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Cognitive processes underlying the optimistic bias in women's victimization risk judgements

Jenny Kathleen Rinehart

Jenny Kathleen Rinehart

Candidate

Psychology

Department

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Elizabeth Yeater , Chairperson

Angela Bryan

Teresa Treat

Richard Viken

Tim Goldsmith

COGNITIVE PROCESSES UNDERLYING THE OPTIMISTIC BIAS IN WOMEN'S JUDGMENTS OF VICTIMIZATION RISK

by

JENNY KATHLEEN RINEHART

B.A., Psychology and English, University of Notre Dame, 2004
M.S., Psychology, University of New Mexico, 2008

DISSERTATION

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In memory of my father, Richard Rinehart, who taught me the value of hard work and education and the importance of respect, humility, and perseverance.

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ABSTRACT

This study examined the cognitive processes underlying the optimistic bias in women's sexual victimization risk judgments and factors that may influence those processes. Participants were 423 undergraduate women between the ages of 18-24. The stimuli were 81 vignettes depicting dating and social situations varying in degree of sexual victimization risk and impact on the woman's popularity. Participants read the vignettes and imagined either themselves (in the Self condition) or an anonymous undergraduate woman (in the Other condition) in the situations and classified each vignette as either high or low risk. Participants also completed measures of sexual victimization history, sociosexuality, rape myth acceptance, and perceived control. Results indicated that women in the Other condition, relative to the Self condition, classified more situations as high risk and were more sensitive to risk-relevant information when making explicit risk judgments. Additionally, women higher in sociosexuality, relative to women lower in sociosexuality, rated fewer situations as high risk and were less sensitive to both risk and popularity impact information when making explicit risk judgments. Finally, women higher in rape myth acceptance were more sensitive to popularity impact information when making explicit risk judgments. This is the first study to examine the role of sensitivity and bias in the optimistic bias in women's judgments of victimization risk.

These specific cognitive processes may be important in explaining and potentially reducing women's optimistic bias and in developing more effective sexual assault prevention programs.

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Introduction and Background

Research has continually shown that sexual victimization is a widespread and serious problem for college-aged women (Fisher, Cullen, & Turner, 2000; Koss Gidycz, & Wisniewski, 1987). In one study, 54% of college-aged women reported having experienced some form of sexual victimization since the age of 14, including 15% who reported an experience that met the legal definition of rape, and 12% who reported an experience of attempted rape (Koss et al., 1987). In more recent years, rates of victimization have remained high, with 20-25% of college women experiencing attempted or completed rape during their college years (Fisher et al., 2000), and one in six women in the United States being raped in their lifetime (Tjaden & Thoennes, 2006). Additionally, once a woman has been victimized, her chances of being raped in the future are twice those of women who have not been previously victimized (Gidycz, Coble, Latham, & Layman, 1993).

Women's Sexual Victimization Risk Perception

In order to better understand these alarming rates of victimization and revictimization, researchers have attempted to identify factors that may place women at increased risk. One area of research that has received a great deal of attention is women's perception of sexual victimization risk (see Gidycz, McNamara, & Edwards, 2006 for a comprehensive review). Researchers have posited that some women may have deficits in risk perception that prevent them from identifying potentially dangerous cues in social situations (e.g. Breitenbecher, 1999; Naugle, 2000; Soller-Baillo, Marx, & Sloan, 2005; Yeater, Treat, Viken, & McFall, 2010; Wilson, Calhoun, & Bernat, 1999). As a result of these deficits, women may be more likely to enter or remain in situations in which they

may be sexually victimized. While this research has focused on women's perceptions of situations, it must be made clear that women are in no way for responsible for victimization; it is the perpetrators who are responsible for their aggression towards women. However, because efforts at reducing men's sexually aggressive behavior have thus far been unsuccessful (Anderson & Whiston, 2005), the best way to protect women at present is to identify factors that increase their risk for victimization.

Victimization History.

One widely studied factor potentially affecting women's victimization risk perception is a history of sexual victimization. The high rates of sexual victimization and revictimization have led researchers to posit that victimized women may have deficits in risk perception that place them at increased risk for sexual victimization relative to nonvictimized women (Gidycz et al., 2006). To date, the findings have been inconclusive, with some researchers finding a relationship between victimization history and risk perception (e.g. Marx & Gross, 1995; Soler-Baillo et al., 2005; Wilson et al., 1999, Yeater et al., 2010), and some finding no relationship between the two (e.g. Breitenbecher, 1999; Yeater, Viken, McFall, & Wagner, 2006).

Many of the studies that have found a relationship between victimization history and risk perception have relied on response latency to measure risk perception (Marx & Gross, 1995; Soler-Baillo et al., 2005; Wilson et al., 1999). In this research, women are asked to listen to an audiotaped vignette depicting a man and a woman on a date and indicate when the man has "gone too far". Victimized women have shown longer response latencies, leading researchers to conclude that these women may have deficits in risk perception (Soler-Baillo, et al., 2005; Wilson et al., 1999).

There also have been several studies that have not found deficits in risk perception among victimized women (Meadows, Jaycox, Orsillo, & Foa, 1997; Messman-Moore & Brown, 2006; VanZile-Tamsen, Testa, & Livingston, 2005). When asked to watch a videotaped vignette and identify risk factors present in the scenario, victimized and nonvictimized women evidenced no difference in their ability to perceive risk (Breitenbecher, 1999). There also were no differences between victimized and nonvictimized women's ratings of sexual victimization risk for written vignettes depicting dating and social situations (Yeater et al., 2006). Additionally, victimized women actually rated videotaped vignettes of ambiguous social situations as having more risk than nonvictimized women (Naugle, 2000).

Sexual Attitudes.

Another factor that is associated with women' risk perception is sexual attitudes (Rinehart & Yeater, 2012; Yeater et al., 2006; Yeater, Viken, Hoyt, & Dolan, 2009). In one study, men and women were asked to read 44 vignettes depicting dating and social situations and rate how risky the vignettes were in terms of the woman having an unwanted sexual experience, and how much the woman's behavior in each situation would influence her popularity with men. Participants who reported greater acceptance of permissive sexual beliefs made lower risk ratings than participants who reported less acceptance of permissive sexual beliefs (Yeater et al., 2006).

Other studies utilizing these vignettes or similar vignettes have shown similar effects of sexual attitudes (Rinehart & Yeater, 2012; Yeater et al., 2009). Women with more permissive sexual attitudes rated less risk in vignettes paired with photographs of

attractive or unattractive men (Rinehart & Yeater, 2012), and in vignettes in which they were asked to imagine themselves or an imaginary woman (Yeater et al., 2009).

One additional factor that is associated with women's risk judgments is rape myth acceptance (Burt, 1980). Rape myth acceptance is defined as beliefs that rapists are justified in their behavior or that women are responsible for being raped. In one study, women were asked to listen to an audiotaped dating scenario in which the man became increasingly coercive and the woman became increasingly distressed. They were then asked to press a button indicating when the man had "gone too far". Women higher in rape myth acceptance took longer to indicate when a man had gone too far than women who endorsed less rape myth acceptance (Loiselle and Fuqua, 2007).

Women higher in rape myth acceptance also believed they were less vulnerable to sexual assault and that rape-related information was less relevant for them than women lower in rape myth acceptance (Bohner & Lampridis, 2004). Additionally, women higher in rape myth acceptance viewed rape victims as more responsible for the event than women lower in rape myth acceptance (Mason, Riger, & Foley, 2004). Finally, there is evidence that rape myth acceptance affects women's sensitivity to risk relevant information when making explicit judgments of victimization risk (Yeater et al., 2010). That is, women higher in rape myth acceptance relied less on risk-relevant information when explicitly rating the risk of dating and social situations than women lower in rape myth acceptance. However, rape myth acceptance did not affect the threshold at which women judged a situation to be risky (Yeater et al., 2010).

Popularity Impact.

There is also evidence that aspects of social situations other than victimization risk influence women's risk judgments. One such aspect is how a woman's behavior will impact her popularity or social acceptance with men or same-age peers. For instance, it has been suggested that women's judgment of risk and response to risky situations may be influenced by competing goals, such as being socially accepted or maintaining relationships with men (Nurius & Norris, 1995). Through ethnographic observation, researchers also found that for some college women, sexual attention from men served as a source of self-esteem and status. In fact, some women reported enjoying dancing and kissing at parties because it "proved" that men liked them (Armstrong, Hamilton, & Sweeney, 2006). Concern over being rejected by men also has been shown to decrease undergraduate women's use of active resistance in potentially risky situations (Norris, Nurius, & Dimeoff, 1996; Turchik, Propst, Chau, Nigoff, & Gidycz, 2007).

In one study, more severely victimized women relied less on popularity impact information than less severely victimized women when making explicit judgments of risk in dating and social situations (Yeater et al., 2010). Yeater et al. (2010) were the first to explicitly evaluate whether popularity impact was related to women's risk judgments. The inclusion of the popularity impact dimension in the stimuli was important not only because it is theoretically relevant to risk judgments, but also because it allowed researchers to determine that differences in processing risk-relevant information were not due to global information processing deficits (Yeater et al., 2010).

Optimistic Bias

The victimization risk perception literature thus far has focused primarily on the connection between women's risk judgments and victimization history (Gidycz et al.,

2006), with some studies investigating the influence of rape myth acceptance (Bohner & Lampridis, 2004; Loiselle and Fuqua, 2007; Yeater et al., 2010), sexual attitudes (Rinehart & Yeater, 2012, Yeater et al., 2009; Yeater et al., 2006), and popularity impact (e.g. Norris, et al., 1996; Turchik, et al., 2007; Yeater et al., 2010) on these judgments.

While these are important variables to investigate, there are other variables that may affect women's risk judgment that have yet to be examined thoroughly. One such variable is the role of perspective, or whether women are rating their own risk or the risk of others. In general, people rate their own risk of experiencing negative events as lower than other people's risk of experiencing the same events, a phenomenon known as the "optimistic bias" (Weinstein 1980, 1982, 1987; Weinstein & Klein, 1996). This optimistic bias is pervasive and is evident for many different types of risk, including car accidents (McKenna, 1993), being the victim of a crime (Perloff & Fetzer, 1986), getting cancer (Weinstein, 1980), and becoming an alcoholic (Weinstein, 1980).

