Sexual Arousal and Narcissism as Predictors of Heterosexual Males’ Sexual Coercion: A Comparison of Three Models

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ABSTRACT

SEXUAL AROUSAL AND NARCISSISM AS PREDICTORS OF HETEROSEXUAL MALES’ SEXUAL COERCION: A COMPARISON OF THREE MODELS

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Research has indicated that as males become more sexually aroused they predict themselves as acting more sexually coercive. Additionally, males high in sexual narcissism also report higher usage of sexual coercion. The underlying mechanism of these relationships, however, is unclear. The current study proposed three models of sexual coercion with cognitive decision-making mediating these relationships: an arousal-cognitive model, a narcissism-cognitive model, and an integrated model of sexual arousal and sexual narcissism. Heterosexual males \((n = 154)\) completed a study of coercive behaviour both in states of sexual arousal and non-arousal and responded to a measure of sexual narcissism. The results suggest that sexual arousal and sexual narcissism indirectly affect sexual coercion through misattribution of partner interest. Additionally, sexual narcissism moderates the affect of sexual arousal on sexual coercion. This is consistent with the idea of sexual coercion being a product of several factors including contextual, cognitive, and personality variables.
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Sexual arousal and narcissism as predictors of heterosexual males’ sexual coercion: A comparison of three models

Sexual assault and sexual coercion (i.e. the use of verbal manipulation and/or physical force to obtain sexual activity against freely given consent; Adams-Curtis, & Forbes, 2004) are serious and prevalent societal concerns. Prevalence rates vary from 22% to 32% of women experiencing some form of sexual assault during adulthood (Elliott, Mok, Briere, 2004; Turchik, Probst, Chau, Nigoff, & Gidycz, 2007; Walker, Messman-Moore, & Ward, 2011). A large proportion of these sexual assaults are committed by a known perpetrator (Gidycz, Orchowski, King, & Rich, 2008). Sexual coercion also occurs within the context of romantic relationships, with 15% percent of male college students admitting to using sexual coercion on dates (Miller & Marshall, 1987). A more recent study found that 12 to 46% of men indicated some likelihood of forcing sexual activity on a partner, depending on the context of the questionnaire and if the males believed they would not get caught (Smith, Martin, & Kerwin, 2001).

Previous research has established a relationship between sexual arousal and sexual coercion (Bouffard & Exum, 2003; Bouffard, 2002; Loewenstein, Nagin, & Paternoster, 1997). More specifically, as males become more sexually aroused, they are more likely to use sexual coercion as a means of sexual gratification. It has been suggested that the mechanism through which sexual arousal predicts coercion is the cognitive process of decision-making and weighing alternative options (Loewenstein et al., 1997; Bouffard, 2002; Ariely & Loewenstein, 2006). Research has not addressed other cognitive aspects of decision-making such as the ability to attend to and interpret consent and non-consent cues, or the misattribution of partner interest (i.e. an arousal-cognitive model).
Additional research has proposed an alternative model of sexual coercion with individual differences such as sexual narcissism predicting sexual coercion (Widman & McNulty, 2010). In contrast to an arousal-cognitive model, this research cites that narcissistic entitlement results in perceptions of sexual refusals as threats to ones’ ego that need to be overpowered (i.e. a narcissism-entitlement model; Widman & McNulty, 2010; Baumeister, Catanese, & Wallace, 2002).

A decision-making approach to narcissism and sexual coercion (i.e. a narcissism-cognitive model), however, would suggest that narcissism influences cognition at an earlier stage of processing, to narrow attention, influence interpretation of cues, and the misattribution of partner interest. There is research establishing that general narcissism influences cognitive processes and motivation (Foster & Trimm, 2008; Foster, Misra, & Reidy, 2009). Research has not addressed, however, the relationship between sexual narcissism and cognitive processes as they relate to sexual coercion. Furthermore, there has been no prior research linking sexual arousal and sexual narcissism to coercion that explores aspects of decision-making related to attention and interpretation. The current study aims to examine both an arousal-cognitive and narcissism-cognitive model of sexual coercion and proposes a third integrative model that addresses the relationship between sexual arousal and sexual narcissism.

**Sexual Arousal-Cognitive Model**

**Sexual arousal predicts sexual coercion.** Research supports the notion that sexual arousal influences males’ potential to act in sexually coercive ways. Several studies have evaluated sexual arousal and sexual coercion using sexually explicit photographs or videos and the descriptions of a hypothetical dating scenario (Loewenstein et al., 1997; Bouffard, 2002; Bouffard & Exum, 2003). When sexually aroused, males were more likely to report they would
act in a sexually coercive manner, such as coaxing a female into taking her clothes off and/or continuing to have intercourse despite her protests (Loewenstein, Nagin et al., 1997; Bouffard, 2002; Bouffard & Exum, 2003). Although these studies are robust, they use direct sexual refusals in their hypothetical dating scenarios. In everyday speech, we commonly and successfully use nonverbal and verbal non-consent cues that are implied, rather than directly stated (Kitzinger & Frith, 1999). In normal discourse there is often concern around being perceived as rude if an individual were to respond to social requests with direct refusals (Kitzinger & Frith, 1999). Furthermore, in sexual scenarios, behavioural sexual initiations are used more often than direct verbal requests (O’Sullivan & Byers, 1992), perhaps making it even more uncomfortable to respond to sexual requests with a direct verbal refusal. Using non-consent cues to imply refusals rather than directly saying “no” may allow for a model of sexual coercion that is more applicable to real world sexual encounters.

**Sexual arousal, sexual coercion, and decision-making.** Research suggests that an altered process of decision-making is one explanation for why sexually aroused males are more likely to disregard clear sexual refusals and use sexual coercion (Ariely & Loewenstein, 2006; Loewenstein et al., 1997; Bouffard, 2002). Loewenstein, Nagin, and Paternoster (1997) asked participants to rate the likelihood of several negative consequences of sexual coercion occurring (i.e. the likelihood they would be arrested, the likelihood friends and family would lose respect for them, etc.). Results indicated that perceived probability of negative consequences was related to less sexual aggression, but did not mediate the relationship between sexual arousal and sexual coercion. More recently, however, Bouffard (2002) found some evidence to support the effect of sexual arousal on the ability to weigh consequences. Sexual arousal was not related to the salience of the overall measure of several costs of sexual coercion (e.g. judgment from family
and friends); however, it was negatively related to the salience of the individual cost of legal repercussions. It was also positively related to the salience of the overall measure of the benefits of sexual coercion (e.g. sexual pleasure). This provides some evidence that sexual arousal affects one’s ability to weigh sexual decisions. There is not strong evidence, however, to suggest that problem-solving mediates the effect of sexual arousal on sexual coercion. It is therefore likely that there are other variables that mediate the relationship between sexual arousal and the decision to use sexual coercion.

