

Male Partners' Perceived Pornography Use and Women's Relational and Psychological Health: The Roles of Trust, Attitudes, and Investment

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Abstract The purpose of this study was to examine the mediating role of relationship trust in the links between young adult women's perceptions of their male partners' pornography use and their relational and psychological health. An additional purpose of this study was to examine the potential moderating roles of women's attitudes toward pornography and relationship investment in the links between their male partners' perceived pornography use and their relational and psychological health and between their male partners' perceived pornography use and relationship trust. Participants included 359 young adult college women who were recruited at a large United States Southern public university and completed an online survey. Results revealed that women's reports of their male partners' pornography use were related to less relationship satisfaction and more psychological distress. In addition, relationship trust mediated the links between male partners' perceived pornography use and relationship satisfaction and psychological distress. Results from the moderation analyses indicated that the direct effect of male partners' perceived pornography use and relationship trust and the conditional indirect effects of male partners' perceived pornography use on both relationship satisfaction and psychological distress were contingent on relationship investment. These findings indicated that when male partners' perceived pornography use is high, women who have low or mean levels of relationship investment have less relationship trust. Finally,

our results revealed that the relationship between male partners' perceived pornography use and relational and psychological outcomes exist regardless of women's own attitudes toward pornography.

Keywords Pornography · Relationship quality · Mental health · Psychological distress

Introduction

Pornography use in the United States and many other countries across the world has exploded in the past decade (Ropelato 2007) due to increases in its accessibility, anonymity, and affordability (Cooper 1998). In addition, a recent United States based meta-analysis by Petersen and Hyde (2010) revealed that men use pornography more often than women. These differences appear to be due to sociocultural rather than biological or evolutionary influences (Conley et al. 2011). Pornography use has also been shown to be highest among young adults in the United States (Buzzell 2005) and other countries such as Israel (Kor et al. 2014). Given these trends, a small but growing body of mostly United States based research has begun to examine the potential negative impact of men's pornography use not only on themselves (e.g., Bridges and Morokoff 2011; Morgan 2011; Sun et al. 2014; Szymanski and Stewart-Richardson 2014) but also on the women with whom they are in romantic relationships. In this article, all studies cited use United States samples unless otherwise noted.

Findings from several qualitative studies suggest that heavy pornography use by a male partner can have a negative influence on his female partner's relational and sexual satisfaction, self-esteem, feelings about her body, and general well-

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being. For example, female participants in these qualitative studies reported that their male partners' pornography use made them (a) feel betrayed by and isolated from their partners (Bergner and Bridges 2002; Zitzman and Butler 2009); (b) experience increased conflict and deterioration in their communication as a couple (Schneider 2000); (c) feel confused and uncertain about their relationship (Bergner and Bridges 2002); (d) experience a loss of trust in the relationship, ruptures in the dyadic attachment bond, and relationship damage (Bergner and Bridges 2002; Zitzman and Butler 2009); (e) experience decreased sexual interest and more dissatisfaction with their sex life (Bergner and Bridges 2002; Shaw 1999); (e) feel confused, fat, ugly, inadequate, sexually undesirable, and unhappy with themselves and their own bodies (Bergner and Bridges 2002; Shaw 1999); and (f) feel self-doubt, low self-worth, fear, anxiety, anger, depression, distress, and emotional harm (Zitzman and Butler 2009).

Corroborating these qualitative findings, Stewart and Szymanski (2012) found that young adult heterosexual college women's perceptions of their male partners' frequency of pornography use were negatively associated with their relationship satisfaction. In addition, greater reports of their male partners' perceived problematic pornography use were related to less relationship satisfaction, sexual satisfaction, and self-esteem. Relatedly, Bridges et al. (2003) found that women who reported the highest levels of male partners' frequency and duration of pornography use were most distressed about this use. In another study of college women (Tylka and Van Diest 2014), previous, but not current, male partners' perceived pornography use was positively related to relationship anxiety, negative affect, and disordered eating and negatively related to self-esteem and body appreciation. However, this study was limited by a one item measure (with limited psychometric support) to assess perceived pornography use. Other studies, both survey (Maddox et al. 2011; Stack et al. 2004) and experimental (Zillmann and Bryant 1988), indicate that exposure to pornography is related to diminished emotional involvement and less relationship and sexual satisfaction among both men and women. Finally, in a Canadian sample of college women whose male partners used pornography to some extent, Resch and Alderson (2014) found that mutual use of pornography was not related to women's relationship satisfaction but was related to more disturbance concerning their partners' pornography use. In addition, they found that women's perceptions of their male partners' honesty about his pornography use was associated with less relationship satisfaction.

Taken together, previous research suggests that women's perceptions of their male partners' pornography use are important to consider. These findings are consistent with other research indicating that women's perceptions of their male partners' behaviors (e.g., conflictual behavior, balance of support and conflict, gender role conflict) are important in

predicting their relational and psychological health (Galliher et al. 2004; Rochlen and Mahalik 2004). Given these links, it is important to identify variables that could potentially mediate and moderate the relationships between women's perceptions of their male partners' pornography use and their relational and psychological health.