There are two primary methods for assessing optimistic bias: direct and indirect (Helweg-Larsen & Shepperd, 2001; Weinstein & Klein, 1996). In the direct method, participants are generally asked to rate the likelihood that they will experience a negative event relative to someone similar to them. Responses usually range from *much less likely* to *much more likely*. In the indirect method, participants first are asked how likely they are to experience a negative event. Then, in a separate question, they are asked to estimate the average person's likelihood of experiencing the same event (Helweg-Larsen & Shepperd, 2001). Both methods lead to an optimistic bias, though the direct method usually produces more robust effects (Klein & Helweg-Larsen, 2002; Otten & van der Pligt, 1992).

Explanations for Optimistic Bias.

There are a number of posited explanations for the optimistic bias, most of which rely on motivational factors, such as self-enhancement or reduction of negative affect (for a comprehensive review, see Chambers & Windschitl, 2004). While motivational factors have received some empirical support, there also has been considerable contradictory evidence suggesting that motivational factors do not adequately explain the optimistic bias (Chambers & Windschitl, 2004). For example, there is evidence that people also judged a random peer in their group as less vulnerable to negative events than the rest of the group (Klar, Medding, & Sarel, 1996). There also is support for comparative-pessimism effects, in which people view their own risk as higher than the group (e.g. Blanton, Axsom, McClive, & Pierce, 2001). These studies suggest that other models may be appropriate for explaining the optimistic bias (Chambers & Windschitl, 2004).

Promising alternatives to motivational models are those that rely on potential biases in information processing to explain optimistic bias. Chambers & Windschitl (2004) outline a number of accounts of specific biases within information-processing stages that may explain sources of the optimistic bias when using the indirect method. These accounts include the differential accessibility account, the differential attention account, the case vs. base-rate account, the idiosyncratic standards account, the differential standards account, and the differential confidence account.

The differential accessibility account suggests that individuals access information more readily about their own traits and likelihood of engaging in a behavior than information about others' traits and their likelihood of engaging in a behavior. If this is the case, one may make biased judgments of their risk of experiencing a negative event

relative to another's risk. There is evidence that people are less biased when comparing themselves to a close friend than to an unfamiliar target (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Perloff & Fetzer, 1986). This may be because they have more information regarding a best friend readily accessible than that regarding an unfamiliar target (Chambers & Windschitl, 2004).

The differential attention account posits that one attends to information about themselves differently than to information about a general target. This may be because oneself is a more salient target than a general target. If one does not conduct an exhaustive search of information about themselves and the general target, a search of information regarding the most salient target (i.e. oneself) will ultimately yield more information than a search for information about a general target because the search for information about a general target is shortened (Chambers & Windschitl, 2004).

The case vs. base rate account suggests that when individuals are asked to make judgments about their own risk, they rely upon information about their own behaviors and characteristics. When asked to judge another person's risk, individuals rely upon base rates of the events to make their decision. This difference in criteria for self and other judgments may lead to optimistic bias (Chambers & Windschitl, 2004). There is evidence that when one is asked to compare a randomly assigned peer (RAP) from their own group to an average peer in their group, they rate the RAP's risk of experiencing controllable negative events as less than that of the average peer. However, they are not biased in risk judgments for a RAP vs. the average peer for uncontrollable negative events (Klar et al; 1996). This may be because when comparing a RAP to an average peer for risk of a controllable negative event (e.g. divorce), one relies upon the information about the

individual's personality traits and behaviors to judge risk while relying upon base rates of the negative events to estimate the risk of an average peer. When judging risk of experiencing an uncontrollable negative event, one relies upon base rates for both their RAP and an average peer because these individual traits no longer matter (Klar et al., 1996).

The idiosyncratic standards account suggests that two different people may use two different standards when evaluating comparative risk. For example, when asked about risk of having a car accident, one person may consider themselves low risk because they have a good driving record, while another person may consider themselves low risk because they do not often drive in populated areas, though both will evidence an optimistic bias (Chambers & Windschitl, 2004). This difference in which behaviors and characteristics are used to judge risk may contribute to the optimistic bias.

The differential standards account posits that people use different standards to evaluate themselves than they use to evaluate other people. This may occur in one of two ways. First, people may use different behaviors as evidence for judging themselves than for judging others. Alternatively, people may use the same behavioral evidence when judging themselves and others, but use different thresholds for drawing conclusions. For example, when judging how well one does on an exam relative to another person in the class, one might consider their grade of an 80 to be indicative of satisfactory performance. However, when judging how well someone else did on the exam, the same person might think a 90 is satisfactory for their classmate. Thus, while exam grades are used as criteria for both judgments, the standards are different for oneself than for another (Chambers, 2004).

Finally, the differential confidence account posits that individuals are more confident in making judgments about a familiar target (e.g. themselves or a close friend) than a random peer because they hold more information about the familiar target than the unfamiliar target. Thus, if asked to rate their own ability in a task vs. an unfamiliar target's ability, they may believe both are competent at the task but rate themselves as more competent because of their confidence in their own ability (Chambers & Windschitl, 2004).

Factors that Influence the Optimistic Bias.

Perceived control. While the optimistic bias phenomenon is quite robust (Weinstein & Klein, 1996), there are a number of factors that influence the effect (Helweg-Larsen & Shepperd, 2001). One factor that consistently influences optimistic bias is perceived control, or how much control individuals believe they have over the outcome of an event (Harris, 1996; Helweg-Larsen & Shepperd, 2001; Klein & Helweg-Larsen, 2002). Generally, greater perceived control is correlated with increased optimistic bias (Harris, 1996). It appears that perceived control influences optimistic bias by affecting personal risk judgments rather than by judgments of others' risk. There is strong evidence that lower levels of perceived control are associated with higher estimates of one's own risk for a variety of negative events (Helweg-Larsen & Shepperd, 2001, Hoorens & Bunk, 1993, Klein & Helweg-Larsen, 2002; van der Veld, Hookykaas, & van der Pligt, 1992; van der Velde, van der Pligt, & Hookykass, 1994). There is inconsistent evidence for the effect of perceived control on estimates of other's risk. (Helweg-Larsen & Shepperd, 2001). Most studies have found no effect of perceived control on estimates of others' risk, though a few have found that lower perceived control is associated with

higher estimates of others' risk (e.g. van der Velde et al., 1994). It appears then, that perceived control influences optimistic bias primarily by affecting how individuals rate their own risk rather than how they rate others' risk.

To date, there has been one study that investigated how perceived control affects women's comparative risk estimates of sexual victimization. Brown and colleagues (2005) gave women a measure describing 13 different negative events and asked them to indicate whether they had experienced each event, how likely they would be to experience the event in the next five years, how likely another student like them would be to experience the event in the next five years, and how much control they feel they have over whether they experience each event. Two of the 13 items were related to sexual assault (Brown, Messman-Moore, Miller, & Stasser, 2005). Results indicated that women who reported higher perceived control over whether they would be victimized gave lower estimates of personal risk, which is consistent with previous optimistic bias literature (Helweg-Larsen & Shepperd, 2001).

Personal experience. Another factor that affects optimistic bias is individuals' personal experience of negative events such as natural disasters. There is strong evidence that personal experience with a negative event reduces one's optimistic bias for the event, purportedly because feelings of invulnerability are reduced and personal risk estimates increase (e.g. Helweg-Larsen, 1999; Helweg-Larsen & Shepperd, 2001; Perloff, 1983; Weinstein, 1980, 1987; van der Velde et al., 1992). However, there is less research to suggest how much experience is necessary to reduce optimistic bias, or how long the reduction lasts. There is some evidence that, while both indirect and direct experience tend to reduce optimistic bias, direct experience tends to be associated with more

significant reductions in optimistic bias (Helweg-Larsen, 1999; Weinstein, 1980, 1982, 1987). If indirect experience is particularly vivid or self-relevant, the effects on optimistic bias may be similar to the effects of direct experience (Stapel & Velthuijsen, 1996), but if the indirect experience is less personally relevant and one feels more removed from the event, there is no effect on optimistic bias (Helweg-Larsen, 1999). It is important to note that direct experience only affects optimism regarding events similar to those experienced; there is not an overall reduction in optimistic bias (Helweg-Larsen, 1999).

Thus, it appears that while experience in general has an effect on optimistic bias, the type and degree of experience matter as well. Helweg-Larsen (1999) measured degree of earthquake experience by asking participants whether they had experienced monetary loss, injury, or other direct effects of the earthquake. Although all participants had some experience with the earthquake and were less optimistic about their risk of experiencing earthquakes in the future, those with more direct experience (e.g. injury) evidenced no optimistic bias.

Self-Other Perspective and Women' Sexual Victimization Risk Perception

Some sexual victimization research has addressed the issue of women's comparative risk assessments (Hoecker & White, 1995; Norris, Nurius, & Graham, 1999; Yeater et al., 2009). When women were asked to estimate their risk of being victimized relative to an anonymous woman's risk, they estimated less risk for themselves (Hoeker & White, 1995; Norris et al., 1999). The perspective women were asked to take affected their ratings of risk as well; when vignettes were written in second person language, women rated the likelihood of nonconsensual sex as lower than when the vignettes were written in third person language (Cue, George, & Norris, 1996).

In one study directly addressing comparative risk assessments in the sexual victimization literature, Yeater et al. (2009) asked women to imagine either themselves or an anonymous woman in vignettes depicting dating and social situations and rate each situation for how risky it was in terms of having an unwanted sexual experience. Women who were asked to imagine themselves in the situation estimated victimization risk to be lower than women who were asked to imagine an anonymous woman. This pattern of results is consistent with the optimistic bias literature (Yeater et al., 2009).

While several studies have found differences in women's judgments of sexual victimization risk, specific cognitive processes responsible for these differences have not typically been identified. One exception is a study that utilized signal detection theory (Green & Swets, 1966) to investigate more thoroughly specific cognitive processes involved in women's risk judgments (Yeater et al., 2010). Signal detection theory allows researchers to distinguish between two processes that affect judgments: perceptual sensitivity and decisional bias. In the context of risk judgments, perceptual sensitivity is the ability to detect risk cues or discern levels of risk. Decisional bias is the threshold at which a situation is deemed risky. Yeater and colleagues (2010) asked women to judge 71 vignettes as either high or low risk in terms of the woman in the situation having an unwanted sexual experience. These vignettes describe diverse social situations that varied in degree of victimization risk and impact on the woman's popularity. The authors found that women with more severe victimization histories had higher thresholds for determining that a situation was risky, were less sensitive to risk relevant information when making explicit judgments of victimization risk, and were more sensitive to popularity impact information when explicitly judging victimization risk. In addition,

women higher in rape myth acceptance were less sensitive to victimization risk when making explicit risk judgments.