Other studies of sexual arousal and sexual coercion have cited decision-making as a possible point of influence as well, but noted the influence of increased sexual motivation (Ariely & Loewenstein, 2006). Ariely and Loewenstein (2006) found that sexual arousal increased the motivation to engage in a wide range of sexual activity including high-risk sexual activity and sexual coercion. The authors reported that sexual arousal acts as an amplifier, increasing the attractiveness of activities that individuals did not find arousing under non-arousal states, such as interacting with women’s shoes. Ariely and Loewenstein (2006) also concluded that sexual arousal increases motivation for sexual gratification relative to other goals. The authors suggested that “sexual arousal seems to narrow the focus of motivation, creating a kind of tunnel-vision where goals other than sexual fulfillment become eclipsed by the motivation to have sex” (Ariely & Loewenstein, 2006, p. 95). This suggests that sexual arousal may influence earlier aspects of decision-making such as attending to information incongruent with goals.

**Sexual arousal as a motivational drive and the effects on attention.** Attention is a cognitive phenomenon that is often credited with our ability to reason and make decisions. Previous research has shown that the scope of attention is malleable and can be influenced by emotional salience (Öhman, Flykt, & Esteves, 2001; LoBue & DeLoache, 2008), changes in
mood (Gasper & Clore, 2002; Fenske & Eastwood, 2003; Huntsinger, Clore, & Bar-Anan, 2010; Huntsinger, 2012), and motivational states (Gable & Harmon-Jones, 2008; Gable & Harmon-Jones, 2009). By influencing the scope of our attention we can limit the amount and type of information that we process and therefore influence how we appraise situations, make decisions, and interact with each other and our environment.

Research in attention and motivation has shown that compared to when motivation is low, our attention is narrowed (Gable & Harmon-Jones, 2010a; Gable & Harmon-Jones, 2010b). Research has also established that when in a state of high motivation, we are more distracted by stimuli that are congruent with our motivations (Forestell, Lau, Gyurovski, Dickter, & Haque, 2012). For example, when in a state of hunger, our attention may be narrowed to higher calorie foods that would better serve our current motivational state. When it comes to sexual stimuli, males’ show greater selective attention to sexual stimuli when sexually aroused compared to males who are not sexually aroused (Alexander & Sherwin, 1991). When given a dichotomous listening task, men who were more sexually aroused were significantly more distracted by sexual stimuli than control stimuli (Alexander & Sherwin, 1991). The authors also noted individual differences in the effects of sexual arousal on attention. According to the authors, having a lower threshold for sexual arousal (i.e. becoming more sexually aroused with less stimulation) is “associated with a greater bias to attend to sexual information” (Alexander & Sherwin, 1991, p. 367).

Little is known, however, about the effect of sexual arousal on attention to specific consent cues and how this relates to sexual decision-making and the use of sexual coercion. It is possible that males’ attention narrows to goal-oriented stimuli when aroused. More specifically, narrowing focus to consent cues rather than non-consent cues during a state of high sexual
motivation, or sexual arousal. The impact of sexual arousal on other cognitive processes necessary for decision-making, such as the likelihood of misinterpreting cues is also unknown. This possible narrowed attention and increase in interpretation errors could lead to individuals perceiving a partner as more interested in them sexually. If males are more likely to attend to consent cues, interpret more cues as consent cues, and perceive their partners as more interested they may be more likely to use sexual coercion.

**Sexual Narcissism-Entitlement Model**

Given that only a small proportion of men use sexual coercion compared to those who do not, there are likely individual variables that partially account for the use sexual coercion. One variable that has been associated with sexual violence is sexual narcissism. General narcissism has been quite strongly linked to violence and aggression, with individuals high on narcissistic traits showing higher levels of aggression than those with lower levels of narcissism (Bushman & Baumeister, 1998; Baumeister, Bushman, & Campbell, 2000). Additionally, the use of physical aggression in dating relationships has been shown to be more frequent for those high in general narcissism (Ryan, Weikel, & Sprechini, 2008). One component of narcissism that has been studied in relation to sexual coercion is sexual narcissism. Sexual narcissism is a cluster of traits that are separate, but related to general narcissism. Sexual narcissism consists of having a sense of sexual entitlement and an inflated sense of sexual ability (Hulbert et al., 1994). Sexual narcissism has been linked to sexual coercion beyond the influence of general narcissism, indicating that sexual narcissism is a unique factor of sexual coercion, separate from general narcissism (Widman & McNulty, 2010). Theory suggests sexual coercion occurs as a result of the entitlement associated with sexual narcissism (Baumeister et al., 2002). For those high in
sexual narcissism, a sexual refusal may be perceived as a threat to one’s ego and coercion would be used a means of undermining that threat (Baumeister et al., 2002).

**Sexual Narcissism-Cognitive Model**

Alternatively, those high in sexual narcissism may be more motivated to engage in sexual activity. Similar to the affects of increased motivation from sexual arousal, sexual narcissism may be related to narrowed attention, interpretation errors, and misattribution of partner interest. There has been a well-established link between general narcissism and differing forms of motivation such as approach motivation (Foster & Trimm, 2008; Foster, Misra, & Reidy, 2009), motivation to complete a task (Wallace, Ready, & Weitenhagen, 2009), and task persistence (Wallace et al., 2009). Those high in general narcissism have been shown to be highly motivated to approach desirable goals, and often endorse attitudes that reflect using more extreme measures to achieve desirable goals (Foster & Trimm, 2008). In addition to more global attitudes, general narcissism is also related to specific types of motivation such as approaching friendship goals and financial goals (Foster et al., 2009).

General narcissism has also been linked to sexual motivation. In a recent study by Baughman, Jonason, Veselka, and Vernon (2014), general narcissism was associated with having a higher sex drive. Individuals higher on general narcissism engaged in more frequent sexual fantasies and a wider variety of sexual fantasies compared to another related personality trait, Machiavellianism (Baughman et al., 2014).