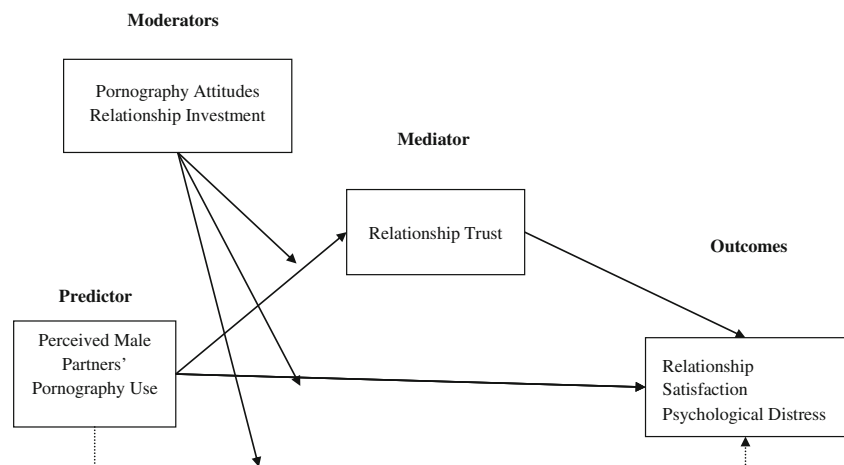
Thus, the purpose of this study was to examine the mediating or explanatory role of relationship trust in the link between men's perceived pornography use and their heterosexual female partners' relationship satisfaction and psychological distress. We chose our two outcome variables because they assess two very different types of distress, one at the couple level targeting the quality of the relationship and the other at the individual level, targeting behavior and attitudinal feelings of personal distress, including symptoms of anxiety and depression. An additional purpose of this study was to examine the potential moderating roles of attitudes toward pornography and relationship investment in the links between women's perceptions of their male partners' pornography use and relational and psychological distress outcomes and between perceptions of their male partners' pornography use and relationship trust (see Fig. 1). Our study examined the experiences of United States young adult college women.

Relationship Trust as a Mediator

In a qualitative study by Bergner and Bridges (2002), women were asked to post letters ($n=100$) to an online message board about their male partners' pornography use. Findings revealed that the majority of women described their partners' viewing of pornography as a "betrayal" and an "affair" (p. 196) and described their partner as "selfish" and a "liar" (p. 198). Many of these participants experienced their male partners' pornography use as infidelity and expressed in their letters themes that the love and sexual expressions between couples should be confined exclusively to that relationship and should not be shared with numerous fantasy women. Thus, themes related to a rupture in trust were evident.

Relatedly, in another qualitative study (Zitzman and Butler 2009) of 14 women who received or presented for couples therapy due to their husband's pornography use, all participants noted that their male partners' pornography use resulted in a loss of security or trust in their relationship that occurred on psychological, emotional, and physical levels. As one woman stated "I don't trust him ... with my most intimate thoughts" (p. 225). In addition, 12 of the participants reported feeling a loss of trust in their male partners' word and commitments, as well as a decrease in respect for him. Zitzman and Butler's study found the following statement to be typical of respondents: "For him to use pornography was breaking the promises that he had made [to be faithful] and when promises are broken, I can't trust someone" (p. 223). Finally, 13 of the women reported that their partners' pornography use led to a

Fig. 1 Hypothesized model predicting relational and psychological outcomes. *Dashed line* indicates conditional indirect effect



lack of trust related to sexual intimacy and fidelity. When having romantic and/or sexual relations with their husband, these women perceived their partner to be disengaging emotionally from them and bringing these pornographic fantasy women into their bedroom. They reported a change in their sexual relationship from one of emotional and sexual intimacy to a solely egocentric erotic interaction that made them feel objectified, used, and disregarded. Furthermore, these pornographic infidelities led to fears about real-life infidelity as evidenced in the following quote, “Well if he’s looking at pornography, what makes me think he’s not, you know if it becomes available . . . he’s not gonna go after another woman?” (p. 227). Supporting these women’s fears, a quantitative study of college students found that pornography use was positively related to infidelity and this relationship was mediated by relationship commitment (Lambert et al. 2012).

Taken together, findings from these three studies, suggest that male partners’ pornography use may lead to decreases in relationship trust for women. Because relationship trust has been highly correlated with romantic intimacy, closeness, and self-disclosure in romantic relationships and is an imperative feature of successful relationships and adult well-being in general (Larzelere and Huston 1980; Zitzman and Butler 2009), this decrease in trust may then lead to less relationship satisfaction as well as to more psychological distress. Thus, examining relationship trust as a mediator in the pornography use → relational and psychological distress outcomes link is warranted.

Attitudes Toward Pornography and Relationship Investment as Moderators

Two potential moderators of the relationship between men’s perceived pornography use and their female partners’ relational and psychological outcomes are her attitudes toward pornography and level of relationship investment. Attitudes

toward pornography can be described as an individual’s beliefs regarding pornography and pornography’s effects or outcomes (Evans-DeCicco and Cowan 2001). Attitudes toward pornography often vary by gender, with men generally showing more approval of pornography than women (Carroll et al. 2008; Lottes et al. 1993; O’Reilly et al. 2007); however, there is likely considerable heterogeneity on attitudes toward pornography within each gender. Research on a sample of Swedish young adults found that attitudes toward pornography vary within groups of men and women, ranging from enthusiasts of pornography, ambivalent to pornography, and opponents of pornography (Johansson and Hammarén 2007). Likewise, Senn (1993) found that women’s attitudes about pornography in the United States ranged from mildly positive to scathing and anti-pornographic. In other Swedish studies, negative attitudes toward pornography often include the view that pornography is degrading (Wallmyr and Welin 2006), or that it promotes a distorted picture of sexuality or increases demands and expectations (Häggström-Nordin et al. 2009). Positive attitudes may include viewing it as exciting, stimulating, or arousing (Wallmyr and Welin 2006) or as a source of new ideas or inspiration (Häggström-Nordin et al. 2009).