The signal detection approach also has been used to discriminate between cognitive processes underlying men and women's judgments of women's sexual intent (Farris, Treat, Viken, & McFall, 2008). Farris et al. (2008) asked men and women to view photographs of women displaying friendliness, sexual interest, sadness, or rejection and categorize them into the correct affective category. Results indicated gender differences in sensitivity, with men being more likely to misperceive friendliness as sexual interest, and men also misperceiving sexual interest as friendliness. Essentially, men showed more difficulty than women distinguishing between platonic-interest cues and sexual-interest cues. However, there were no threshold differences between men and women. This is particularly interesting because previous literature suggested that gender differences in judgments of sexual intent were due to differences in decisional thresholds, or bias (Farris et al., 2008).

There have been no such attempts to identify the specific cognitive processes responsible for optimistic bias. The optimistic bias literature traditionally relies upon individual items to determine comparative risk. Without providing multiple items varying in risk, it is impossible to determine whether people differ in their ability to discriminate between levels of risk. Thus, the implicit assumption driving the literature appears to be that people have threshold differences when judging their own risk and risk for other people. In fact, one explanation of the optimistic bias, the differential standards account, suggests that people may have the same information about themselves and others, but use

different criteria for judging themselves than for judging others, a process akin to threshold differences.

An optimistic bias in evaluating risk for sexual victimization could be due to differences in sensitivity, bias, or both. For instance, women may identify fewer risk factors, or are less sensitive to risk, when evaluating their own risk than when evaluating others' risk. Conversely, women may be equally sensitive to gradients or levels of risk for themselves and others, but have a higher threshold for what they consider risky for themselves than for others, thus displaying a decisional bias when judging risk. Either one of these processes could potentially explain the tendency to rate one's own risk as lower than another person's risk. Thus, signal detection theory (Green & Swets, 1966) could be useful in determining whether the optimistic bias is due to differences in sensitivity, bias, or both. Additionally, personal experience (i.e. victimization history), sexual attitudes, rape myth acceptance, perceived control, and a focus on popularity impact may significantly influence the optimistic bias in women's judgments of victimization risk.

Current Study

The current study extends previous research by identifying specific cognitive processes underlying the optimistic bias in women's sexual victimization risk judgments. Women were asked to read 81 vignettes depicting dating and social situations varying in degree of sexual victimization risk and popularity impact and make explicit risk judgments for either themselves (in the Self condition) or an anonymous undergraduate woman (in the Other condition). This data were then used to differentiate between (a) sensitivity to risk-relevant or popularity impact-relevant information and (b) the threshold

at which women determined situations to be high risk. Additionally, the current study examined a number of factors that may influence risk judgments and the optimistic bias, including personal experience (i.e. victimization history), sexual attitudes, rape myth acceptance, and perceived control.

Based on previous optimistic bias literature, the specific hypotheses of the current study were that (a) women would show higher risk thresholds in the Self condition than in the Other condition (i.e. they will judge more situations as risky for others than for themselves, showing a decisional bias); (b) women reporting less perceived control would show lower thresholds in the Self condition than women with more perceived control (i.e. show a decisional bias), but there would be no effect of perceived control on thresholds in the Other condition; and (c) women with more severe victimization histories would show lower thresholds in the Self condition (i.e. show a decisional bias), but there would be no effect of victimization history on thresholds in the Other condition. Based upon research examining the relationship between sexual attitudes and risk judgments, the specific hypothesis was that women with more permissive sexual attitudes would show higher thresholds than women with less permissive sexual attitudes.

It also was expected that the current study would replicate the effects of rape myth acceptance and victimization history on sensitivity and bias present in Yeater and colleagues' (2010) research. Specifically, it was expected that (a) more severely victimized women would be less sensitive to victimization risk information, more sensitive to popularity impact, and show higher thresholds when judging risk explicitly than less severely victimized women; (b) women higher in rape myth acceptance would

be less sensitive to victimization risk information but would not show any differences in threshold relative to women lower in rape myth acceptance.

Due to a paucity of literature regarding the relationships among some of the study measures, the current study did not make specific predictions about the effects of the following variables on women's explicit risk judgments: (a) rape myth acceptance and sensitivity to popularity impact information; (b) sexual attitudes and sensitivity to popularity impact information; (c) perceived control and sensitivity to popularity impact information; (d) condition and rape myth acceptance; and (e) condition and sociosexuality.

Method

Participants

Participants were 423 undergraduate women selected from the psychology subject pools from the University of New Mexico (UNM) and the University of Colorado, Boulder (UCB). The sample was 54.6% freshman, 92.4% heterosexual, and 92.4% single. The sample was ethnically diverse, including 40.7% White, 37.8% Hispanic, 4% Native American, 4% Asian, 1.4% African American, and 11.6% "Other". A Fischer's exact test revealed that participants at UNM were more ethnically diverse than participants at UCB ($p < .001$), with 36 % of UNM students reporting their ethnicity as White, and 88.6% of UCB students reporting their ethnicity as White. Additionally, UCB students were significantly farther along in their college education than UNM students, $t(428) = -2.67$, $p = .008$. Because women ages 16-24 have the highest victimization rates (Bureau of Justice Statistics, 1984), and the vignettes used were designed to depict dating and social situations that heterosexual or bisexual, and unmarried women are likely to encounter, 15

women who were lesbian, married, or over the age of 24 were excluded from all analyses. Twenty additional participants' data were excluded because they did not complete all of the measures. The final sample after these exclusions was 423.

Stimuli

In previous research, (Yeater, McFall, & Viken, 2011; Yeater et al., 2006, Yeater et al., 2010), a set of 81 written vignettes were developed that describe a wide range of problem situations that undergraduate women might face when dating or interacting socially with men. First, undergraduate women described their own dating and social experiences. Then another group of undergraduate women determined how risky these situations were in terms of them ending in forced sexual activity. These descriptions and ratings then were used to develop a set of vignettes describing dating and social situations. The vignettes were written to be non-overlapping and independent; consequently, they describe diverse situations (e.g., date, party, bar, school event), types of relationships with the man described (e.g., boyfriend, acquaintance, stranger), risk factors for sexual victimization (e.g., alcohol use, sexual activity prior to or during the date), and contextual cues signaling a possible impending assault (e.g., man making verbal threats to obtain sexual activity, touching the woman without her consent).

In past research (Yeater et al., 2010), four sexual violence experts and four graduate students in these experts' labs provided normative risk ratings for each vignette. These raters determined how risky (1 = not risky, 5 = completely risky) each situation was in terms of the woman in the situation having an unwanted sexual experience (i.e. one in which the woman is verbally or physically coerced into having sexual contact of any kind with a man). In the same research, the vignettes also were rated by 30

undergraduate women for how likely the woman's behavior in each situation was to influence her popularity (1=none, 5=quite a lot). Popularity was defined as how much the woman was valued, liked, or socially accepted. Inter-coder agreement was high for both the risk dimension (ICC = .96) and the popularity impact dimension (ICC = .88). The mean risk rating for the vignettes was 3.10 (*SD* = 1.14); the mean popularity impact rating was 2.79 (*SD* = .50). The dimensions were also relatively independent, with a low, nonsignificant correlation (*r* = -.12).

Measures

Demographics Questionnaire (Appendix A). This self-report measure asked participants for their age, marital status, ethnic membership, academic status, and number of lifetime sexual partners. It also asked participants to rate the degree to which they wanted their first sexual intercourse to happen and to report who proposed their first sexual intercourse (themselves, their partner, or both of them). Additionally, participants were asked to rate how clearly they were able to imagine the situations described in the vignettes (1= not at all clearly, 7=extremely clearly), and how difficult they found it to imagine the vignettes (1=not at all difficult, 7=extremely difficult). Results indicated that overall, participants found it quite easy to imagine the vignettes (*M*=2.15, *SD*=1.27) and were able to imagine them quite clearly (*M*=5.70, *SD*=1.14).

Sexual Experiences Survey (Appendix B)(SES; Koss et al., 1987). Participants' past incidents of sexual victimization were assessed using the Sexual Experiences Survey (SES). The SES is a 10-item self-report questionnaire developed to measure various degrees of severity of sexual victimization (i.e., unwanted sexual contact, sexual coercion, attempted rape, and rape) since the age of 14. The SES uses behaviorally

specific definitions of sexual assault and asks participants to indicate whether the event occurred by choosing one of two dichotomous response options (i.e., no or yes). An example item from the SES includes: "Have you had a man attempt sexual intercourse (get on top of you and insert his penis) when you didn't want to by threatening or using some degree of force (twisting your arm, holding you down, etc.) but intercourse did not occur?" The SES possesses good internal consistency (α = .74) and 1-week test-retest reliability (r = .93) (Koss & Gidycz, 1985). The SES correlates .73 with responses obtained by an interviewer (Koss & Gidycz, 1985), suggesting that the SES is a reasonable measure of self-reported sexual victimization. Following the common scoring procedure for the SES (e,g, Gidycz et al., 1993), participants were assigned to one of four severity categories based on the most severe victimization experience they report having had since the age of 14. Categories in order of severity were: unwanted contact, coercion, attempted rape, and rape. With respect to frequency of sexual victimization in the current sample, 33.6% of participants reported no history of sexual victimization, 15.1% reported unwanted sexual contact, 19.9% reported sexual coercion, 9.2% reported attempted rape, and 22.2% reported rape.

Rape Myth Acceptance Scale (Appendix C) (RMAS; Burt, 1980). The degree to which participants believe that rape is justifiable or that women are to blame for their own victimization was measured with the Rape Myth Acceptance Scale (RMAS). The RMAS contains 11 items that assess agreement with common misconceptions about rape (e.g. "A woman who goes to the home or apartment of a man on their first date implies that she is willing to have sex."). Burt (1980) reported an alpha coefficient of .80 for the RMAS. The test-retest correlation has been found to be between .79 and .88 (Schewe &

O'Donohue, 1998). Scores were calculated by summing participants' responses to items. In the current study, the internal consistency was .72.

