therefore, we moved to the next stage of the analysis, examination of the structural model and its fit to the data.

A SEM analysis was conducted for our theorized partially mediated model predicting relationship quality and sexual satisfaction (see Figure 1). This model included an estimate of the direct effect between gender role conflict and relationship quality and sexual satisfaction, as well as the mediated paths from gender role conflict and relationship quality via avoidant attachment, anxious attachment, and pornography use and between gender role conflict and sexual satisfaction via avoidant attachment, anxious attachment, and pornography use. In addition, the latent model was conducted while accounting for the measurement model. Power for test of close fit of the hypothesized model ($n = 373$, $df = 96$; MacCallum, Browne, & Sugawara, 1996) was .99 (with a null RMSEA value of .05 and alternative RMSEA value of .08). Results indicated a good fit of the data: CFI = .967, TLI = .959, IFI = .967, RMSEA = .063, SRMR = .051 and revealed that that gender role conflict was directly related to relationship quality ($\beta = .21$) and indirectly (through anxious attachment, avoidance attachment, pornography use) related to both relationship quality and sexual satisfaction.

Next, we compared our theorized model with an alternative fully mediated model and used the chi-square difference test to compare nested structural models (Weston & Gore, 2006). In the alternative fully mediated model, we constrained to zero the direct paths from gender role conflict to relationship quality and from gender role conflict to sexual satisfaction. Results indicated a good fit of the data: CFI = .964, TLI = .956, IFI = .964, RMSEA

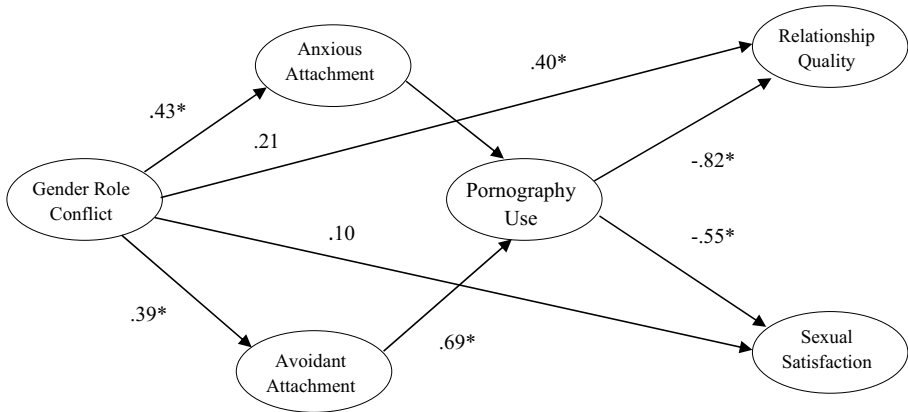


Figure 1. Theorized antecedents and consequences of men's pornography use on men.
 Note: All coefficients are standardized values. * $p < .05$.

= .065, SRMR = .054. A chi-square difference test between our theorized partially mediating model ($\chi^2 = 238.378$; $df = 96$) and the alternative fully mediated model ($\chi^2 = 253.735$; $df = 98$) was significant, $\Delta\chi^2(2) = 15.357$, $p < .05$, indicating that our theorized partially mediating model was a better fit to the data. Therefore, we employed our theorized partially mediating model as our final structural model and used it for subsequent procedures to test the significance of indirect effects.

To test whether these chains of mediation were significant we used a bootstrap analysis to create 10,000 bootstrap samples from our dataset as recommended by Mallinckrodt, Abraham, Wei, and Russell (2006). Results of our analysis using a bias corrected 95% confidence interval for indirect relations indicated that the indirect link from gender role conflict to relationship quality was statistically significant at $p < .05$. The mean indirect (unstandardized) effect was $-.24$; the standard error of the mean indirect effect was $.04$; and the 95% confidence interval for the mean indirect effect was $-.31$ (lower limit) and $-.19$ (upper limit). The standardized indirect effect of gender role conflict on relationship quality via anxious attachment, avoidance attachment, and pornography use was $\beta = -.36$. The squared multiple correlation for relationship quality was $.57$, which indicated that the variables in the model accounted for more than one-half of the variance in relationship quality. Results of our analysis also indicated the indirect links from gender role conflict to sexual satisfaction was statistically significant at $p < .05$. The mean indirect (unstandardized) effect was $-.34$; the standard error of the mean indirect effect was $.06$; and the 95% confidence interval for the mean indirect effect was $-.46$ (lower limit) and $-.25$ (upper limit). The standardized indirect effect of gender role conflict on sexual satisfaction via anxious attachment, avoidance attachment, and pornography use was $\beta = -.24$. The squared multiple correlation for sexual satisfaction was $.26$, which indicated in the model accounted for more than one-quarter of the variance in sexual satisfaction.