Attitudes toward pornography as a moderator between male partners’ pornography use and relationship satisfaction, psychological distress, and relationship trust has thus far gone untested. However, levels of positive and negative attitudes toward pornography may change how women view, or make sense of, their male partners’ pornography use. More negative attitudes toward pornography (e.g., belief that pornography promotes false expectations of women’s sexuality) may lead women to see their male partners’ pornography use as setting an unrealistic standard and add pressure to the couple’s sexual and intimate relationship (by a comparison of actual vs. pornographic sex) which would likely decrease her ratings on relationship satisfaction; if women hold more positive attitudes toward pornography, their male partners’ pornography

use may be viewed in a more positive light (e.g., a way to increase relationship satisfaction via new sexual ideas). In addition, more negative attitudes toward pornography may be associated with lower levels of relationship quality, as her partners' pornography use may conflict with the woman's negative view of pornography, contributing to relationship problems and differences in values or worldviews; more positive views of pornography may align with her partner's pornography use, and thus may increase relationship quality due to shared values. Finally, negative attitudes toward pornography may increase psychological distress, as male partners' pornography use coupled with negative attitudes may trigger psychological distress, such as feeling depressed or anxious. In contrast, positive attitudes could buffer the effects of male partner's pornography use on psychological distress, as her male partner's pornography use does not conflict with her beliefs, which would contribute to less psychological distress.

Similarly, attitudes toward pornography may act as a moderator between male partner's pornography use and relationship trust. For example, if a woman has more negative attitudes about pornography (e.g., that pornography is degrading and harmful), she may interpret her male partner's pornography use as a threat to their relationship (e.g., as an act of infidelity or dishonesty; Bergner and Bridges 2002), which may decrease her relationship trust. In contrast, if a woman has more positive attitudes toward pornography, she may interpret her male partner's pornography use as an act of sexual inspiration, education, or stimulation, or even a way to avoid physical infidelity, which could increase relationship trust.

In addition to attitudes toward pornography, the relationship between men's pornography use on their female partners' relational and psychological outcomes may be moderated/intensified by relationship investment. Relationship investment can be described as the energy and resources put into a relationship that would be lost or acutely reduced if the relationship ended (Rusbult 1980). Investments in a relationship can be both intrinsic and extrinsic, with intrinsic investments involving more elusive resources (e.g., personal and emotional disclosure, effort expended maintaining the partnership, how much one's identity is connected to the relationship) and extrinsic investments involving more tangible resources (e.g., mutual friends, shared material possessions; Rusbult et al. 1994). Given how much time, energy, and effort they have put forth to build and maintain their partnerships, women who are highly invested in their relationships might be more likely to regard their male partners' pornography use as a more significant betrayal. This sense of betrayal could result in decreased trust and lower relationship satisfaction. Further, because highly invested women stand to lose so much if their relationship ended, they may be more sensitive and attuned to relationship threats. Women who have made greater relationship

investments may consequently be more likely to interpret their male partners' pornography use as threatening to their core attachment relationship and experience increased psychological distress.

Providing some support for these notions, Bridges et al. (2003) found that married women reported more distress over their partners' pornography use than those who were dating. Relatedly, Stewart and Szymanski's (2012) study found that relationship length moderated the relationship between women's perceptions of their male partners' problematic pornography use and sexual satisfaction, with significant dissatisfaction being associated with longer relationship length. It is possible that not just relationship length or type, but also all of the resources one invests in a longer-term relationship moderates this link. Thus, greater relationship investment may be associated with decreased relational satisfaction and increased psychological distress outcomes when pornography use is high.

Relationship Length as a Covariate

Findings from cross sectional and longitudinal studies reveal that relationship satisfaction decreases as relationship length increases (Bradbury et al. 2000; Locke and Wallace 1959). More specifically, much of the literature on relationship satisfaction across time generally supports that the majority of couples experience the highest relationship satisfaction during the first several years together with a decline in levels of satisfaction during the later years (Bradbury et al. 2000). Scholars have theorized that these decreases in relationship satisfaction may be the result of habituation and less shared participation in new and stimulating activities (Aron et al. 2000). Thus, we included relationship length as a covariate in the present study.

The Present Study

In sum, the purpose of our study was to examine one potential mediator and two potential moderators in the relationship between male partners' perceived pornography use and young adult women's relational and psychological health. Our hypothesized conceptual model is shown in Fig. 1. Our specific hypotheses were:

1. After controlling for relationship length, relationship trust would mediate the relationship between male partners' perceived pornography use and women's relationship satisfaction and psychological distress. That is, the data would be consistent with the notion that higher levels of male partners' perceived pornography use would lead to less relationship trust, which in turn would lead to less relationship satisfaction and more psychological distress.

2. After controlling for relationship length, attitudes toward pornography and relationship investment would moderate the direct relationship between male partners' perceived pornography use and women's relationship satisfaction and psychological distress. Specifically, the relationship would be stronger when negative attitudes toward pornography and relationship investment are high and weaker when negative attitudes toward pornography and relationship investment are low.
3. After controlling for relationship length, attitudes toward pornography and relationship investment would moderate the association between male partners' perceived pornography use and women's relationship trust. Specifically, the association would be stronger for relationship trust when negative attitudes toward pornography and relationship investment are high and weaker when negative attitudes toward pornography and relationship investment are low.

Collectively, hypotheses 1 and 3 imply a pattern of moderated mediation (Hayes 2013). Given that attitudes toward pornography and relationship investment are expected to moderate the direct relationships between male partners' perceived pornography use and relationship trust, attitudes toward pornography and relationship investment should also qualify the indirect relationships between male partners' perceived pornography use and distal criteria (i.e., relational and psychological health). Accordingly, we propose the following hypothesis concerning the conditional indirect effects.