Perceived Control (Appendix D) (Brown et al., 2005). Participants were presented with 13 negative life events and asked to rate how much control they feel they have over whether or not they experience each event. Two items were related to sexual victimization: "Being the victim of a rape" and "Being forced to engage in sexual activity that you do not desire, short of rape." After each item, participants were provided with a six-point Likert scale (1 = no control, 6 = total control). They then were provided with the same 13 items and asked to rate how much control they feel the average female UNM student or the average UCB student has over whether or not they experience each event. The same Likert scale was provided after each item. Scores were calculated by taking the mean of the self-ratings for the two sexual victimization-related items.

Sociosexuality Scale (Appendix E) (SS; Bailey, Kirk, Zhu, Dunne & Martin, 2000). The Sociosexuality Scale (SS) is a 15-item self-report measure used to assess participants' sexual attitudes and their willingness to engage in sexual activity. The SS includes 7 items from the Sociosexuality Orientation Inventory (SOI; Simpson & Gangestad, 1991), and 13 items from Eysenck's (1976) study of the genetics of sexual behavior. The full scale of the SS is correlated highly with the SOI and has alpha coefficients of .88 for men and .85 for women (Bailey et al., 2000). Scores were created by summing participants' responses to the items. Higher scores on the SS indicate greater acceptance of permissive sexual beliefs and behaviors. In the current study, and the internal consistency was .87. Descriptive data for the measures can be found in Table 1

Table 1

Means and standard deviations for sexual attitude and perceived control measures

Measure	*M*	*SD*
Rape Myth Acceptance Scale	26.29	8.19
Perceived Control	2.90	1.18
Sociosexuality Scale	28.39	7.34

Procedure

Participants were recruited from the University of New Mexico (UNM) and the University of Colorado, Boulder (UCB) psychology subject pools. Participants were seen in groups of 2 to 10, during which they completed their questionnaires under conditions that allowed them to give their responses in privacy. Specifically, participants were provided with sufficient space between them and their fellow participants to ensure that their responses remained anonymous and confidential. All participants were first presented with a consent form. The researcher made sure the participant read, understood, and signed the consent form.

Participants then were assigned randomly to either a Self condition or an Other condition (Appendix F for examples). Within each condition, participants received one of two random vignette orders. Participants in the Self instructional set were asked to read the vignettes and imagine themselves in each situation. The vignettes were written in second person (e.g. You're out at a club with your girlfriends. A guy has been paying attention to you all night…). Participants in the Other condition were asked to read the vignettes and imagine an average female UNM undergraduate student or an average female UCB undergraduate student in each situation. The vignettes were written in third

person (e.g. A woman is out at a club with her girlfriends. A guy has been paying attention to her all night…). After reading each vignette, participants in both conditions were asked to categorize each vignette as either high risk or low risk with respect to how risky the situation was in terms of having an unwanted sexual experience. An unwanted sexual experience was defined as one in which they (in the Self condition) or an average UNM or UCB woman (in the Other condition) may be verbally or physically coerced into having sexual contact of any kind with the man. The rating task took approximately one hour.

Following the rating task, all participants completed the demographics questionnaire, Sexual Experiences Survey, Rape Myth Acceptance Scale, Sociosexuality Scale, and Perceived Control questionnaire. The questionnaires took approximately thirty minutes to complete. Once finished, participants were debriefed. They also were provided with contact information for the faculty advisors, the UNM Student Health Center or UCB Health and Psychiatry Center, the UNM Psychology Clinic or UCB Raimy Psychology Clinic, and AGORA-UNM Crisis Center in case they became distressed after completion of the study.

Data Analytic Strategy

HLM 7.0 was used to fit a two-level, logistic model to participants' explicit judgments of the 81 vignettes as high or low risk. Reported statistics are for a unit-specific model with robust standard errors. The Level 1 predictors were grand mean centered normative ratings of victimization risk and popularity impact for each vignette. For each participant, the beta weights in the Level 1 equation reflected: (1) utilization of victimization risk information and (2) utilization of popularity impact; and the intercept

in the Level 1 equation reflected (3) the threshold at which situations were classified as high risk. These estimates then became the dependent variables in the Level 2 equation. The Level 2 predictors were condition [self (-1) vs. other (1)], victimization history (centered), sociosexuality (centered), and rape myth acceptance (centered). Table 2 presents the correlations between Level 2 variables. Two-way interactions between condition and the other Level 2 variables also were included in the model.

Although participants came from different campuses, campus was not a reliable predictor of threshold or utilization, and did not significantly change the overall pattern of results when included as a Level 2 predictor; thus it was not included in analyses. Additionally, due to issues of multicollinearity at the linear combination level, perceived control was not included in the omnibus model, and instead was included in a separate model.

Table 2

Bivariate associations between Level 2 variables

Variables	1	2	3	4	5
1. Condition					
2. Rape Myth Acceptance	-.039				
3. Sociosexuality	-.012	-.158**			
4. Victimization History	-.022	-.050	.268**		
5. Perceived Control	-.023	.158**	.036	.025	

Note: *p<.05; **p<.01

Results

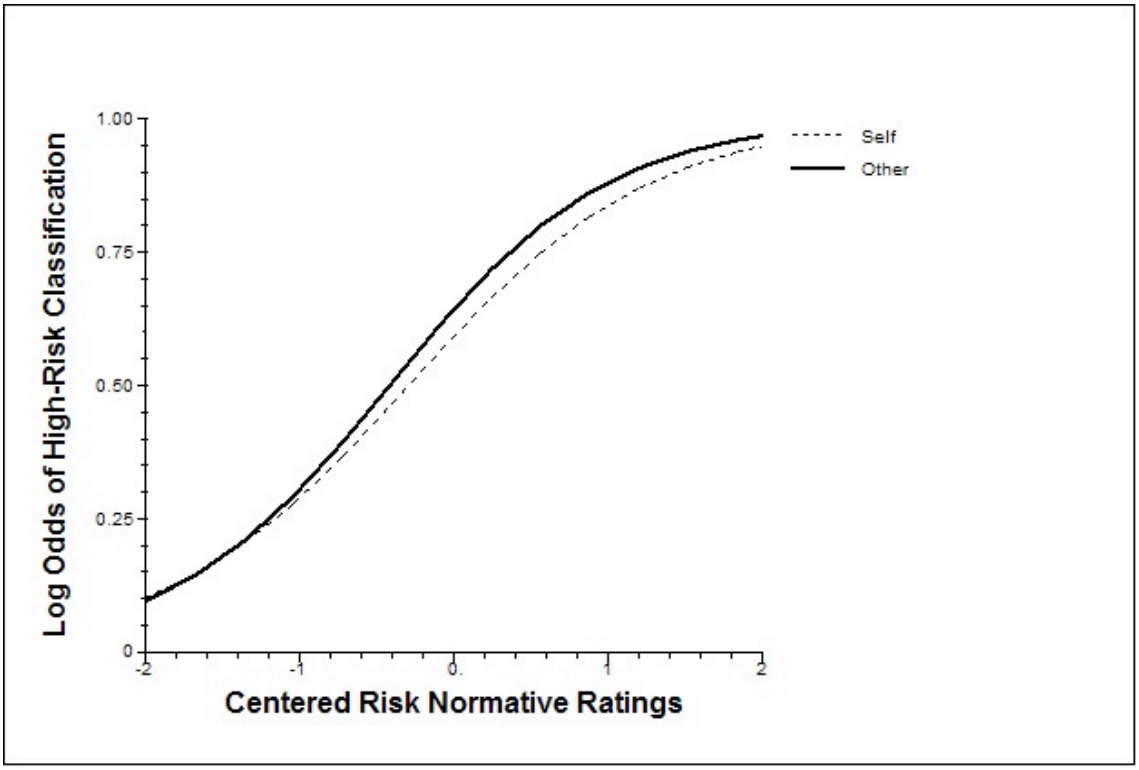
Average Threshold and Utilization Estimates in Level 1 Equation

The average log-odds of a high-risk classification (i.e. the threshold) was .65, indicating that 65.7% of the vignettes, on average, were classified as high risk, $t(415) = 14.18$, $p < .001$. The probability of making a high-risk classification increased as victimization risk increased, $b = 1.36$, $t(415) = 64.63$, $p < .001$, and as popularity impact increased, $b = 0.23$, $t(415) = 6.90$, $p < .001$.

Predictors of Threshold Location in Level 2 Equation

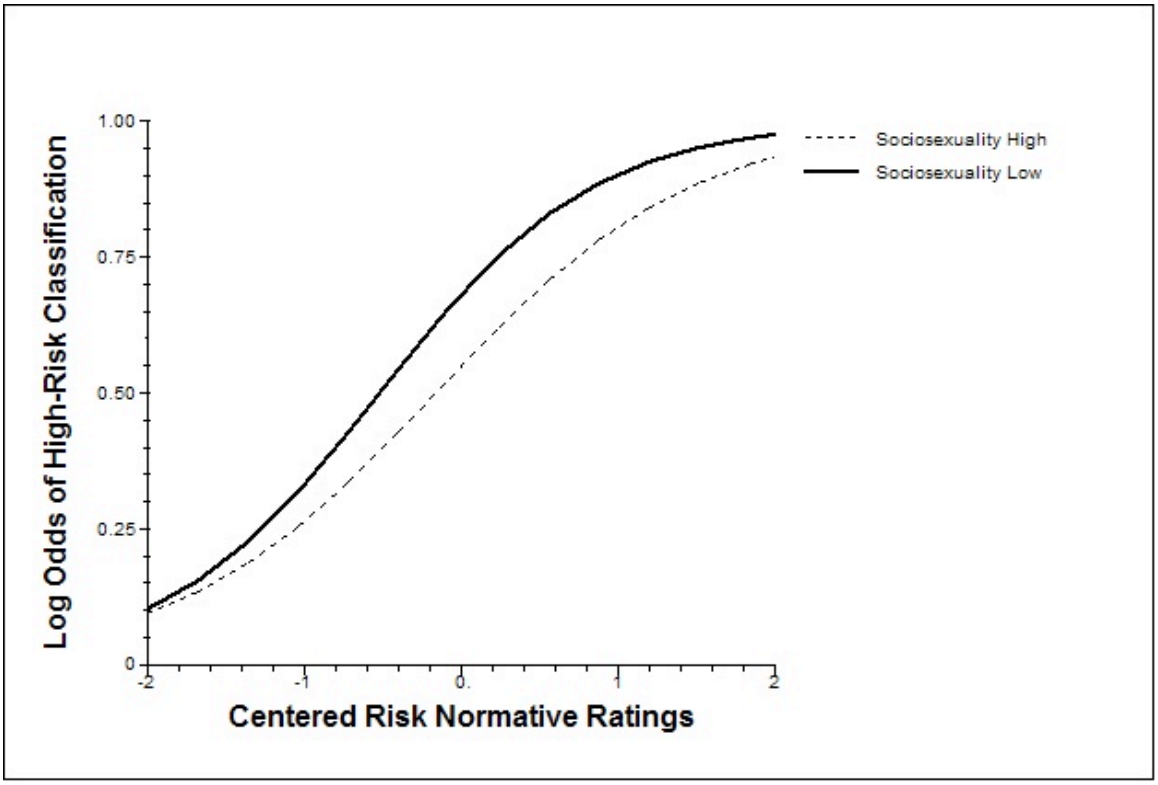
Variability in participants' thresholds for classifying situations as high risk was associated with condition and sociosexuality. First, women in the Other condition were more likely to classify situations as high risk than women in the Self condition, $b = 0.12$, $t(415) = 2.54$, $p = .012$. Participants in the Other condition classified, on average, 68.26% of situations as high risk, while participants in the Self condition classified, on average, 63% of situations as high risk. This effect is illustrated in Figure 1. The centered normative risk ratings are displayed along the x-axis, while the log odds of making a high-risk classification are displayed along the y-axis. The threshold is the log odds of making a high risk classification when risk is at the average value (represented by 0 on the x-axis, because these risk ratings are centered). As seen in Figure 1, women in the Other condition classified more situations as high risk than women in the Self condition.