Although general narcissism has been related to approach-motivation and sexual motivation, current research has not explored the link between sexual narcissism, increased sexual motivation, and sexual coercion. It is possible that given the fact that those high in general narcissism have an approach-motivation orientation and a higher sex drive, that those high in
sexual narcissism would also have an increased motivation to engage in sexual activity and approach their sexual goals. Considering the previously outlined existing research on motivation and attention, it is likely that the increase sexual motivation related to sexual narcissism would lead to narrowed attention to consent cues, greater interpretation errors of non-consent cues, and perceiving partners as more sexually interested.

**Aims of the Current Study**

The current study aims to replicate existing research regarding sexual arousal, sexual narcissism, and sexual coercion. Adding to previous research on motivation, attention, and decision-making, the current study aims to evaluate several novel aspects of decision-making as possible mediators. The current study also aims to integrate research on sexual arousal, sexual narcissism, and sexual coercion. Five specific hypotheses are predicted as they pertain to three different models of sexual coercion:

**Model 1: Arousal-cognitive model.**

**Hypothesis 1:** Sexual arousal predicts sexual coercion. It is predicted that similar to previous research, as heterosexual males become more sexually aroused they will report a higher likelihood of using sexual coercion.

**Hypothesis 2:** Cognitive variables mediate the relationship between sexual arousal and sexual coercion. It is predicted that cognitive variables – narrowed attention, interpretation errors, and misattribution of partner interest – will mediate the relationship between sexual arousal and sexual coercion (see Figure 1a).

**Model 2: Sexual narcissism-cognitive model.**

**Hypothesis 3:** Sexual narcissism predicts sexual coercion. It is predicted that similar to previous research, sexual narcissism will be associated with sexual coercion. More specifically,
higher endorsement of sexual narcissism will be related to higher reported likelihoods of acting coercively.

**Hypothesis 4: Cognitive variables mediate the relationship between sexual narcissism and sexual coercion.** It is predicted that cognitive variables, will mediate the relationship between sexual narcissism and sexual coercion (see Figure 1b).

**Model 3: Integrated model.**

**Hypothesis 5: Sexual narcissism moderates the sexual arousal-cognitive model.** It is predicted that the mediation model of sexual arousal through cognitive variables (i.e. arousal-cognitive model) will be moderated by sexual narcissism (see Figure 2). More specifically, sexual narcissism will moderate the direct effect of sexual arousal on coercion and the indirect effect of arousal through cognitive variables on coercion. It is predicted that the direct and indirect effect will be stronger for those higher in sexual narcissism than for those lower in sexual narcissism.

**Methods**

**Participants**

Participants were 216 males (over 78% White/European) recruited from the undergraduate psychology subject pool at the University of Guelph ($M_{age} = 19.30, SD = 1.43$). Recruitment was limited to male participants, as research indicates that males commit the majority of sexual offences (Ménard, Hall, Phung, Ghebrial, & Martin, 2003; Hogben, Byrne, & Hamburger, 1996). Participants were excluded from data analysis if: they had incomplete data ($n = 52$); used any medications known to affect sexual functioning ($n = 0$, i.e. antidepressants or medications to treat hypertension, see Serretti & Chiesa, 2009, and Javaroni & Neves, 2012 for a full review); reported any current significant difficulties with sexual arousal ($n = 4$); were not
“mostly attracted to females” ($n = 3$; as the sexually explicit photos contained nude women); or did not report any variation in sexual arousal across time points/did not report any arousal ($n = 13$; as this likely represented either a response bias or difficulties in sexual arousal). With overlap among exclusion criteria, the final sample consisted of 154 heterosexual male participants. The study was approved by the University Research Ethics Board and all participants provided informed consent and were given course credit for their participation.

**Procedure**

The procedure was adapted from Loewenstein et al. (1997) and Bouffard (2002). Participants read and responded to several hypothetical dating scenarios both in a sexual arousal condition and a non-arousal condition. The order of the two conditions was counter-balanced. To allow their sexual arousal to return to baseline and prevent order effects, participants viewed a short nature film between conditions. Similar to previous studies on sexual arousal and sexual assault (Loewenstein et al., 1997; Bouffard, 2002), in the sexual arousal condition, participants were exposed to photographs of full-length nude women prior to and while reading and responding to the scenarios. In the non-arousal condition, participants viewed photographs of natural landscapes (e.g., a mountain with trees).

Participants completed the entire procedure through an online website. The online procedure differed from the Bouffard (2002) study, however, other research on sexual arousal has opted for the privacy of an at-home procedure that an online study provides (Ariely & Loewenstein, 2006). Respondents proceeded through the following series of screens in both conditions:

**Screen 1 – Baseline arousal (text only).** Participants were asked to report their level of subjective sexual arousal in order to establish a baseline sexual arousal level.
Screen 2 – Photograph (picture & text). Participants viewed a photograph (either of a nude woman or a landscape) and indicated their level subjective sexual arousal.

Screen 3 – Hypothetical dating scenario (picture & scenario). A different photograph of the same type was then presented with a hypothetical dating scenario. The scenarios were written in the second person and described the participant as making a sexual advance towards a known female (e.g. “You ask her to spend the night”). The female character largely responds with non-consent cues (e.g. shifting away from the participant and providing an excuse). The female also responds using some ambiguous cues (e.g. tucking her hair behind her ear) or consent cues (e.g. smiling and saying “sure”). Cues included both verbal and non-verbal means of communication. At no point during the hypothetical dating scenarios did the females provide a “no” response to a sexual advance. This reflects the uncommon and unnecessary use of the word “no” in real-world sexual refusals (Kitzinger & Frith, 1999). All scenarios ranged from 100 to 150 words and were piloted to test for clarity and to confirm the interpretation of consent cues and non-consent cues (see Appendix A for an example with explanations).

Screen 4 – Partner interest and sexual coercion (pictures & questionnaire). Participants were shown photographs and completed questions regarding the misattribution of partner interest and the likelihood they would use sexual coercion.

Screen 5 – Recall of consent cues (pictures & free recall). Participants viewed photographs and completed the free recall task for consent cues.

Screen 6 – Recall of non-consent cues (pictures & free recall). This screen consisted of a photograph and the free recall task for non-consent cues.