4. After controlling for relationship length, attitudes toward pornography and relationship investment would moderate the indirect relationship between male partners' perceived pornography use and relationship satisfaction and psychological distress. Specifically, the indirect relationships would be stronger when negative attitudes toward pornography and relationship investment are high and weaker when negative attitudes toward pornography and relationship investment are low.

To test hypothesis 1, bootstrap analyses for mediation were conducted using Hayes (2013) PROCESS SPSS macro. Hierarchical multiple regression analyses for the moderated models (hypothesis 2 and 3) and bootstrap analyses for the moderated mediation models (hypothesis 4) were also conducted with PROCESS. For these analyses, the predictor and interaction terms were mean centered. For the moderated models, the predictor and proposed moderator variables were entered at Step 1. Next, the interaction terms were entered at Step 2. For each of the moderated mediation models, pornography use was entered as the predictor variable, relationship trust was entered as the mediator, either attitudes toward pornography or relationship investment were entered as the moderator variable, and either relationship satisfaction or

psychological distress were entered as the criterion/outcome variable (see Fig. 1).

Method

Participants

The initial sample comprised 390 female participants who completed an online survey.

Two participants who were over 30 years old, 12 participants who were in a relationship less than 6 months, and 17 participants who left at least one measure completely blank and/or had more than 20 % of missing data on one or more measures were eliminated from the dataset, which resulted in a final sample of 359 participants.

Participants ranged in age from 18 to 28 years, with a mean age of 18.65 years ($SD=1.31$). The sample was 6 % African American, 3 % Asian American/Pacific Islander, 3 % Latina, 85 % White, and 3 % Other. All participants were currently enrolled in college, with 76 % being first year undergraduates, 14 % Sophomores, 7 % Juniors, and 3 % Seniors. Participants reported being a member of the following social classes: 6 % Wealthy, 33 % Upper-Middle Class, 38 % Middle Class, 15 % Lower-Middle Class, 5 % Working Class, and 3 % Poor. Relationship length ranged from .50 to 11.83 years, with a mean relationship length of 1.85 years ($SD=1.37$). The majority of participants were not cohabitating, with only 8 % ($n=27$) reporting that they currently lived with their male romantic partner.

Measures

We used six measures in the current study. Cronbach alphas for all measures used are reported in Table 1.

Women's Perceptions of their Male partners' Pornography Use

The Perceived Partner's Pornography Use Scale, which includes nine items assessing perceptions of frequency of use [e.g., More specifically, how frequently does your boyfriend/partner view sexually explicit/pornographic material (such as magazines, movies, and/or Internet sites)?] and eight items assessing perceptions of problematic use [e.g., My boyfriend/partner's use of sexually explicit materials/pornography (including online, magazines, DVD/videos) has interfered with certain aspects of his life], was used to assess women's reports of their male romantic partners' pornography use. Response options vary (e.g., none, once a month or less, 2 or 3 days a month, 1 or 2 days a week, 3 to 5 days a week, everyday or almost everyday), with 12 items being rated on a 5-point Likert scale from 1 to 5. Mean scale scores were

Table 1 Means, standard deviations, and correlations for all study variables

Variable	Alpha	Possible range	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Perceived partners' pornography use	.90	.71–4.65	1.23	.58	–					
2. Relationship trust	.90	1–7	6.08	1.19	–.26*	–				
3. Pornography attitudes	.91	1–7	4.82	1.33	–.11*	.09	–			
4. Relationship investment	.74	0–8	6.12	1.42	–.12*	.19*	.11*	–		
5. Relationship satisfaction	.80	0–5.25	4.43	.78	–.27*	.57*	.10	.19*	–	
6. Psychological distress	.91	1–4	1.85	.58	.19*	–.32*	–.05	.05	–.34	–
7. Relationship length in years	–	.50 or >	1.85	1.37	.06	–.16*	.03	.11*	–.11*	.07

* $p < .05$

calculated, with higher scores indicating higher levels of perceptions of male partners' pornography use.

Using a young adult female sample, Stewart and Szymanski (2012) reported an alpha of .91 for the perceptions of pornography use full scale. In addition, content validity was supported via a review of the pornography use literature and expert review. Structural validity was established via exploratory factor analyses. Construct validity was provided by positive correlations between the perceptions of frequency of pornography use and perceptions of problematic pornography use subscales and theorized positive relationships between perceptions of male partners' pornography use and psychological and relational outcomes. Discriminate validity was supported by no significant relationships between perceptions of pornography use and relationship length and social desirability.

Relationship Trust

The Dyadic Trust Scale (Larzelere and Huston 1980), an eight item measure assessing judgment of honesty and goodwill of a significant other toward the respondent, was used to assess relationship trust. Example items include “I feel that I can trust my partner completely” and “I feel that my partner can be counted on to help me.” Each item is rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Mean scale scores were calculated, with higher scores indicating higher levels of relationship trust. Reported alpha was .93. Structural validity was established via exploratory factor analyses. Construct validity was supported by positive correlations with measures of love and intimacy of self-disclosure and levels of commitment toward the relationship. Discriminate validity was supported by demonstrating that dyadic trust was not related to social desirability and that it was distinct from general trust.

Attitudes Toward Pornography

The Attitudes toward Pornography Scale (Evans-DeCicco and Cowan 2001), a 13 item measure, was used to assess general

attitudes about pornography. Items were rated on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Examples items include “Degrades women,” “Gives men false expectations about the opposite sex,” and “Is stimulating and exciting” (reverse scored). Mean scale scores were calculated, with higher scores indicating more negative attitudes toward pornography. Validity was supported by expected gender differences on pornography attitudes and by demonstrating that pornography attitudes were related to beliefs about both female and male pornography actors.