Figure 1. The effect of condition on threshold and sexual victimization risk utilization.



Sociosexuality negatively predicted the probability of making a high-risk classification, $b = -.04$, $t(415) = -5.98$, $p < .001$. Participants with higher sociosexuality (i.e. more liberal sexual attitudes) classified fewer vignettes as high risk than participants with lower sociosexuality (i.e. more conservative sexual attitudes). Participants whose sociosexuality was 1 *SD* above the mean classified, on average, 58.7% of situations as high risk, while participants whose sociosexuality was 1 *SD* below the mean classified, on average, 72.0% of situations as high risk. This effect is illustrated in Figure 2. Participants who were 1 *SD* above the mean on sociosexuality classified fewer situations as high risk than women who were 1 *SD* below the mean on sociosexuality.

Figure 2. The effect of sociosexuality on threshold and sexual victimization risk utilization.



The interaction between condition and victimization history approached significance, $b = .06$, $t(415) = 1.96$, $p = .05$. Follow-up analyses revealed that victimization history did not significantly predict thresholds in either the Self condition ($p = .47$) or the Other condition ($p = .056$). The main effects of victimization history ($p = .28$) and rape myth acceptance ($p = .15$) on thresholds were nonsignificant. The interactions between condition and other Level 2 variables also were nonsignificant.

Predictors of Victimization Risk Utilization in Level 2 Equation

Participants' reliance on victimization risk information when making explicit risk judgments was associated with condition and sociosexuality. Participants in the Other

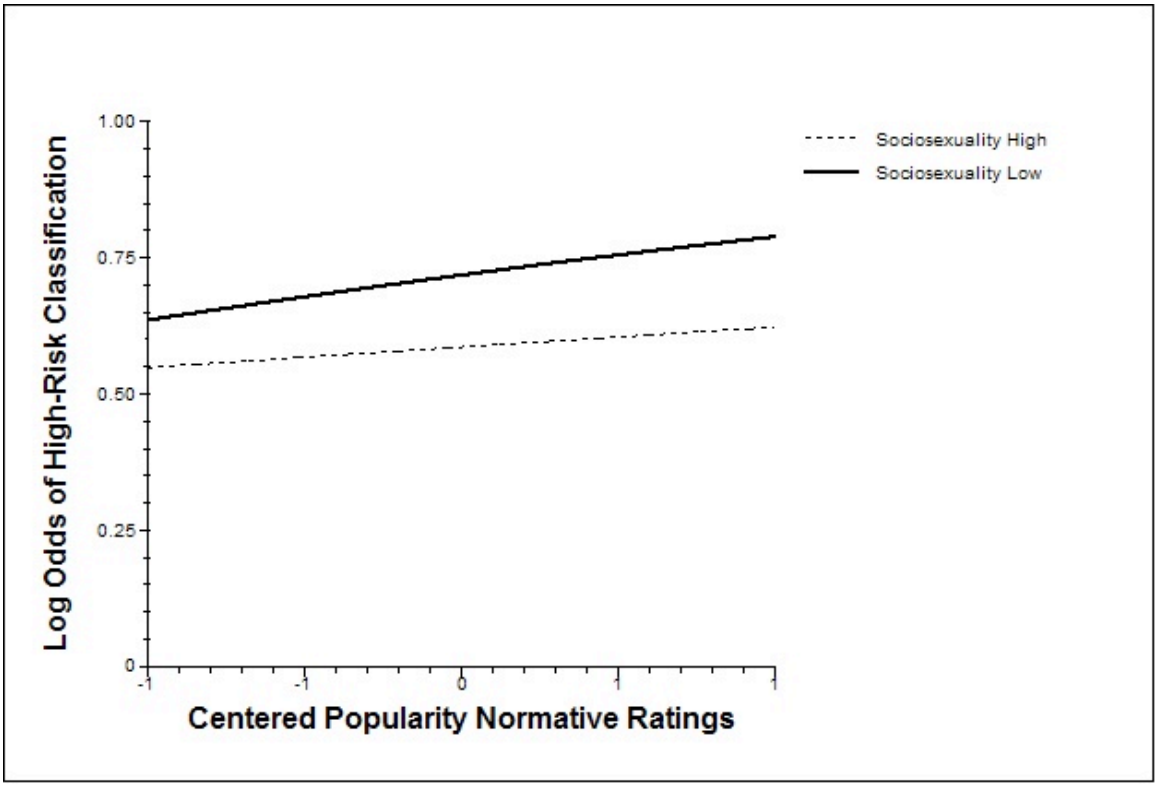
condition relied more on sexual victimization risk information when explicitly rating risk than participants in the Self condition, $b = .07$, $t(415) = 3.33$, $p < .001$. Participants in the Other condition showed an average victimization risk utilization score of 1.43, while participants in the Self condition showed an average victimization risk utilization score of 1.29. The relationship between risk utilization and condition is illustrated in Figure 1. The slope for the Other condition is steeper than the slope for the Self condition, indicating that participants in the Other condition relied more on risk relevant information when making explicit risk judgments than participants in the Self Condition.

Sociosexuality negatively predicted utilization of victimization risk information, $b = -.02$, $t(415) = -5.50$, $p < .001$. Participants higher in sociosexuality relied less on victimization risk information than participants lower in sociosexuality when making explicit judgments of risk. Participants whose sociosexuality was 1 *SD* above the mean showed an average victimization risk utilization score of 1.24, while participants whose sociosexuality was 1 *SD* below the mean showed an average victimization risk utilization score of 1.48. The relationship between sociosexuality and utilization of victimization risk information is displayed in Figure 2. Participants whose sociosexuality was 1 *SD* below the mean had a steeper slope than participants whose sociosexuality was 1 *SD* above the mean, indicating that participants lower in sociosexuality relied more on victimization risk information when making explicit risk ratings than participants higher in sociosexuality. Neither victimization history ($p = .72$) nor rape myth acceptance ($p = .07$) predicted victimization risk utilization. The interactions between condition and other Level 2 variables also were nonsignificant.

Predictors of Popularity Impact Utilization in Level 2 Equation

Participants' utilization of popularity impact information when making explicit risk judgments was associated with sociosexuality and rape myth acceptance. Sociosexuality negatively predicted reliance on popularity impact information, $b = -.01$, $t(415) = -2.89$, $p = .004$. Participants higher in sociosexuality relied less on popularity impact information when making explicit judgments of risk than participants lower in sociosexuality. Participants whose sociosexuality was 1 *SD* above the mean showed an average popularity impact utilization score of .13, while participants whose sociosexuality was 1 *SD* below the mean showed an average popularity impact utilization score of .32. The relationship between sociosexuality and utilization of popularity impact information is displayed in Figure 3. The centered popularity impact normative ratings are displayed along the x-axis, while the log odds of making a high-risk classification are displayed along the y-axis. Participants whose sociosexuality was 1 *SD* above the mean had a shallower slope, indicating that they relied to a lesser degree on popularity impact information when making explicit risk judgments than participants whose sociosexuality was 1 *SD* below the mean.

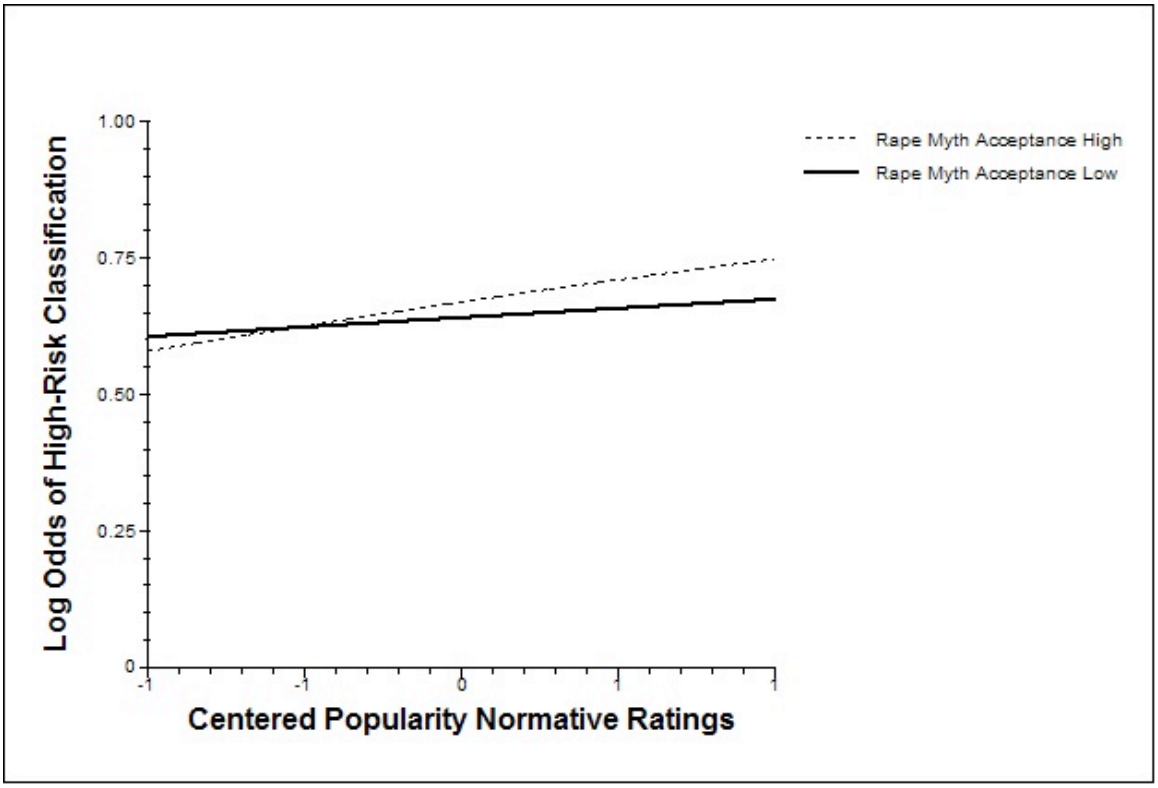
Figure 3. The effect of sociosexuality on popularity impact utilization.