Screen 7 – Interpretation task (pictures & interpretation task). This screen consisted of photographs the interpretation task for consent and non-consent cues.
This procedure was repeated with two additional hypothetical dating scenarios in the same condition. After reading and responding to three dating scenarios, participants viewed a short nature film. They subsequently responded to three additional hypothetical dating scenarios in the opposing arousal state. The procedures in the arousal and non-arousal conditions were identical with the exception of the content of the photographs (i.e. photographs of nude women or landscapes).

After participants read and responded to all hypothetical dating scenarios in both conditions, participants watched another short nature film to ensure that their sexual arousal returned to baseline (see Appendix B for a description of both nature videos). Personality traits and demographics were evaluated after arousal returned to baseline.

Measures

Sexual Coercion. Sexual coercion can include a wide range of behaviours including verbal manipulation, administration of drugs and alcohol, and physical force. The current study included measures of verbal manipulation and the administration of alcohol to another party with their consent. The current study does not explicitly examine the use of physical force as a coercive tactic. The coercive items were adapted from Bouffard (2002); participants rated the likelihood that they would respond to the female character in the story in the following coercive ways: (1) “coax her into taking off her clothes,” (2) “continue to kiss and touch her if she expressed a lack of interest in sex,” (3) “say things you didn’t mean to get her to have sex,” (4) “get her another drink in order to get her in the mood,” and (5) “have sex with her even if she protested.” Participants responded on a 0% (not at all likely/I would not do this) to 100% (extremely likely/I would most definitely do this) scale. Responses for scenarios that occurred in a public place (e.g. a bar) were modified slightly for clarity (e.g. “I would coax her into going
home with me and taking her clothes off”). There was adequate internal consistency among items in each hypothetical dating scenario (Cronbach’s alpha ranged from .76 to .82). A total Sexual Coercion score was computed across dating scenarios within each condition with strong internal consistency (Cronbach’s alpha was .91 and .93 in the arousal condition and the non-arousal condition, respectively).

Cognitive variables. Three measures were used as cognitive variables that potentially affect sexual decision-making: Misattribution of Partner Interest, Recall of Consent Cues, and Positive Interpretation Errors. Misattribution of Partner Interest was evaluated with the question, “How interested was the female in the story in having sexual contact with you at this moment?” Responses were rated on a 0% (not at all interested) to 100% (completely willing and interested) scale. Total Misattribution of Partner Interest scores were calculated across scenarios in the arousal and non-arousal conditions. The total Misattribution of Partner Interest scores had adequate internal consistency across stories in each condition, $\alpha = .76$ and $\alpha = .72$ (in the arousal and non-arousal condition respectively) and overall, $\alpha = .82$.

Recall of Consent Cues was used as a proxy measure of narrowed attention. Although memory and attention are two distinct psychological concepts, attention has been linked to recall and has been used to measure and draw inferences on attention in previous studies (Gable & Harmon-Jones, 2010a; Beck, Barlow, Sakheim, & Abrahamson, 1987). Participants completed a free recall task for consent cues and non-consent cues. The free recall task required participants to list as many specific cues from the story as they can remember that indicated the female was interested (or not interested) in having sex:

“List as many specific events from the story that you can remember that indicated that [female’s name] was (NOT) interested in having sex with you at this moment. List both things that [female’s name] said and things that [female’s name] did to make you think she was (NOT) interested in having sex with you.”
Recall of Consent Cues consisted of accurately recalled consent cues. Accurately recalled consent cues refer to cues that were present in the story, were in response to a sexual request, and were interpreted correctly. Inaccurately recalled consent cues were either not present in the story, occurred before consent was requested, or were misinterpreted. Total number of recalled consent and non-consent cues regardless of accuracy was also recorded.

Lastly, Positive Interpretation Errors were identified using the interpretation task. The interpretation task required that participants identify recalled cues from the story as consent, non-consent, or ambiguous cues:

“Please indicate whether each event occurred in the story you just read. If the event happened, did it indicate [female’s name]’s interest in having sex, disinterest in having sex, or neither. Check YES if the event occurred in the story and NO if the event did not happen in the story. IF, you check yes, please state whether the event indicated her interest in having sex, her disinterest in having sex, or whether the event indicated neither sexual interest nor sexual disinterest.”

A positive interpretation error consisted of falsely identifying a non-consent cue or ambiguous cue (e.g. “she scratched her nose”) as a consent cue. For example, indicating that when the female moved away from the participant it implied she was interested in sexual contact. A negative interpretation error consisted of falsely identifying a consent cue or an ambiguous cue as a non-consent cue. Interpreting the female absent-mindedly scratching her arm as an indication she was not interested in sexual contact would be an example of a negative interpretation cue.

Sexual Arousal. To measure Sexual Arousal, participants responded to the question “How sexually aroused do you feel right now?” on a scale from 0% (not at all aroused) to 100% (extremely aroused/arousal associated with an orgasm). This has been shown to be an effective measure of males’ subjective sexual arousal and is consistent with previous research on sexual
arousal (Suschinsky, Lalumière, Chivers, 2009; Chivers, Seto, Lalumière, Laan, & Grimbos, 2010) and research on the effects of sexual arousal on sexual assault (Loewenstein, et al., 1997; Bouffard, 2002). Cronbach’s alpha suggested strong internal consistency between subjective arousal questions within each condition, $\alpha = .90$ and $.93$ and across conditions, $\alpha = .76$.

**Sexual Narcissism.** To assess Sexual Narcissism, participants completed the “Index of Sexual Narcissism” (Hurlbert, Apt, Gasar, Wilson, & Murphy, 1994). The Index of Sexual Narcissism is comprised of 25 statements to which participants rate their degree of agreement. Items included statements such as “My partner seldom gives me the sexual praise I deserve.” Cronbach’s alpha suggested strong internal consistency of the items, $\alpha = .84$.

**Demographics.** The post-experimental questionnaire included demographic items including age, relationship status, ethnicity, sexual orientation, and sexual arousal difficulties.

**Results**

**Preliminary Results**

To test for order effects, a MANOVA was conducted with Order as the between subjects variable across the outcome, predictor, and mediator variables (i.e. Sexual Arousal, Sexual Coercion, Misattribution of Partner Interest, Recall of Consent Cues, and Positive Interpretation Errors). No significant order effects were found, $F(18, 432) = 1.20, p = .25, \eta^2 = .05$.