Relationship Investment

The Investment Size subscale from the Investment Model Scale (Rusbult et al. 1998) was used to assess relationship investment. Five global items were rated on a 9-point Likert scale ranging from 0 (Do Not Agree At All) to 8 (Completely Agree). Example items include, “I feel very involved in our relationship-like I have put a great into it” and “Many aspects of my life have become linked to my partner (recreational activities, etc.), and I would lose all of this if we were to break up.” Mean scale scores were calculated, with higher scores indicating higher levels of relationship investment. Preliminary analyses of the Investment Size subscale suggest good internal consistency, with alphas ranging from .82 to .84. Structural validity was supported via exploratory factor analyses. Convergent and discriminant validity were supported via moderate associations with measures of dyadic adjustment and relationship closeness and weak associations with measures of personal disposition, respectively (Rusbult et al. 1998).

Relationship Satisfaction

The Couples Satisfaction Index-four item short form (Funk and Rogge 2007) was used to assess relationship satisfaction. The four item Couples Satisfaction Index was developed from the longer 32-item version for its ability to contribute a large amount of information on relationship satisfaction despite its

brevity. Example items include “In general how satisfied are you with your relationship?” and “Please indicate the degree of happiness, all things considered, of your relationship?” Response options vary (e.g., not at all to very; extremely unhappy to perfect), with three items being rated on a 6-point Likert scale from 0 to 5 and one item being rated on a 7-point Likert scale from 0 to 6. Mean scale scores were calculated, with higher scores indicating higher levels of relationship satisfaction.

Funk and Rogge (2007) reported an alpha of .94 for scores on the four item Couples Satisfaction Index scale. Construct validity was supported via exploratory factor analyses and item response theory, high positive correlations with other measures of relationship quality, positive correlations with positive communication and sexual chemistry, and negative correlations with ineffective arguing, perceived stress, hostile conflict, and neuroticism. In addition, both long and short forms of the Couples Satisfaction Index scales were shown to have greater power for detecting differences in relationship satisfaction scores and higher precision of measurement (less noise) than the two most widely cited relationship satisfaction measures, the Marital Adjustment Test (Locke and Wallace 1959) and the Dyadic Adjustment Scale (Spanier 1976).

Psychological Distress

The Hopkins Symptom Checklist-21 (Green et al. 1988), a shortened version of the Hopkins Symptom Checklist (Derogatis et al. 1974) was used to assess psychological distress. The Hopkins Symptom Checklist-21 includes items reflecting three dimensions: general feelings of distress, somatic distress, and performance difficulty. Sample items include: “Feeling lonely” and “Trouble concentrating.” Participants indicate how often they have felt each symptom during the past several days using a 4-point Likert scale ranging from 1 (not at all) to 4 (extremely). Mean scale scores were calculated, with higher scores indicating greater levels of psychological distress. Reported internal consistency for scores on the Hopkins Symptom Checklist-21 with an undergraduate sample was .90 (Green et al. 1988). Validity was supported by exploratory factor analyses, correlating it with measures of anxiety and general psychological distress, and demonstrating that a treatment-seeking sample scored significantly higher on it than a non-treatment-seeking sample (Deane et al. 1992).

Procedure

Participants were recruited through a department of psychology’s human research pool at a large Southern university in the United States. In order to participate, potential respondents needed to identify as female, be at least 18 years old, and be in a romantic relationship with a man for a duration of at least 6 months. The research announcement and the

informed consent stated that the researchers were conducting a study on gender-related attitudes and experiences and how these may relate to various aspects of women’s relationship satisfaction. It also stated that the research survey would ask questions about feelings, thoughts, and experiences they may have had in their romantic relationship, their male partner/boyfriend’s use of sexually explicit materials, psychological well-being, and demographics.

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 the aforementioned measures, which were randomly ordered in the survey, and a demographics questionnaire. Participants received course credit for their undergraduate course. We used a separate course credit database so there was no way to connect a person’s online course credit submission with her submitted survey.

Results

Descriptives and Preliminary Analyses

Analysis of missing data patterns for the 359 participants in our final sample indicated that .25 % or one-quarter of a percent of all items for all participants/cases were missing, and 52 % of the items were not missing data for any participant/case. Considering individual cases, 85 % of participants had no missing data. Finally, no item had 1.7 % or more of missing values. Given the very small amount of missing data, we used available case analyses procedures to address missing data points. With available case analysis, mean scale scores are calculated without substitution or imputation of values. This procedure is preferred over mean substitution which can produce inflation of correlation coefficients among items. Furthermore, it has been found to produce similar results to multiple imputation methods (Parent 2013).

Data met guidelines for univariate normality (i.e., skewness < 3, kurtosis < 10; Weston and Gore 2006). Preliminary analyses revealed a moderate correlation between the relationship trust and relationship satisfaction measures ($r = .62$). Thus, we conducted an exploratory factor analyses using principal axis factoring with promax rotation on all the items from these two scales. Six of the eight relationship trust items loaded on factor 1 (factor loadings ranged from .60 to .99; highest cross loading with factor 2 was .13) and all the relationship satisfaction items (factor loadings ranged from .52 to .90; highest cross loading with factor 1 was .05) and two items from the relationship trust scale (factor loadings = .47 and .33) loaded on factor 2. To ensure the independence of these

two measures, we deleted the two items from the relationship trust scale that loaded on factor 2. Thus, we used a six item relationship trust scale in all analyses.