Rape myth acceptance positively predicted utilization of popularity impact information, $b = .01$, $t(415) = 3.16$, $p = .002$. Participants higher in rape myth acceptance relied more on popularity impact information when making explicit judgments of risk than participants lower in rape myth acceptance. Participants whose rape myth acceptance was 1 *SD* above the mean showed an average popularity impact utilization score of .33, while participants whose rape myth acceptance was 1 *SD* below the mean showed an average popularity impact utilization score of .13. Figure 4 shows this effect. Participants whose rape myth acceptance was 1 *SD* above the mean had a steeper slope, indicating that they relied to a greater extent on popularity impact information when making explicit risk judgments than participants whose rape myth acceptance was 1 *SD*

below the mean. Neither condition (p = .69) nor victimization history (p = .24) predicted popularity impact utilization. The interactions between condition and other Level 2 variables were also nonsignificant.

Figure 4. The effect of rape myth acceptance on popularity impact utilization.



Perceived Control as a Predictor

Although perceived control was not included in the omnibus model due to issues of multicollinearity, we conducted exploratory analyses with centered normative ratings of victimization risk and popularity impact as Level 1 predictors, and perceived control (centered), condition, and the interaction of perceived control and condition as Level 2 predictors. Perceived control did not significantly predict threshold (p = .48),

victimization risk utilization (p = .37), or popularity impact utilization (p = .52). The interaction between condition and perceived control also was nonsignificant.

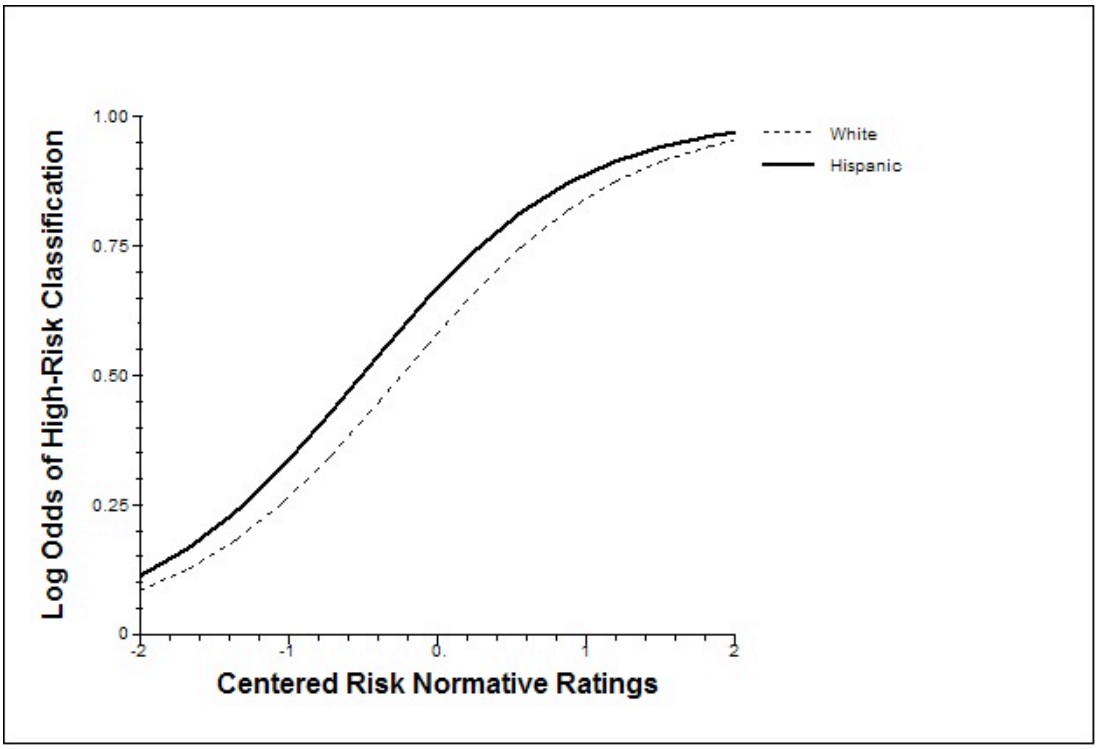
Ethnicity as a Predictor

Previous research has called for the inclusion of ethnicity as a predictor of sensitivity and bias (Yeater et al., 2010). In order to investigate the role of ethnicity, we conducted exploratory analyses with the two largest ethnic groups in our sample (Hispanic and White). There were 331 women included in the analyses, 51.7% of whom reported their ethnicity as White. The model included centered normative ratings of victimization risk and popularity impact as Level 1 predictors, and ethnicity (White vs. Hispanic), condition, and the interaction of ethnicity and condition as Level 2 predictors.

The average log odds of a high-risk classification (i.e. the threshold) was .68, indicating that 66.4% of the vignettes, on average, were classified as high risk, $t(327) = 12.31$, $p < .001$. Variability in participants' thresholds for classifying situations was significantly associated with ethnicity. Hispanic women were more likely to classify situations as high risk than White women, $b = 0.19$, $t(327) = 3.44$, $p < .001$. Hispanic women, on average, classified 70.5% of situations as high risk, while White women, on average, classified 62% of situations as high risk. This effect is illustrated in Figure 5. The centered normative risk ratings are displayed along the x-axis, while the log odds of making a high-risk classification are displayed along the y-axis. The threshold is the log odds of making a high risk classification when risk is at the average value (represented by 0 on the x-axis, because these risk ratings are centered). Hispanic women classified more situations as high risk than White women. Ethnicity did not significantly predict victimization risk utilization (p = .51) or popularity impact utilization (p = .14). The

interactions between ethnicity and condition were all nonsignificant.

Figure 5. The effect of ethnicity on threshold.



Discussion

There were several novel and exciting findings from this study. This is the first study to examine specific cognitive processes (i.e. sensitivity and decisional bias) underlying the optimistic bias in women's sexual victimization risk judgments. It is also the first to examine how several important factors such as victimization history, rape myth acceptance, sexual attitudes, and perceived control influence these cognitive processes. As expected, there were important differences in risk judgments when considering the role of perspective when asking women to make explicit judgments of victimization risk. Women were more sensitive to victimization risk information and

judged more situations as high risk when imagining another woman in the situation than when imagining themselves. Though previous research has posited information processing biases as explanations for the optimistic bias (Chambers & Windschitl, 2004), the novel stimuli and methods utilized in this study provide a more thorough understanding of specific cognitive processes underlying the optimistic bias than has previously been possible. Given that approximately 54% of women have experienced some form of victimization (Koss et al., 1987) it is concerning that women estimate less risk of sexual victimization for themselves than for other women. As noted by Norris et al. (1996), women who estimate less risk for themselves than for other women may overestimate their ability to effectively resist sexual assault and engage in fewer self-protective behaviors.

This study also identified several factors that influence the cognitive processes underlying risk judgments. Women with more liberal sexual attitudes were less sensitive to victimization risk information, and were less likely to classify situations as high risk. These findings are consistent with previous research showing that liberal sexual attitudes and beliefs predict different judgments of risk (Rinehart & Yeater, 2012; Yeater et al., 2006; Yeater et al., 2009). However, this is the first study to isolate the specific cognitive processes underlying the relationship between sociosexuality and sexual victimization risk judgments.

Women with more liberal sexual attitudes required more evidence of risk to categorize a situation as risky, and relied less on sexual victimization information when evaluating risk. Again, this finding is troubling, because it suggests that women with more liberal sexual attitudes may have difficulty avoiding or leaving potentially risky

situations. It is important to note that previous research has posited that differences in risk perception due to sexual attitudes may be not be because women with more liberal attitudes actually perceive less risk, but because they identify fewer situations as unwanted (Yeater et al., 2009; Yeater et al., 2006). However, in previous research investigating the link between sociosexuality and risk perception, an unwanted sexual experience was defined as one that the woman would "feel bad about, be hurt by, or regret later" (Rinehart & Yeater, 2012; Yeater et al., 2009; Yeater et al., 2006). In the current study, an unwanted experience was defined as one in which the woman would be "verbally or physically coerced into having sexual contact of any kind with the man". This newer definition may better distinguish sexual victimization experiences from simply unwanted sexual experiences. Thus, the link between sexual attitudes and risk judgments in the current study suggests that women with more liberal sexual attitudes may actually have information processing deficits rather than differing opinions regarding when a situation might be "unwanted."

Interestingly, women with more liberal sexual attitudes also relied less on popularity impact information when explicitly judging risk than women with more conservative sexual attitudes. It may be that because women with more liberal sex attitudes are more likely to engage in sexual behavior without emotional closeness or commitment, behavior generally considered socially unacceptable (Gangestad & Simpson, 1992), they are less sensitive to public image and popularity. Further research is warranted to more fully explore this relationship. Additionally, further work is needed to identify aspects of social situations other than popularity impact that may interfere with undergraduate women's ability to process risk-relevant information.