To test the effectiveness of the conditions, a paired-samples $t$-test was conducted with Sexual Arousal as the within-subjects factor. Participants were significantly more sexually aroused in the arousal condition ($M = 44.26, SD = 24.18$) than in the non-arousal condition ($M = 16.69, SD = 18.91$), $t(151) = 15.89, p < .001$. There was a large effect of condition on arousal, $d = 1.27$. 
Main Analyses

Analytic strategy. Zero-order correlations were used to examine possible control variables. Age, length of relationship and frequency of pornography use were not significantly correlated with Sexual Arousal, Sexual Coercion or any of the cognitive variables, therefore were not used as control variables, correlations ranged from .01 to .14. Baseline levels of Sexual Arousal, Sexual Coercion and the cognitive variables (i.e. in the non-arousal condition), however, were correlated with the predictor, outcome, and mediator variables (correlations ranged from .34 to .80) and were therefore identified as control variables and entered at Step 1 in the hierarchical regression equations examined, or as covariates in the multiple mediation analyses.

To investigate the multiple mediation models of sexual coercion, the Preacher and Hayes (2008) bootstrapping method of evaluating indirect, direct, and total effects of multiple mediators was used. This method allows for evaluation of the total set of mediators. Compared to evaluating each mediator as a separate model, multiple mediation reduces the likelihood of biased coefficients. The bootstrapping method of measuring indirect effects also avoids the normality assumption of traditional mediation approaches (see Preacher & Hayes, 2008 for a comparison of mediation models). Bootstrapping uses a resampling procedure that estimates the effects using confidence intervals. The confidence intervals are considered to be significant if they do not cross zero. The PROCESS macro (Hayes, 2013) for SPSS was used to evaluate the models (model 4, model 4, and model 15 of the PROCESS macro were used to evaluate Figure 1a and 1b, and Figure 2 respectively). The confidence intervals for all analyses were set at 95% using 10,000 samples. Regression coefficients calculated using the PROCESS macro are reported as unstandardized regression weights as is outlined in Preacher and Hayes (2008).
Hypothesis 1: Sexual Arousal predicts Sexual Coercion. A hierarchical linear regression analysis was conducted to evaluate the first hypothesis. Control variables were entered into Step 1 of the equation and Sexual Arousal was entered into Step 2 of the equation. Beyond the large amount of variance in Sexual Coercion accounted for by the control variables, \( R^2 = .70, F(5, 123) = 58.56, p < .00 \), Sexual Arousal accounted for significant additional variance, \( \Delta R^2 = .02, F(1, 122) = 6.37, p = .01 \) (see Table 1).

Hypothesis 2: Sexual Arousal predicts Sexual Coercion, mediated by cognitive variables. To evaluate the second hypothesis, that in addition to the direct effect of Sexual Arousal, there is an indirect effect of Sexual Arousal on Sexual Coercion through several cognitive variables (i.e. Recall of Consent Cues, Positive Interpretation Errors, and Misattribution of Partner Interest) a multiple mediation analysis was performed. The Preacher and Hayes (2008) approach allows for testing of total, direct, and indirect effects of the predictor variable and mediators (i.e. all the cognitive variables). The control variables were entered into the equation as covariates. The total effects model was significant, accounting for 78% of the variance in Sexual Coercion, \( F(6, 115) = 68.06, p < .001 \). The total effect of Sexual Arousal on Sexual Coercion (i.e. with just the covariates and Sexual Arousal entered into the equation) was significant, (see Table 2). The overall direct effect model was significant and accounted for 81% of the variance, \( F(9, 112) = 53.72, p < .001 \). The direct effect of Sexual Arousal on Sexual Coercion (i.e. the effect of Sexual Arousal with the mediators entered into the equation), however, was not significant, (see Table 2). There was a direct effect of Misattribution of Partner Interest and the direct effect of Positive Interpretation Errors was trending towards significance, but there was no direct effect of Recall of Consent Cues. The total indirect effect of Sexual Arousal on Sexual Coercion through all three mediators was significant (see Table 2). Of the
three possible mediators, there was a significant indirect effect of Sexual Arousal on Sexual Coercion through Misattribution of Partner Interest (see Table 2). The indirect effect of the other two mediators was not significant.

**Hypothesis 3: Sexual Narcissism predicts Sexual Coercion.** In order to test the third hypothesis, whether Sexual Narcissism is associated with Sexual Coercion, the zero-order correlation was evaluated. Sexual Narcissism was significantly correlated with baseline levels of Sexual Coercion (i.e. without the influence of sexual arousal), $r^2 = .21$. The higher someone was in sexual narcissism, the more likely they were to predict themselves using sexual coercion.

**Hypothesis 4: Narcissism predicts Sexual Coercion mediated by cognitive variables.** To evaluate the fourth hypothesis, that in addition to the direct effect of Sexual Narcissism, there is an indirect effect of Sexual Narcissism on Sexual Coercion through several cognitive variables (i.e. Recall of Consent Cues, Positive Interpretation Errors, and Misattribution of Partner Interest) a multiple mediation analysis was performed. Baseline levels of the cognitive variables and Sexual Coercion were used in the analysis to evaluate the direct and indirect effects without the influence of sexual arousal. The total effects model accounted for 22% of the variance in Sexual Coercion, $R^2 = .22$, $F(1, 127) = 34.90$, $p < .001$. The direct effects model was also significant, accounting for 34% of the variance, $R^2 = .34$, $F(4, 124) = 15.93$, $p < .001$. The direct effects of Sexual Narcissism and Misattribution of Partner Interest on Sexual Coercion were significant. Neither the direct effects of Recall of Consent Cues nor Positive Interpretation Errors were significant (see Table 3). The total indirect effect of Sexual Narcissism on Sexual Coercion through all three mediators was significant (see Table 3). Of the three possible mediators, there was a significant indirect effect of Sexual Narcissism on Sexual Coercion through Misattribution of Partner Interest (see Table 3).
**Hypothesis 5: Sexual narcissism moderates the sexual arousal-cognitive model.** A moderated mediation analysis was performed using the Preacher and Hayes (2008) bootstrapping method to evaluate the fifth hypothesis, that Sexual Narcissism moderates the relationship between Sexual Arousal and Sexual Coercion and moderates the indirect effect of Sexual Arousal on Sexual Coercion through cognitive factors. Given that only Misattribution of Partner Interest was a significant mediator of the effect of Sexual Arousal on Sexual Coercion, the other cognitive variables were dropped from the model (see Figure 2). Control variables were entered into the equation as covariates. The overall direct effects model accounted for 74% of the variance in sexual coercion, $R^2 = .74$, $F(8, 142) = 49.97$, $p < .001$. The direct effect of Misattribution of Partner Interest and Sexual Narcissism were significant, but the direct effect of Sexual Arousal was not (see Table 4). The interaction between Sexual Narcissism and Sexual Arousal was significant, but the interaction between Sexual Narcissism and Misattribution of Partner Interest was not significant (see Table 4). Therefore, the interaction between Sexual Narcissism and Sexual Arousal was further explored. At high levels of Sexual Narcissism there was a significant effect of Sexual Arousal on Sexual Coercion, where as, at low levels of Sexual Narcissism, there was not a significant effect of Sexual Arousal on Sexual Coercion (see table 4). The moderated mediation was not significant, Sexual Narcissism did not moderate the indirect effect of Sexual Arousal on Sexual Coercion through Misattribution of Partner Interest (see Table 4).