Tests of Alternate Models

Based on the possibility that attachment styles may precede gender role conflict (Bowlby, 1982) or that pornography use may precede both gender role conflict and attachment styles, we tested two alternate models. The first alternate model examined direct effects of anxious and avoidant attachment styles on relationship quality and sexual satisfaction, and indirect effects through gender role conflict and then through pornography use. Fit statistics for this model indicated an adequate fit to the data: CFI = .936, TLI = .920, IFI = .937, RMSEA = .088, SRMR = .110. The second alternate model examined direct effects of pornography use on relationship quality and sexual satisfaction, with gender role conflict, anxious attachment, and avoidant attachment as multiple mediators. Fit statistics for this model indicated a good fit to the data: CFI = .967, TLI = .957, IFI = .967, RMSEA = .064, SRMR = .047.

Because these two alternate models are not nested within our original theory driven model, we compared these two alternative models to our original model via the Akaike Information Criterion (AIC). Smaller AIC values indicate better-fitting models (Weston & Gore, 2006). In addition, Burnham and Anderson (2002) suggested that an AIC difference ≤ 2 does not warrant interpretation, a difference of 3-9 indicates different degrees of departure, and a difference ≥ 10 indicates that one model is inferior to the other. The AIC for our retained partially mediated theory driven final model was 318.378, whereas the AIC for the first alternate model alternate was 452.892 (AIC difference = 134.514), and the AIC for the second alternate model was 321.993 (AIC difference = 3.612). Thus, we concluded that our original theory driven partially mediating model (see Figure 1) was a better fit for the data.

DISCUSSION

Consistent with theory and previous research (Bergner & Bridges, 2002; Bowlby, 1982; Maddox et al., 2011; O'Neil, 2008; Stack et al., 2004; Morgan, 2011; Zapf et al., 2008), our findings revealed that men's pornography use was positively associated with their gender role conflict and avoidant and anxious attachment styles and negatively associated with their relationship quality and sexual satisfaction. However, also consistent with previous research the effect sizes were small. In addition, the findings provided support for a theorized mediated model in which gender role conflict was linked to relational outcomes both directly and indirectly via attachment styles and pornography use. That is, the data was consistent with the notion that more gender role conflict leads to more anxious and avoidant attachment styles which in turn lead to more pornography use which in turn leads to less relationship quality and less sexual satisfaction. These findings provide support for the notion that traditional gender role socialization leaves many men with relational and sexual deficits due to the prescription of overly restricted gender roles, emotional disconnection, and use of pornography to experience some level of emotional and/or sexual gratification without having to risk intimacy or interpersonal rejection (Blazina, 2001; O'Neil). Rooting our study in gender role conflict and attachment theories adds to the depth of theoretical perspectives through which we can look at the complex issue of pornography use. In addition, our findings underscore the importance of examining mediating effects.

The findings of the present study provide initial support for the reliability and validity of the Pornography Use Scale for assessment of men's reports of their frequency and problematic pornography use. Structural validity was supported via exploratory factor analysis. Construct validity was supported by expert review, positive correlations between the frequency of pornography use and problematic pornography use subscales, positive correlations between the frequency of pornography use and problematic pornography use subscales and online sexual compulsivity, and by theorized correlations between pornography use and gender role conflict, attachment styles, and relational outcomes. In addition, the test of our conceptual model in which gender role conflict is both directly and indirectly related to relational outcomes through avoidant and anxious attachment and then through pornography use provides additional validity evidence for this new scale. Divergent validity was supported by demonstrating that pornography use was conceptually distinct from social desirability and relationship length. While the results of the current study are encouraging, further support for reliability and validity for the Pornography Use Scale is needed. Future research is needed to examine test-retest reliability of scores of the Pornography Use Scale. Additional support for structural validity could be accomplished through confirmatory factor analysis and cross-validation using more diverse male samples.

Limitations

The current study is limited by a convenience sample that was predominately White, highly educated, financially privileged, and in predominately short-term relationships. It may be that the results would be quite different with a sample that was more racially and ethnically diverse, older in age, less educated, in longer term relationship, and engaging in more pornography use. For example, Acker and Davis (1992) found that participants indicated greater levels of commitment in married or more serious relationships versus unmarried relationships. It may be that college students may not experience as much commitment and intimacy in their romantic relationships compared to those in later developmental stages of life, which may influence the relationships between pornography use and relational outcomes.

In addition, the correlational and cross-sectional nature of this study precludes definitive answers about the causal sequence proposed in our study, and alternative explanations beyond the ones we tested are plausible. For example, a cyclical process may exist where gender role conflict may predict more pornography use, which in turn may contribute to increases in men's gender role conflict. A similar argument could be made in terms of gender role conflict contributing to more insecure attachment, which leads to more pornography use, which then leads to more insecure attachment and gender role conflict. Relatedly, it could be that pornography use influences poorer relational outcomes, which in turn influences more pornography use. Furthermore, it is important to acknowledge that the mediational relationships found in his study might not have been evident if other variables that cause avoidant and anxious attachment styles, pornography use, relationship quality, and sexual satisfaction had been included in the model.