Rape myth acceptance also was related to differences in information processing. Women higher in rape myth acceptance were more sensitive to popularity impact information that women lower in rape myth acceptance when explicitly rating risk. This is inconsistent with previous research (Yeater et al., 2010), which found no relationship between rape myth acceptance and sensitivity to popularity impact information when explicitly judging risk in the same set of stimuli. This lack of consistency between studies makes the relationship between these two variables somewhat difficult to interpret. There were methodological differences between the current study and previous research, which included learning tasks before the explicit categorization task, though it is not clear how this might be related to differences in findings (Yeater et al., 2010). There is evidence however, that women who are higher in rape myth acceptance also report higher levels of social desirability (Theriault & Holmberg, 1998). This tendency for women higher in rape myth acceptance to be more concerned with public image could be related to their increased reliance on popularity impact information when explicitly judging victimization risk. Again, further research is warranted to explore the relationship between rape myth acceptance and sensitivity to popularity impact information when judging victimization risk.

Finally, Hispanic women classified more situations as high risk than White women. This is the first study to investigate the relationships between ethnicity and sensitivity and bias in sexual victimization risk judgments. In fact, there has been no prior research establishing a link between ethnicity and sexual victimization risk judgments in general. This may be due in part to insufficient samples of ethnically diverse participants in prior research, making the large and diverse sample a strength of the current study. It is

important to note that the ecological validity of the stimuli used in the current study has not been evaluated with Hispanic women. The vignettes used in the current work are based on dating and social situations described by primarily White women at a large, midwestern university. Thus, it is unclear whether ethnically diverse women experience similar situations. Additionally, factors that could vary as a function of ethnicity (e.g. acculturation) were not measured. Due to these issues and the paucity of literature in this area, further research is needed to illuminate the effects of ethnicity on risk judgments. Specifically, future research would benefit from examining whether current assessment tools and research methodologies are appropriate for use with ethnic minorities. Additionally, if there are reliable ethnic differences in victimization risk judgments, intervention programs may need to be adjusted to better address the needs of ethnically diverse women (Goldsmith, Hall, Garcia, Wheeler, & George, 2005).

While there were several novel findings in this study, several hypotheses were not supported. There was no effect of victimization history on sensitivity to risk or popularity information or on thresholds when explicitly rating risk. This is inconsistent with previous research which found that more severely victimized women were less sensitive to victimization risk information, more sensitive to popularity impact information, and showed higher thresholds than less severely victimized women when explicitly rating risk (Yeater et al., 2010). It is not clear why the current study failed to replicate previous research, given the similarity in tasks. Again, the primary difference between previous research and the current study was the inclusion of an implicit categorization task and a category learning task. In the category learning task, women were randomly assigned to learn either victimization risk or popularity impact, though they were not told explicitly

what they were learning. They were asked to categorize vignettes into one of two arbitrary categories, and were provided with feedback about their performance based on either victimization risk or popularity impact normative ratings. Results indicated that learning about risk increased women's sensitivity to risk when explicitly judging risk (Yeater et al, 2010). In fact, victimized women who performed well on the first block of the risk category learning task relied on risk relevant information to the same degree as nonvictimized women when explicitly rating risk.

There also was not a significant interaction between victimization history and condition. While previous research has found that personal experience predicts a reduction in optimistic bias (e.g. Helweg-Larsen, 1999; Helweg-Larsen & Shepperd, 2001; Perloff, 1983; Weinstein, 1980, 1987; van der Velde et al., 1992), that was not the case in the current study. However, the current findings are consistent with previous research examining the effects of perspective on risk perception (Yeater et al., 2009). Given that Yeater and colleagues (2009) used the same vignettes as this study, it is possible that the lack of consistency with other research findings is due to the stimuli or methodology used in these studies.

Additionally, though personal experience has been shown to mitigate the optimistic bias, it is not clear how long this effect might last. Most studies have examined events that happened very recently or within a matter of months (e.g. Helweg-Larsen, 1999); however proximity of sexual assault was not measured in the current study. For some women, their sexual victimization experience may have been several years prior to the study, which could lead to a reduction in the mitigating effect of personal experience.

The optimistic bias was also not affected by perceived control in the current

study. This is contrary to hypotheses and inconsistent with previous literature (Brown et al., 2005). Brown and colleagues (2005) measured risk perception by comparing participants' estimations of their own likelihood of experiencing rape or an unwanted sexual experience to their estimations of a fellow student experiencing the same events. While perceived control influenced this effect, it is difficult to determine, due to differences in methodology between the studies, why this relationship was not replicated in the current work.

Researchers in the sexual violence area have noted the importance of changing women's optimistic bias as a part of prevention efforts (Gidycz et al., 2006). To date, no sexual assault prevention programs have specifically targeted optimistic bias reduction as a program outcome. There have been many attempts to reduce optimistic bias for other health-related behaviors, but most have been unsuccessful, suggesting the optimistic bias is resistant to modification (Gidyz et al., 2006; Weinstein & Klein, 1995). However, researchers have suggested specific approaches to reducing optimistic bias appropriate for use in sexual assault prevention (Gidycz et al., 2006). For example, Gidycz and colleagues (2006) suggested that because perceived similarity to others has affected the optimistic bias in other areas (Helweg-Larsen & Shepperd, 2001; Stapel & Velthuijsen, 1996), providing women in sexual assault prevention programs with models of victims might increase their perceived similarity to victims and thus reduce their optimistic bias. They also proposed that providing women with vivid, self-relevant information such as discussions of specific risky situations, may also reduce their biased risk judgments (Gidycz et al., 2006), since personal experience (Weinstein, 1989) and vivid information (Stapel & Velthuijsen, 1996) have been shown to affect optimistic bias in other areas.

Gidycz and colleagues (2010) reference two prevention programs with components similar to those described above (Marx, Calhoun, Wilson, & Meyerson, 2001; Gidycz, Rich, King, Orchowski, & Miller, 2006), but neither program assessed optimistic bias, so it remains unclear whether such approaches mitigate the optimistic bias.

Given that women's optimistic bias in the current study was associated with differences in sensitivity and decisional biases, it may be that approaches that address these issues specifically would more successfully reduce optimistic bias and protect women from harm. There is evidence that sensitivity to risk might be enhanced by category learning tasks (Yeater et al., 2010), which may provide a promising new prevention avenue. In previous research, women who learned about risk became more sensitive to risk in an explicit rating task (Yeater et al., 2010). Thus, learning tasks could be effective with women who exhibit reduced sensitivity to risk.

Previous literature has also called for the use of individually tailored prevention information (Gidycz et al., 2001; Yeater et al., 2010). Yeater and colleagues (2010) suggest that providing women with individualized feedback about their risk based on assessments of their dating and social behaviors could change their risk thresholds. Additionally, thresholds for determining risk could potentially be changed by providing women with individual feedback regarding performance on learning tasks. Thus, any women who evidence biases in risk judgments on an explicit categorization task could be identified and provided with learning tasks in order to potentially reduce their risk of sexual victimization.

Appendices

Appendix A: Demographics Questionnaire

Appendix B: Sexual Experiences Survey

Appendix C: Rape Myth Acceptance Scale

Appendix D: Perceived Control

Appendix E: Sociosexuality Scale

Appendix F: Example Vignettes

Appendix A

DEMOGRAPHICS QUESTIONNAIRE

Subject ID# _____

Date:_____

Directions: For each of the questions below, either fill in the blank or place an "✓" in the appropriate box.

_____

1. Age _____

2. Marital Status

[01] Single
[02] Married
[03] Separated
[04] Divorced
[05] Living Together
[06] Widowed

3. Year in College

[01] Freshman
[02] Sophomore
[03] Junior
[04] Senior
[05] Graduate Special
[06] Graduate Student

4. Race

[01] Asian
[02] African American
[03] Hispanic/Latino
[04] White/Caucasian
[05] Native American
[06] Other_____

5. What is your sexual orientation?

[01] heterosexual
[02] homosexual
[03] bisexual
[04] other

6. How many different sexual partners have you had in your lifetime? **(By sexual partners, we mean different persons with whom you have had vaginal, oral, or anal intercourse).**_____

7. On a scale from 1 to 5, where 1 means "I really did not want it to happen" and 5 means "I really wanted it to happen", how much did you want your first sexual intercourse to happen?

I really 1 2 3 4 5 I really

didn't want it to happen — wanted it to happen

8. The first time you had sexual intercourse, whose idea was it?

Mine My Partner's Both of us

The following questions are about the task in which you were asked to read hypothetical dating and social situations and judge the level of risk.

9. How clearly were you able to imagine the situations described in the vignettes?

1	2	3	4	5	6	7
Not at all clearly						Extremely clearly

10. How difficult did you find it to imagine the vignettes?

1	2	3	4	5	6	7
Not at all difficult						Extremely difficult

Appendix B

SEXUAL EXPERIENCES SURVEY (SES)

Subject ID# _____

Date:_____

Please place an "✓"or fill in the blank for each of the following questions. Please read each question carefully. The following questions are ONLY about sexual experiences you may have had **SINCE YOU WERE FOURTEEN YEARS OLD**.

1. Have you ever given in to sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because you were overwhelmed by a man's continual arguments and pressure? **(Since you were fourteen**)

[01] No
[02] Yes

2. Have you ever had sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because a man used his authority (boss, teacher, camp counselor, supervisor) to make you? **(Since you were fourteen)**

[01] No
[02] Yes

3. Have you had sex play (fondling, kissing, or petting, but not intercourse) when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.)? **(Since you were fourteen)**

[01] No
[02] Yes

***The following questions are about sexual intercourse. By sexual intercourse, we mean penetration of a woman's vagina, no matter how slight, by a man's penis. Ejaculation is not required. Whenever you see the words sexual intercourse, please use this definition.*

---

4. Have you had a man attempt sexual intercourse (get on top of you and insert his penis) when you didn't want to by threatening or using some degree of force (twisting your arm, holding you down, etc.) but intercourse did not occur? **(Since you were fourteen)**

[01] No
[02] Yes

5. Have you had a man attempt sexual intercourse (get on top of you and insert his penis) by giving you alcohol or drugs, but intercourse did not occur? **(Since you were fourteen)**

[01] No
[02] Yes

6. Have you given in to sexual intercourse when you didn't want to because you were overwhelmed by a man's continual arguments or pressure? **(Since you were fourteen)**

[01] No
[02] Yes

7. Have you had sexual intercourse when you didn't want to because a man used his position of authority (boss, teacher, counselor, supervisor)? **(Since you were fourteen)**

[01] No
[02] Yes

8. Have you had sexual intercourse when you didn't want to because a man gave you alcohol or drugs? **(Since you were fourteen)**

[01] No
[02] Yes

9. Have you had sexual intercourse when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you? **(Since you were fourteen)**

[01] No
[02] Yes

10. Have you had sexual acts (anal or oral intercourse or penetration by objects other than the penis) when you didn't want to because a man threatened or used some degree of physical force (twisting your arm, holding you down, etc.)? **(Since you were fourteen)**

[01] No
[02] Yes

Appendix C

RMAS

Subject # _____

_____ 1. A woman who goes to the home or apartment of a man on their first date implies that she is willing to have sex.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 2. Any female can get raped.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 3. One reason that women falsely report a rape is that they frequently have a need to call attention to themselves.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 4. Any healthy woman can successfully resist a rapist if she really wants to.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 5. When women go around braless or wearing short skirts and tight tops, they are just asking for trouble.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 6. In the majority of rapes, the victim is promiscuous or has a bad reputation.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 7. In a girl engages in necking or petting and she lets things get out of hand, it is her own fault if her partner forces sex on her.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 8. Women who get raped while hitchhiking get what they deserve.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 9. A woman who is stuck-up and thinks she is too good to talk to guys on the street deserves to be taught a lesson.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 10. Many women have an unconscious wish to be raped, and may then unconsciously set up a situation in which they are likely to be attacked.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 11. If a woman gets drunk at a party and has intercourse with a man she's just met there, she should be considered "fair game" to other males at the party who want to have sex with her too, whether she wants to or not.