**Additional analyses.** Models including recall of non-consent cues and negative interpretation errors were investigated and the pattern of results did not differ.
Discussion

Although there was some evidence to suggest that sexual arousal is a predictor of interpretation errors and sexual narcissism is a predictor of recall of consent cues, overall there was no evidence to suggest indirect effects of sexual narcissism or sexual arousal through these cognitive variables. This is contrary to previous research on other types of motivation and attention. The lack of evidence to support these variables as mechanisms of sexual coercion could be for several reasons. A possible ceiling effect may have occurred, where not enough variance was introduced to determine an effect; more specifically, participants were too accurate in their recall of details in the scenarios. Previous research on attention and motivation has used more simplistic cognitive tasks, such as dichotomous listening and perceptual tasks, rather than detailed memory tasks (see Gasper & Clore, 2002; Fenske & Eastwood, 2003; Huntsinger et al., 2010; and Huntsinger, 2012 for examples). Given the well-substantiated research on motivation and attention, it is likely that by using the memory and interpretation tasks, rather than specific attention-based measures, the effect of motivation may have been lost. Future research should examine sexual motivation using more specified attentional tasks that would provide more accuracy and be less likely to have a ceiling effect.

This study employed an attentional task that was more rooted in real-world sexual scenarios, rather than a specific attentional scope task. The lack of evidence for narrowed attention and interpretation errors on this real-world task suggests that heterosexual men are capable of attending to and accurately interpreting sexual refusals, without explicit use of the word “no”. This suggests that when altered perceptions of partner interest occur and coercion is used, it is not a result of narrowed attention or errors in interpretation. Research regarding miscommunication in sexual scripts is consistent with this finding; males are able to understand
their partners’ refusals (Beres, 2010). Gendered sexual scripts that portray males as sexual initiators and females as gatekeepers in heterosexual sex is one possible explanation for why males are able to understand refusals, but still believe their partners to be interested. More specifically, men may perceive women’s refusals as part of a normative sexual script rather than genuine disinterest.

**Sexual Arousal-Cognitive Model**

Previous research has demonstrated that sexual arousal is associated with an increase in heterosexual males’ self-reported proclivity for sexual coercion (Loewenstein et al., 1997; Bouffard, 2002; Bouffard & Exum, 2003). The current study replicated the finding that as heterosexual males become more sexually aroused, they predicted themselves as more likely to act in sexually coercive ways.

The possible mechanisms through which sexual arousal predicts sexual coercion were explored with a multiple mediation model. Despite the fact that there was no evidence for narrowed attention or increased interpretation errors during sexual arousal, individuals’ perceptions of other’s interest in having sex with them did increase under arousal states and this mediated the relationship between sexual arousal and sexual coercion. This suggests that sexual arousal is associated with altered perceptions of their partner interest, leading to sexual coercion. Given that there was no evidence to support narrowed attention or interpretation errors, there may be alternate explanations to this misattribution aside from increased motivation. Sexual arousal affects mood (Peterson & Janssen, 2007) and mood in turn affects perceptions and judgments (Lerner & Keltner, 2001). It is therefore possible that the increased positive affect associated with sexual arousal is related to more positive perceptions of others and misattributing partner interest.
Sexual Narcissism-Entitlement Model

Previous research has demonstrated that sexual narcissism is related to increased sexual aggression (Widman & McNulty, 2010). Theory suggests that individuals high in sexual narcissism feel more entitled to sex, perceive themselves as more sexually skilled, and more strongly value casual sex. The current study replicated the finding that sexual narcissism is associated with higher levels of sexual coercion. Results also indicated an indirect effect of sexual narcissism through misattribution of partner interest. This indirect effect suggests that the well-established relationship between sexual narcissism and sexual coercion can be partially explained by the misconception of perceiving a potential sexual partner as are more sexually interested in them.

This contradicts the entitlement theories of narcissism that suggest that violence occurs, not because narcissism leads to misunderstanding of other’s beliefs, but because other’s beliefs are perceived to be a threat to their own ego (Bushman & Baumeister, 1998; Twenge & Campbell, 2003). More specifically that someone high in sexual narcissism would understand someone as being uninterested, but use coercion as a means of getting what they feel entitled to, despite the clearly understood sexual refusal.

Sexual Narcissism-Cognitive Model

The effect of sexual narcissism on misattribution of partner interest is consistent with aspects of sexual narcissism that pertain to an individual believing they are exceptionally skilled at sex. This is also consistent with the narcissistic belief that one should take sexual responsibilities less seriously. It is probable that the more sexually skilled a person believes themselves to be and the less inhibited they believe others should be, the more likely they are to perceive others as wanting to engage in sexual activity with them.
The use of sexual coercion, however, suggests this is not a simple misunderstanding. Those high in sexual narcissism that use sexual coercion are not perceiving their partners as more interested and proceeding with sexual activity consensually. More specifically, people who scored high on sexual coercion were more likely to continue sexual activity despite protests, say things they didn’t mean, and give their partners more alcohol in an attempt to get them to engage in sexual activity. Due to their inflated sense of sexual self-esteem, those high in sexual narcissism may believe others are outwardly refusing their sexual advances, but are truly still interested in having sex with them. They are, therefore, more likely to use coercion to counteract this resistance. Specifically, those high in sexual narcissism could recognize the sexual refusal, but believe their partner’s evaluation of them to be incorrect. Research on narcissism supports this explanation and suggests those high in narcissism are more likely to perceive others who provide negative feedback as less competent (Kernis & Sun, 1994).