Internal consistencies, descriptive statistics, and bivariate correlations among all study variables are shown in Table 1. Means for pornography use and psychological distress fell a little below the midpoint of the possible scale ranges. The mean for pornography attitudes fell a little above the midpoint of the possible scale range. Means for relationship trust, relationship investment, and relationship satisfaction were relatively high. At the bivariate level, greater perceptions of male partners' pornography use was negatively correlated at $p < .05$ with relationship trust ($r = -.26$) and relationship satisfaction ($r = -.27$) and positively correlated with psychological distress ($r = .19$). In addition, relationship length was related to relationship trust ($r = -.16$) and relationship satisfaction ($r = -.11$), underscoring the need to include it as a control variable in all mediation and moderated mediation analyses. Examination of multicollinearity indexes for all analyses (highest absolute value of correlations between predictor variables was .26, highest variance inflation factors was 1.21, lowest tolerance value was .83, and highest condition index value was 16.08) indicated that multicollinearity was not a problem (i.e., absolute value correlations $< .90$, variance inflation factors < 10 ; tolerance values $> .20$, and condition indexes < 30 ; Field 2013; Tabachnick and Fidell 2001).

Mediation Analyses

We used the PROCESS SPSS macro (Hayes 2013; Model 4) to test the mediation models described in Hypothesis 1. As suggested by Preacher and Hayes (2008), for our mediational analysis we used bootstrapping analyses with 1,000 bootstrapping resamples to produce 95 % confidence intervals for the indirect effect. Mediation analysis experts increasingly recommend bootstrap confidence intervals, as they do not erroneously assume normality in the distribution of the mediated effect and it can be applied with confidence to smaller samples (c.f., Mallinckrodt et al. 2006; Preacher and Hayes 2008). If the confidence interval does not contain zero, one can conclude that mediation is significant and meaningful (Preacher and Hayes 2008).

The test of mediation using bootstrapping analyses revealed that relationship trust mediated the male partners' perceived pornography use \rightarrow relationship satisfaction link, mean indirect [unstandardized] effect = $-.19$; $SE = .05$, 95 % CI $[-.2896, -.0898]$, $\beta = -.14$, and the male partners' perceived pornography use \rightarrow psychological distress link, mean indirect [unstandardized] effect = $.07$; $SE = .03$, 95 % CI $[.0316, .1322]$, $\beta = .08$. The variables in the model accounted for 34 and 11 % of the variance in relationship satisfaction and psychological distress scores, respectively.

Moderator and Moderated Mediation Analyses

To test hypotheses 2, 3 and 4, we again used PROCESS (Hayes 2013; Model 8). For these analyses, predictor and interaction terms were mean centered. First, we tested two moderated mediation models to evaluate pornography attitudes as a moderator of the mediation model for male partners' perceived pornography use and the two outcome variables (relationship satisfaction and psychological distress). Results of these moderated analyses are shown in Table 2. Contrary to hypothesis 2, results indicated that pornography attitudes did not moderate the male partners' perceived pornography use \rightarrow relationship satisfaction link nor the male partners' perceived pornography use \rightarrow psychological distress link. Contrary to hypotheses 3 and 4, results indicated that pornography attitudes did not moderate the relationship between male partners' perceived pornography use and relationship trust. Thus, there was no support for moderated mediation.

Second, we tested two moderated mediation models to evaluate relationship investment as a moderator of the mediation model for male partners' perceived pornography use and the two outcome variables (relationship satisfaction and psychological distress). Results of these moderated analyses are shown in Table 3. Contrary to hypothesis 2, results indicated that relationship investment did not moderate the male partners' perceived pornography use \rightarrow relationship satisfaction link nor the male partners' perceived pornography use \rightarrow psychological distress link. Supporting hypothesis 3, results indicated that relationship investment did moderate the relationship between male partners' perceived pornography use and relationship trust ($\beta = .13$; R^2 change = $.02$; significant F change = $.009$). Follow-up simple slopes analysis revealed that male partners' perceived pornography use predicted relationship trust for women with low (-1 SD; $B = -.64$, $t = -5.35$, $p = .000$) and at the mean ($B = -.41$, $t = -3.91$, $p = .000$) of relationship investment; whereas, it did not predict relationship trust for women with high ($+1$ SD; $B = -.18$, $t = -1.21$, $p = .23$) relationship investment (see Fig. 2).

Supporting hypothesis 4, the indirect path of male partners' perceived pornography use with relationship satisfaction, mediated by relationship trust, was significant when relationship investment was low, -1 SD; $B = -.22$; boot estimate = $.06$; 95 % CI $[-.3363, -.1178]$, and at the mean, $B = -.14$; boot estimate = $.04$; 95 % CI $[-.2405, -.0667]$, but not significant when relationship investment was high, $+1$ SD; $B = -.06$; boot estimate = $.05$; 95 % CI $[-.1727, .0383]$. Likewise, the indirect path predicting psychological distress was significant when relationship investment was low, -1 SD; $B = .10$; boot estimate = $.03$; 95 % CI $[.0459, .1665]$, and at the mean, $B = .06$; boot estimate = $.02$; 95 % CI $[.0262, .1233]$, but not significant when relationship investment was high, $+1$ SD; $B = .03$; boot estimate = $.02$; 95 % CI $[-.0099, .0833]$.