Directions for Future Research

Clearly, more research about how men are affected by their use of pornography is needed. Future research should include samples of more varied age ranges, longer-term relationships, married men, and groups recruited from other contexts (e.g., church groups, community organizations, counseling centers). Because all the pornography studies reviewed above focused either exclusively on heterosexual persons, future research is needed on sexual minority persons. For example, given some gay men's emphasis on body evaluation and body image and more acceptance of pornography among men it is unclear if similar relations found among heterosexual men in this study would also be found among gay men. Longitudinal research is needed to establish a cause and effect relationship between partner pornography use and its theorized antecedents (i.e., gender role conflict and attachment styles) and relational outcomes. Building on the findings from qualitative research (Bergner & Bridges, 2002; Zitzman, 2007), future research might examine the mediational roles of relationship commitment, trust, betrayal, and conflict in the link between pornography use and relationship quality and sexual satisfaction. Finally, investigations are needed that assess men's reports of their pornography use as predictors of their female partner's psychological, relational, and sexual outcomes.

CONCLUSION

The current study adds to the small but burgeoning body of research demonstrating the negative impact that young adult men's pornography use can have on their relationship quality and sexual satisfaction. This study extends prior research by employing a multiple-item measure to assess pornography use, using a large non-clinical sample of young adult college men, and examining both simple and complex relationships between men's pornography use and gender role conflict, attachment styles, and relational outcomes. The results of this study also support the use of the Pornography Use Scale as a research tool to further our understanding of the impact of pornography use on men in heterosexual relationships.

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APPENDIX A
PORNOGRAPHY USE SCALE

Frequency of Pornography Use Subscale

1. How frequently do you view sexual explicit materials/pornography via adult magazines (e.g., Playboy, Hustler)?

- 0 = none
- 1 = once a month or less
- 2 = 2 or 3 days a month
- 3 = 1 or 2 days a week
- 4 = 3 to 5 days a week
- 5 = everyday or almost everyday

2. How frequently do you view sexual explicit materials/pornography via adult videos, movies, and/or films?

- 0 = none
- 1 = once a month or less
- 2 = 2 or 3 days a month
- 3 = 1 or 2 days a week
- 4 = 3 to 5 days a week
- 5 = everyday or almost everyday

3. How frequently do you view sexual explicit materials/pornography via the Internet?

- 0 = none
- 1 = once a month or less
- 2 = 2 or 3 days a month
- 3 = 1 or 2 days a week
- 4 = 3 to 5 days a week
- 5 = everyday or almost everyday

4. Taken together, how frequently do you view sexually explicit/pornographic material (such as magazines, movies, and/or Internet sites)?

- 0 = never
- 1 = rarely
- 2 = sometimes
- 3 = frequently
- 4 = most of the time

5. More specifically, how frequently do you view sexually explicit/pornographic material (such as magazines, movies, and/or Internet sites)?

- 0 = none
- 1 = once a month or less
- 2 = 2 or 3 days a month
- 3 = 1 or 2 days a week
- 4 = 3 to 5 days a week
- 5 = everyday or almost everyday

6. Taken together, how many hours per week do you view sexually explicit/pornographic material (such as magazines, movies, and/or Internet site)?

- 0 = none
- 1 = about 1 hour per week

- 2 = between 2 and 4 hours per week
- 3 = between 4 and 6 hours per week
- 4 = between 6 and 8 hours per week
- 5 = more than 8 hours per week

7. When using/viewing sexually explicit/pornographic materials (including online, magazines, DVD/videos/movies) in one sitting, I spend approximately _____ amount of time doing such;

- 0 = I do not ever use/view such materials
- 1 = less than 15 minutes
- 2 = between 15 minutes and 30 minutes
- 3 = between 31 minutes and 60 minutes
- 4 = between 61 minutes and 90 minutes
- 5 = more than 90 minutes

Problematic Pornography Subscale

	Strongly disagree	Dis- agree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
8. I use sexually explicit materials/pornography (including online, magazines, DVD/videos) more than I would like to.					
9. My use of sexually explicit materials/ pornography (including online, magazines, DVD/videos) has interfered with certain aspects of my life.					
10. My use of sexually explicit materials/ pornography (including online, magazines, DVD/videos) has interfered with certain aspects of my relationship.					
11. I sometimes wish I would stop using sexually explicit materials/pornography.					
12. My use of sexually explicit materials/ pornography is a problem in my romantic relationship currently.					
13. My use of sexually explicit materials/ pornography has negatively affected me.					
14. I believe I am addicted to sexually explicit materials/ pornography.					