**Integrated Model**

Contrary to hypotheses, the indirect effect of sexual arousal on sexual coercion through misattribution of partner interest was not moderated by sexual narcissism. Overall, it appears that regardless of the effects sexual narcissism, there is an indirect effect of sexual arousal through misattribution of partner interest. More specifically the more aroused a male is, the more likely they are to believe a partner is interested in having sex with them and consequently, the more likely they are to use coercion to engage in sex with a partner. Separately from this effect, sexual narcissism did moderate the relationship between sexual arousal and sexual coercion. Those who feel more entitled to sex and perceive themselves as having better sexual abilities (i.e. people who are high on sexual narcissism) are more likely to use coercion when sexually aroused compared to those who do not have these beliefs.
It is interesting that the moderated mediation model was not supported, given the indirect effect of sexual narcissism through misattribution of partner interest without the effect of sexual arousal. Due to the lower levels of sexual narcissism in the community sample it may be possible that there was not enough variance in sexual narcissism to consistently moderate the indirect effect and account for a larger portion of the variance in coercion. In community samples with lower rates of sexual narcissism and sexual coercion, the indirect effect of sexual arousal and misattribution of partner interest is a much stronger predictor of sexual coercion. In samples of individuals with a history of sexual offending, however, sexual narcissism may significantly moderate this indirect effect.

Similarly, between the three models of coercion, the sexual arousal-cognitive model accounted for the most variance in sexual coercion. This is contrary to my hypothesis. Given the low levels of sexual narcissism and sexual coercion in the sample, it is likely that the result for the models that include sexual narcissism would be stronger in populations with a history of sexual offending.

Limitations and Future Directions

Several of the measures used in the current study were comprised of single items taken at multiple time points (i.e. Misattribution of Partner Interest and Sexual Arousal) while other measures consisted of multiple items (i.e. Sexual Coercion and Sexual Narcissism). While this is consistent with previous research in the area, future research may wish to further evaluate the reliability of the single measure items.

Future research could focus on expanding the population of research. Firstly, by exploring these models within populations with stronger behavioural histories of sexual coercion, we may better understand the underlying mechanisms. Targeting individuals who have a history
of sexual offending and comparing results to this community sample will allow for a better understanding of the factors that distinguish those who sexually offend and those who do not. In addition to examining these models in populations of individuals who sexually offend, it would be beneficial to expand the sample to include females and individuals of sexual minorities. Although males commit the majority of sexual offences, they are not exclusively responsible for all sexual offences and this research may not be applicable to the wider range of gender presentations and sexual identities.

Given the extensive research on motivation and attention, future research could address the gap in this literature with more direct measures of attention. By using an attentional task that does not involve memory, but rather focuses on global or local based attention, one may be better able to establish the effect of sexual arousal on attention.

**Conclusions**

The current study provides further insight into models of sexual coercion. In a community sample, where sexual narcissism and sexual coercion rates are lower than in populations with a history of sexual offending, sexual arousal predicts coercion through artificially increasing the misattribution of partner interest. Sexual narcissism also predicts sexual coercion through increasing misattribution of partner interest. The integration of these two models revealed that sexual narcissism affects the impact of sexual arousal on coercion. The narcissism models, however, account for less variance in sexual coercion than the arousal-cognitive model. This suggests that personality factors, such as sexual narcissism may play a larger role in populations who have a history or sexual offenses, but among community populations, contextual factors such as sexual arousal are more influential. More research should
be done to address the mechanisms underlying the effects of arousal and narcissism on misattribution of partner interest.

The implications of this study suggest that better informed intervention approaches to sexual coercion should incorporate promoting more accurate perceptions of partner interest, particularly in those with higher levels of sexual narcissism and lower thresholds for sexual arousal.
References


individual, and situational determinants. *Journal of Interpersonal Violence*, 18(10), 1222-1239.


Table 1

*Hierarchical Regression Analyses Predicting Sexual Coercion*

<table>
<thead>
<tr>
<th>Step 1. Sexual Coercion (NA)</th>
<th>Δ$R^2$</th>
<th>$F$ change</th>
<th>$\beta$</th>
<th>sr$^2$</th>
<th>$r$</th>
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</thead>
<tbody>
<tr>
<td>Sexual Coercion (NA)</td>
<td>.70</td>
<td>58.56***</td>
<td>.77***</td>
<td>.43</td>
<td>.83***</td>
</tr>
<tr>
<td>Sexual Arousal (NA)</td>
<td>- .04</td>
<td>.00</td>
<td>.26***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misattribution of Partner Interest (NA)</td>
<td>.11</td>
<td>.01</td>
<td>.50***</td>
<td></td>
<td></td>
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<tr>
<td>Recall of Consent Cues (NA)</td>
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<td>.00</td>
<td>.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Interpretation Errors (NA)</td>
<td>.05</td>
<td>.00</td>
<td>.08</td>
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</table>

Step 2. Sexual Arousal

<table>
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<tr>
<th></th>
<th>Δ$R^2$</th>
<th>$F$ change</th>
<th>$\beta$</th>
<th>sr$^2$</th>
<th>$r$</th>
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</thead>
<tbody>
<tr>
<td>Sexual Arousal</td>
<td>.02</td>
<td>6.37*</td>
<td>.15*</td>
<td>.01</td>
<td>.31***</td>
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</tbody>
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*Note. NA refers to the non-arousal condition, * $p < .05$, ** $p < .01$, *** $p < .001$*
Table 2

Mediation of the Effect of Sexual Arousal on Sexual Coercion Through Misattribution of Partner Interest, Recall of Consent Cues, and Positive Interpretation Errors

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<th>Bias-Corrected</th>
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</thead>
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<tr>
<td></td>
<td>Point Estimate</td>
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<td></td>
</tr>
<tr>
<td><strong>Total Effects</strong></td>
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<td></td>
</tr>
<tr>
<td>1. Sexual Arousal</td>
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<td>.036</td>
</tr>
<tr>
<td><strong>Direct Effects</strong></td>
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<td></td>
</tr>
<tr>
<td>1. Sexual Arousal</td>
<td>.053</td>
<td>.035</td>
</tr>
<tr>
<td>2. Misattribution of Partner Interest</td>
<td></td>
<td>.170***</td>
</tr>
<tr>
<td>4. Positive Interpretation Errors</td>
<td>.041</td>
<td>.021</td>
</tr>
<tr>
<td><strong>Indirect Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Misattribution of Partner Interest</td>
<td></td>
<td>.027a</td>
</tr>
<tr>
<td>2. Recall of Consent Cues</td>
<td>-.003</td>
<td>.005</td>
</tr>
<tr>
<td>3. Positive Interpretation Errors</td>
<td>.007</td>
<td>.007</td>
</tr>
<tr>
<td>Total</td>
<td>.032a</td>
<td>.016</td>
</tr>
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</table>