Table 2 Test of pornography attitudes as a moderator of the predictor-mediator and predictor-criterion links

Predictor variable	<i>B</i>	β	<i>t</i>	<i>R</i> ²	<i>F</i>	<i>df</i>
Mediator: Relationship Trust						
Relationship length	-.13	-.15	-3.02*	.10	9.66*	4, 354
Perceived partner pornography use	-.55	-.27	-4.95*			
Pornography attitudes	.05	.06	1.19			
Perceived partner pornography use × pornography attitudes	.09	.05	1.00			
Criterion: Relationship Satisfaction						
Relationship length	-.01	-.02	-.42	.35	37.26*	5, 353
Perceived partner pornography use	-.17	-.13	-2.69*			
Pornography attitudes	.03	.05	1.03			
Relationship trust	.35	.53	11.76*			
Perceived partner pornography use × pornography attitudes	.03	.03	.61			
Criterion: Psychological Distress						
Relationship length	.01	.02	.34	.11	8.99*	5, 353
Perceived partner pornography use	.11	.10	2.06*			
Pornography attitudes	-.01	-.01	-.28			
Relationship trust	-.14	-.29	-5.40*			
Perceived partner pornography use × pornography attitudes	-.02	-.02	-.40			

β and *t* reflects values from the final regression equation; * $p < .05$

Discussion

The present study aimed to contribute to the small but growing body of research focused on the relationship between

women's perceptions of their male partners' pornography use and their relational and psychological health. Most research in this area has (a) focused on qualitative studies (with limited generalizability, c.f. Bergner and Bridges 2002; Shaw

Table 3 Test of relationship investment as a moderator of the predictor-mediator and predictor-criterion links

Predictor variable	<i>B</i>	β	<i>t</i>	<i>R</i> ²	<i>F</i>	<i>df</i>
Mediator: Relationship Trust						
Relationship length	-.15	-.17	-3.41*	.14	14.62*	4, 354
Perceived partner pornography use	-.41	-.20	-3.91*			
Relationship investment	.14	.17	3.374*			
Partner pornography use × relationship investment	.16	.13	2.62*			
Criterion: Relationship Satisfaction						
Relationship length	-.01	-.03	-.57	.35	37.75*	5, 353
Perceived partner pornography use	-.17	-.12	-2.70*			
Relationship investment	.04	.08	1.70			
Relationship trust	.34	.53	11.38*			
Perceived partner pornography use × relationship investment	-.02	-.03	-.66			
Criterion: Psychological Distress						
Relationship length	-.00	-.00	-.06	.13	10.27*	5, 353
Perceived partner pornography use	.12	.12	2.33*			
Relationship investment	.05	.12	2.31*			
Relationship trust	-.15	-.32	-5.88*			
Perceived partner pornography use × relationship investment	-.02	.03	.57			

β and *t* reflects values from the final regression equation; * $p < .05$

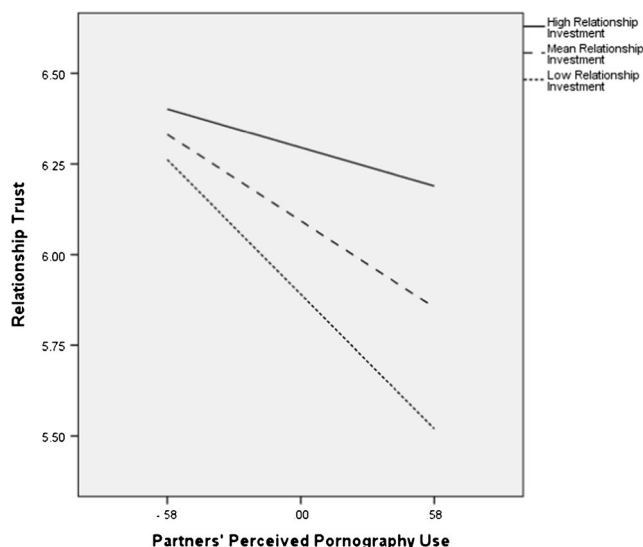


Fig. 2 Interaction of perceived partners' pornography use and relationship investment on relationship trust

1999; Zitzman and Butler 2009), (b) been limited by the use of one item measures to assess pornography use (which lack psychometric support; c.f., Maddox et al. 2011; Stack et al. 2004; Tylka and Van Diest 2014), and (c) used simple cross sectional studies focusing on direct relationships between pornography use and outcome measures (c.f., Bridges et al. 2003; Bridges and Morokoff 2011; Maddox et al. 2011; Morgan 2011). Our study extends previous research by using a psychometrically supported pornography use scale and a more complex research design that examines potential theorized mediators and moderators in these links. Our findings are consistent with Stewart and Szymanski's (2012) study showing that greater perceptions of male partners' pornography use were related to less relationship satisfaction among young adult college women. The current study extends previous research by demonstrating quantitatively that greater perceptions of male partners' pornography use are also related to more psychological distress among women. Although this finding is consistent with findings from qualitative studies (i.e., Bergner and Bridges 2002; Zitzman and Butler 2009), it is contrary to Tylka and Van Diest's (2014) finding that perceptions of current male partners' perceived pornography use were not related to women's negative affect. However, this later study is limited by the use of a one item measure (with limited psychometric support) to assess perceived pornography use.

Our findings also extend previous research by demonstrating that relationship trust is an important explanatory variable in the link between perceptions of male partners' pornography use and women's relationship satisfaction and psychological distress. Again, consistent with findings from qualitative studies (Bergner and Bridges 2002; Zitzman and Butler 2009), the data suggest that higher perceived levels of male partners' pornography use may lead to a loss of emotional and

psychological trust and safety in the relationship, which in turn negatively influences their female partners' relational and psychological distress. Loss of trust in the relationship may leave female partners feeling nervous, insecure, and worried about the future of their relationships. This increased anxiety may contribute to overall feelings of psychological distress and take away from aspects of the relationship that used to be satisfying.

Contrary to our hypotheses, results indicated that pornography attitudes did not moderate the perceptions of male partners' pornography use and relationship trust, relationship satisfaction, nor psychological distress links. These findings suggest that among young adult women, perceptions of male partners' pornography use are negatively related to relational and mental health regardless of whether women hold negative, neutral, or positive attitudes toward pornography. The finding that women holding negative views toward pornography may have a hard time dealing with their male partners' pornography use and thus may influence their ability to trust him, as well as feel satisfied with their relationship makes sense based on theory and past research. However, the finding that women holding positive attitudes toward pornography also experience less relationship trust and satisfaction and more psychological distress is intriguing.