1	2	3	4	5	6	7
strongly agree						strongly disagree

_____ 12. What percentage of women who report a rape would you say are lying because they are angry and want to get back at the man they accuse?

a	b	c	d	e
almost all	about ¾	about half	about ¼	almost none

_____ 13. What percentage of reported rapes would you guess were merely invented by women who discovered they were pregnant and wanted to protect their own reputation?

a	b	c	d	e
almost all	about ¾	about half	about ¼	almost none

14. A person comes to you and claims they were raped. How likely would you be to believe their statement if the person were:

_____ your best friend?

a	b	c	d	e
always	frequently	sometimes	rarely	never

_____ an Indian woman?

a	b	c	d	e
always	frequently	sometimes	rarely	never

_____ a neighborhood woman?

a	b	c	d	e
always	frequently	sometimes	rarely	never

_____ a young boy?

a	b	c	d	e
always	frequently	sometimes	rarely	never

_____ a black woman?

a	b	c	d	e
always	frequently	sometimes	rarely	never

_____ a white woman?

a	b	c	d	e
always	frequently	sometimes	rarely	never

Appendix D

PERCEIVED CONTROL

For each of the following events, please rate **how much control you feel you have over whether or not you experience each event.**

A. Being injured in a car accident.

1	2	3	4	5	6
No Control					Total Control

B. Being the victim of a mugging.

1	2	3	4	5	6
No Control					Total Control

C. Having to withdraw from college.

1	2	3	4	5	6
No Control					Total Control

D. Being the victim of a rape.

1	2	3	4	5	6
No Control					Total Control

E. Being diagnosed with cancer.

1	2	3	4	5	6
No Control					Total Control

F. Suffering from a psychological disorder.

1	2	3	4	5	6
No Control					Total Control

G. Contracting HIV.

1	2	3	4	5	6
No Control					Total Control

H. Suffering injury from a natural disaster (such as flood, earthquake, tornado, etc.)

1	2	3	4	5	6
No Control					Total Control

I. Being fired from a job.

1	2	3	4	5	6
No Control					Total Control

J. Being forced to engage in sexual activity that you do not desire, short of rape.

1	2	3	4	5	6
No Control					Total Control

K. Developing a drinking problem.

1	2	3	4	5	6
No Control					Total Control

L. Having an unwanted pregnancy.

1	2	3	4	5	6
No Control					Total Control

M. Having your car stolen.

1	2	3	4	5	6
No Control					Total Control

For each of the following events, please rate **how much control you feel the average female University of New Mexico student has over whether or not they experience each event.**

A. Being injured in a car accident.

1 2 3 4 5 6

No Control Total Control

B. Being the victim of a mugging.

1 2 3 4 5 6

No Control Total Control

C. Having to withdraw from college.

1 2 3 4 5 6

No Control Total Control

D. Being the victim of a rape.

1 2 3 4 5 6

No Control Total Control

E. Being diagnosed with cancer.

1 2 3 4 5 6

No Control Total Control

F. Suffering from a psychological disorder.

1 2 3 4 5 6

No Control Total Control

G. Contracting HIV.

1	2	3	4	5	6
No Control					Total Control

H. Suffering injury from a natural disaster (such as flood, earthquake, tornado, etc.)

1	2	3	4	5	6
No Control					Total Control

I. Being fired from a job.

1	2	3	4	5	6
No Control					Total Control

J. Being forced to engage in sexual activity that you do not desire, short of rape.

1	2	3	4	5	6
No Control					Total Control

K. Developing a drinking problem.

1	2	3	4	5	6
No Control					Total Control

L. Having an unwanted pregnancy.

1	2	3	4	5	6
No Control					Total Control

M. Having their car stolen.

1	2	3	4	5	6
No Control					Total Control

Appendix E

SOCIOSEXUALITY QUESTIONNAIRE (SQ)

Subject ID# _____

Date:_____

Directions: For each of the statements below, circle the number that best represents your beliefs or opinions. Feel free to be honest when answering. There are no "right" answers. Please make sure to read the scale correctly.

(1) It is better not to have sexual relations until you are married. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(2) Virginity is a girl's most valuable possession. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(3) Sex without love (impersonal sex) is highly unsatisfactory. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(4) I believe in taking my pleasures where I can find them.

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(5) Absolute faithfulness to one's partner throughout life is nearly as silly as celibacy. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(6) Sometimes sexual feelings overpower me. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(7) Group sex appeals to me. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(8) If I were invited to take part in an orgy, I would accept. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(9) I can imagine myself being comfortable and enjoying "casual" sex with different partners. [b]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(10) I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with him or her. [b]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(11) It would be difficult for me to enjoy having sex with someone I did not know very well.[a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(12) I could enjoy having sex with someone I was attracted to, even if I didn't feel anything emotionally for him or her. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(13) The thought of an illicit sex affair excited me. [a]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(14) Sex without love is ok. [b]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

(15) The thought of a sex orgy is disgusting to me. [a]]

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

Appendix F

PERCEPTION OF DATING AND SOCIAL SITUATIONS QUESTIONNAIRE
RISK INSTRUCTIONAL SET – OTHER

INSTRUCTIONS: Please read each of the following vignettes carefully (vignette means short story) and imagine that the woman in each of the situations described is **an average female University of New Mexico undergraduate student**. After reading each vignette, you will be asked to evaluate how risky the situation is in terms of the woman having an unwanted sexual experience. By unwanted, we mean a sexual experience in which she may be verbally or physically pressured into having sexual contact of any kind with the man. You will classify each situation as either **low risk** or **high risk.**

VIGNETTE #1A

A woman has not been out on a date in several months. As a result, she's been feeling particularly lonely lately. She goes out to a bar to have a drink with her girlfriends. An attractive guy that she's seen around campus comes over and asks to buy her a drink. He hangs around and after awhile he starts to touch her arms and back and makes a few sexually suggestive comments.

PLEASE RATE HOW RISKY THE SITUATION IS IN TERMS OF THIS WOMAN HAVING AN UNWANTED SEXUAL EXPERIENCE. BY UNWANTED, WE MEAN AN EXPERIENCE IN WHICH SHE MAY BE VERBALLY OR PHYSICALLY COERCED INTO HAVING SEXUAL CONTACT OF ANY KIND WITH THE MAN.

Low Risk High Risk

VIGNETTE #2

A woman has been living in a dorm on campus for the last two months. One night, after she returns from dinner, she finds the RA for her dorm outside of her room. He tells her that he needs to talk to her and asks her to come to his room. Once inside his room, he tells her that she's been looking stressed out lately. He says that he gives great backrubs that relieve stress and wonders if she would like one.

PLEASE RATE HOW RISKY THE SITUATION IS IN TERMS OF THIS WOMAN HAVING AN UNWANTED SEXUAL EXPERIENCE. BY UNWANTED, WE MEAN AN EXPERIENCE IN WHICH SHE MAY BE VERBALLY OR PHYSICALLY COERCED INTO HAVING SEXUAL CONTACT OF ANY KIND WITH THE MAN.

Low Risk High Risk

PERCEPTION OF DATING AND SOCIAL SITUATIONS QUESTIONNAIRE
RISK INSTRUCTIONAL SET – SELF

INSTRUCTIONS**:** Please read each of the following vignettes carefully (vignette means short story) and imagine that **you** are the woman in each of the situations described. After reading each vignette, you will be asked to evaluate how risky the situation is in terms of you having an unwanted sexual experience. By unwanted, we mean an experience in which you may be verbally or physically coerced into having sexual contact of any kind with the man. You will classify each situation as either **low risk** or **high risk**.

VIGNETTE #1A

You have not been out on a date in several months. As a result, you've been feeling particularly lonely lately. You go out to a bar to have a drink with your girlfriends. An attractive guy that you've seen around campus comes over and asks to buy you a drink. He hangs around and after a while he starts to touch your arms and back and makes a few sexually suggestive comments.

PLEASE RATE HOW RISKY THE SITUATION IS IN TERMS OF YOU HAVING AN UNWANTED SEXUAL EXPERIENCE. BY UNWANTED, WE MEAN AN EXPERIENCE IN WHICH YOU MAY BE VERBALLY OR PHYSICALLY COERCED INTO HAVING SEXUAL CONTACT OF ANY KIND WITH THE MAN.

Low Risk High Risk

VIGNETTE #2

You have been living in a dorm on campus for the last two months. One night, after you return from dinner, you find the RA for your dorm outside of your room. He tells you that he needs to talk to you and asks you to come to his room. Once inside his room, he tells you that you've been looking stressed out lately. He says that he gives great backrubs that relieve stress and wonders if you would like one.

PLEASE RATE HOW RISKY THE SITUATION IS IN TERMS OF YOU HAVING AN UNWANTED SEXUAL EXPERIENCE. BY UNWANTED, WE MEAN AN EXPERIENCE IN WHICH YOU MAY BE VERBALLY OR PHYSICALLY COERCED INTO HAVING SEXUAL CONTACT OF ANY KIND WITH THE MAN.

Low Risk High Risk

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