*Note. Regression weights are unstandardized, *p < .05, **p < .01, ***p < .001, a indirect effect is statistically significant*
Table 3

*Indirect Effects of Sexual Narcissism on Sexual Coercion Through Misattribution of Partner Interest, Recall of Consent Cues, and Positive Interpretation Errors*

<table>
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<tr>
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<th>Bias-Corrected</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Point Estimate</td>
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</tr>
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<td><strong>Total Effects</strong></td>
<td></td>
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</tr>
<tr>
<td>1. Sexual Narcissism</td>
<td>.587***</td>
<td>.099</td>
<td>.390</td>
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<td><strong>Direct Effects</strong></td>
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<tr>
<td>1. Sexual Narcissism</td>
<td>.403***</td>
<td>.100</td>
<td>.205</td>
</tr>
<tr>
<td>2. Misattribution of Partner Interest</td>
<td>.302***</td>
<td>.065</td>
<td>.173</td>
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<tr>
<td><strong>Indirect Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Misattribution of Partner Interest</td>
<td>.196^a</td>
<td>.065</td>
<td>.093</td>
</tr>
<tr>
<td>2. Recall of Consent Cues</td>
<td>-.004</td>
<td>.020</td>
<td>-.056</td>
</tr>
<tr>
<td>3. Positive Interpretation Errors</td>
<td>-.008</td>
<td>.015</td>
<td>-.055</td>
</tr>
<tr>
<td>Total</td>
<td>.184^a</td>
<td>.057</td>
<td>.092</td>
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</tbody>
</table>

*Note.* Regression weights are unstandardized, * p < .05, ** p < .01, *** p < .001, ^a indirect effect is statistically significant.
Table 4

*Moderated Mediation of the Effect of Sexual Arousal on Sexual Coercion Through Misattribution of Partner Interest at Conditional Effects of Sexual Narcissism*

<table>
<thead>
<tr>
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<th>Bias-Corrected</th>
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<th>Lower</th>
<th>Upper</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Point Estimate</td>
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<td></td>
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<tr>
<td>Direct Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Sexual Narcissism</td>
<td>.154*</td>
<td>.074</td>
<td>.009</td>
<td>.300</td>
</tr>
<tr>
<td>2. Sexual Arousal</td>
<td>.066</td>
<td>.040</td>
<td>-.013</td>
<td>.145</td>
</tr>
<tr>
<td>3. Misattribution of Partner Interest</td>
<td>.273***</td>
<td>.049</td>
<td>.176</td>
<td>.370</td>
</tr>
<tr>
<td>4. Sexual Narcissism x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Misattribution of Partner Interest</td>
<td>.002</td>
<td>.004</td>
<td>-.005</td>
<td>.009</td>
</tr>
<tr>
<td>5. Sexual Narcissism x Sexual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arousal</td>
<td>.007*</td>
<td>.003</td>
<td>.000</td>
<td>.013</td>
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<tr>
<td>Conditional Direct Effect</td>
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<tr>
<td>Sexual Narcissism Low</td>
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<td>.054</td>
<td>-.121</td>
<td>.091</td>
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<tr>
<td>High</td>
<td>.147*</td>
<td>.057</td>
<td>.033</td>
<td>.260</td>
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<tr>
<td>Conditional Indirect Effect</td>
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<tr>
<td>Sexual Narcissism Low</td>
<td>.048a</td>
<td>.024</td>
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<td>.111</td>
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<tr>
<td>High</td>
<td>.059a</td>
<td>.028</td>
<td>.018</td>
<td>.132</td>
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</table>

*Note.* Regression weights are unstandardized, Low = -1SD, High = +1SD, *p < .05, **p < .01, ***p < .001, a indirect effect is statistically significant.
Figure 1. Multiple mediation models of sexual coercion using Preacher and Hayes (2008) method the indirect effects of sexual arousal (A) and indirect effects of Sexual Narcissism (B) are represented with unstandardized coefficients, \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \).
Figure 2. Moderated mediation model of sexual coercion using Preacher and Hayes (2008) method. The indirect effects of sexual conditional effects of Sexual Narcissism are represented with unstandardized coefficients, * p <.05, ** p <.01, *** p <.001.
Appendix A

Scenario A: The Living Room

You are alone with Amber in your living room after eating dinner together. Sitting close to her on the couch, you notice how attractive Amber looks tonight and you tell her "You look amazing." She smiles and you lean in and kiss her. After kissing for a few minutes, you place your hand on her leg and whisper "Do you want to take this to the bedroom?" Amber pauses and says "...Okay. Well, maybe." She moves your hand off her leg and looks to the ground, as she says, "We should really do the dishes." Amber shifts down the couch and gently adjusts her skirt.

Word Count: 105

Non-consent cues:

- Amber pauses
- Amber places the word “well” before her answer.
- Amber moves your hand off her leg and whispers "we should really do the dishes"
- Amber breaks eye contact
- Amber moves away from you

Consent cues:

- Amber says “Okay”

Ambiguous cues:

- Amber adjusts her clothing
Appendix B

*Natur* – In between blocks of hypothetical dating scenarios, participants viewed a two minute, seven second video of different images of nature. The video cuts in and out of scenes of flowers, running water, forestry, and a sunset. Instrumental music plays over the full video. The video can be found at: [http://www.youtube.com/watch?v=Tb0ci38M66U](http://www.youtube.com/watch?v=Tb0ci38M66U).

*Great Rift* – After responding to all scenarios, participants viewed a six minute, 14 second video of clips from the BBC documentary “Great Rift”. The video consists of images of scenery from mountains, flatlands, lakes, and waterfalls with the instrumental music playing. The full video can be found at: [http://www.youtube.com/watch?v=NQSLsgKLIhk](http://www.youtube.com/watch?v=NQSLsgKLIhk).