It may be that women who view pornography as positive or harmless experience cognitive dissonance, as well as inner confusion and conflict, when faced with a partner who uses pornography frequently and/or when that use becomes a concern to others and results in secondary problems (e.g., life, work, and relationship problems). Because his behavior and associated problems goes against her beliefs, it may negatively influence her relational and psychological health. Another explanation may be that although she might view pornography as positive or harmless in theory, it may be different when it is applied to her life as it relates to her partner. Thus, a male partner's perceived high pornography use may challenge her more neutral or positive views of pornography.

Although we found no interaction effect of relationship investment on the direct link between perceptions of male partners' pornography use and relationship satisfaction and psychological distress, we did find an interaction effect on relationship trust. The results from our moderation analyses indicated that the direct effect of male partners' perceived pornography use and relationship trust and the conditional indirect effects of male partners' perceived pornography use on both relationship satisfaction and psychological distress were contingent on relationship investment. These findings indicated that when male partners' perceived pornography use is high, women who have low or medium investment in their relationship have less relationship trust. This finding is contrary to our hypotheses and Stewart and Szymanski's (2012) finding that perceptions of problematic pornography use interacted with relationship length in predicting sexual satisfaction, with

significant risk or dissatisfaction being associated with longer relationship length. It may be that women who have not invested a significant amount of time and effort to promote intimacy and maintain a relationship might find it easier to distrust their partner in the face of perceived pornography use than women who have made such a huge investment. In addition, women who have high levels of relationship investment may see their male partners' perceived pornography use problems just like other couple challenges and as something that can be worked with and overcome; thereby, buffering them from its associated negative relational and psychological distress.

Limitations and Future Directions

Limitations of this study include sampling method (convenience sample and use of college students recruited through their enrollment in psychology courses at a southern predominantly White university), the use of self-report measures, and a correlational and cross-sectional research design. Generalizability of our study is limited by our homogeneous sample. Thus, our theorized moderated mediation model needs to be tested with middle aged women, women of color, sexual minority women, and non-college educated women to see if similar relations among constructs exist. As is true with all self-report data, participants may have responded in socially desirable ways and findings could be due to a general tendency to respond negatively or method variance. In addition, the cross-sectional nature of our data precludes us from drawing conclusions about causal links between variables in our study and alternative explanations are plausible. For example, due to the low quality of their romantic relationships and their female partners' psychological distress, men might increase their use of pornography as a way to cope. Thus, longitudinal research that follows young adult women over time and uses a cross-lagged model is needed to provide further support for the potential cause-effect relationships in our theorized model. Furthermore, it is important to acknowledge that the mediational relationships found in this study might not have been evident if other variables that cause relationship trust, relationship satisfaction, and psychological distress had been included in the model.

Future research might examine different types of pornography used by male partners to see if these differentially predict relational and psychological outcomes and moderated effects found in this study. For example, hard-core and violent pornography use may be more distressing than soft-core pornography use. In addition, pornography that contains higher levels of relational intimacy may be less distressing than pornography that contains detached sex, degradation, and violence (Manning 2006; Sun et al. 2014). Research is also needed to examine other potential moderators, such as conformity to feminine norms, feminist identity, and internalized sexism

of the perceptions of male partners' pornography use → relationship trust → relational and mental health outcomes links. Examining other potential mediators, such as attachment styles, relationship conflict, levels of support from one's partner, and betrayal in the link between perceived partners' pornography use and relationship satisfaction and psychological distress is also warranted.

Furthermore, research is needed that assesses men's reports of their pornography use as predictors of their female partners' relational and psychological outcomes. Given growing evidence that women's perceptions of their male partners' behaviors are important predictors of their distress (c.f. Galliher et al. 2004; Rochlen and Mahalik 2004; Stewart and Szymanski 2012), as well as Resch and Alderson's (2014) finding that increased male partners' honesty about their pornography use was related to less relationship satisfaction among their female partners, future research is needed to determine if there are differences between women who are aware of and women who are not aware of their male partners' pornography use on relational and psychological outcomes. For example, women who are in relationships with men who use pornography frequently but are not aware of their use might not experience the undesirable outcomes found in the current study. In addition, there is a tendency in research studies, such as this one, to assume that pornography use occurs only when men are alone. Future research is needed to explore whether and how often couples might view pornography together.

Given that the majority of research has focused on men's pornography use, more research is needed to examine women's individual use of pornography, as well as viewing pornography with their partner, and their links to relational and psychological health. Finally, our study focused on potential harmful effects of pornography use. Future research is needed to determine when, how, and what types of pornography use might be positive, perhaps aiding a couple in their romantic and sexual relationships (Manning 2006).

Conclusion

In conclusion, the current study provides one more step in the accumulating body of research that has examined potential negative outcomes of men's pornography use. The findings of our study suggest that men's pornography use can have negative consequences on the lives of other people. Our study demonstrated that the erosion of relationship trust is an important phenomenon that helps explain the positive link between women's perceptions of their male partners' pornography use and their relationship dissatisfaction and psychological distress. In addition, our study showed that these relationships exist regardless of a woman's own attitudes toward pornography. Finally, our study revealed the important moderating role of relationship investment in the relationship between male

partners' perceived pornography use and relational and psychological outcomes.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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Informed Consent The research involved human participants and included an informed consent that was approved by the University of Tennessee's Institutional Review Board.

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