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Women's Readiness To Engage In Risky Sexual Behavior: The Effects Of Interpersonal Violence Victimization And Social Rejection

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**WOMEN'S READINESS TO ENGAGE IN RISKY SEXUAL BEHAVIOR:
THE EFFECTS OF INTERPERSONAL VIOLENCE VICTIMIZATION AND SOCIAL
REJECTION**

by

JACQUELINE WOERNER

DISSERTATION

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of Wayne State University,

Detroit, Michigan

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CHAPTER 1 INTRODUCTION

Background

Young adults are more likely than any other age group to engage in risky sexual behavior (RSB) and are consequently vulnerable to negative consequences including STIs (sexually transmitted infections; Centers for Disease Control and Prevention [CDC], 2012). RSB includes behaviors such as inconsistent condom use, having multiple sexual partners, engaging in sex with a non-monogamous partner, failing to discuss sex-related risks with partners, and using drugs/alcohol prior to sex. Nationally representative surveys have found that approximately 15-25% of sexually active women ages 15-55 not seeking pregnancy fail to use any form of contraceptives, and these rates are even higher among young adults under 25 years (Daniels, Daugherty, & Jones, 2014; Eisenberg, Allsworth, Zhao, & Peipert, 2012). Furthermore, only about one third of college students report regular condom use, and 6% report having multiple partners in the past month (Douglas et al., 1997; Nesoff, Dunkle, & Lang, 2015; Wechsler et al., 2000). Another nationally representative survey of women between the ages of 15 and 45 found that only 26% had used a condom during their most recent vaginal intercourse with a man, 33% were high on drugs or alcohol during sexual intercourse in the past 12 months, 9% had a non-monogamous male sexual partner over the past year, and 30% had 6 or more lifetime male sexual partners (Adimora & Schwartz, 2011).

RSB represents a significant public health concern due to its impact on STIs including HIV infection (CDC, 2012). The World Health Organization (2009) reported that unsafe sex is among the top ten risk factors for death around the world. Sexual behaviors remain the leading cause of HIV infection worldwide, and HIV incidence has remained

stable in the United States throughout the past two decades despite continuous HIV prevention efforts (CDC, 2012; Inciardi, 1995). Furthermore, approximately 20 million STIs occur each year in the United States and account for nearly \$16 billion in health care costs. Over half of these occur among individuals under the age of 25, and reports suggest that rates are increasing; in 2014, cases of chlamydia represented the highest number of annual cases of any condition ever reported to the CDC (CDC, 2014).

Recent trends in the STI and HIV epidemic have identified young women to be uniquely vulnerable for infection (CDC, 2012) due to increased rates of substance use and RSB including inconsistent condom use and engagement in sex with multiple partners (Inciardi, 1995; Brown & Weissman, 1994; Logan, Cole, & Leukefeld, 2003; Tortu et al., 1998). Women are the most susceptible group to STI/HIV transmission via heterosexual contact, and over half of new infections occur among young adults under the age of 25 (CDC, 2012; Logan, Cole, & Leukefeld, 2002). Infection rates are particularly high for low-income, minority women (CDC, 2012). Given that the primary defense against the spread of STIs is the prevention of relevant risk behaviors (Leigh & Stall, 1993), it is important for researchers to understand the factors responsible for the initiation and maintenance of RSB in order to develop effective prevention and intervention efforts.

Previous efforts to understand the etiology of sexual risk-taking have been met with limited success (Baral et al., 2013; Cooper, Shapiro, & Powers, 1998; Kalichman, Rompa, & Coley, 1996; Kelly & Kalichman, 1995; Logan, Cole, & Leukefeld, 2002). First, research on RSB prevention has been investigated primarily through cross-sectional studies based on self-report which has restricted the assessment of causal relationships (Cooper, Shapiro, & Powers, 1998; Sheeran, Abraham, & Orbell, 1999; Leigh & Stall,

1993). Experimental research that establishes causality, specifically studies that investigate the motivations underlying this behavior, is necessary. Previous research has relied almost exclusively on models that assume risky sex results from individuals' knowledge, beliefs, attitudes, and motivations specific to health protection and disease avoidance (Collado, Loya, & Yi, 2015; Cooper, Shapiro, & Powers, 1998; Levinson, Jaccard, & Beamer, 1995; Montanaro & Bryan, 2014). However, the fact that sexual risk-taking is so resistant to change signifies the existence of specific motivational factors that promote and maintain these behaviors separate from health-related thought processes (Cooper, Shapiro, & Powers, 1998). Both human and animal behavior research suggest that such motivational factors may be related to the broader social and cultural context in which RSB occurs (Amaro, 1995; Baseman, Ross, & Williams, 1994; Baumeister & Vohs, 2004; Ehrhardt & Wasserheit, 1991; El-Bassel et al., 2003; Kopetz et al., 2010; Leigh, 1990; Levinson, Jaccard, & Beamer, 1994; Ross et al., 2002; Stall & Leigh, 1994; Tortu et al., 1998).

Indeed, sexual behavior is determined by a combination of personal, social, and cultural factors. For instance, a meta-analysis on women's sexual behavior identified social status, incarceration history, substance abuse, and mental health problems as important contextual influences on RSB (Logan, Cole, & Leukefeld, 2002). These factors are thought to increase stress levels and result in behaviors such as substance use and RSB that are more normative in impoverished communities. In line with this, researchers have stressed the fact that women's HIV/STI risk cannot be disentangled from social factors including inequality and relationship patterns (Amaro, 1995; Gómez & Marin, 1996; Logan, Cole, & Leukefeld, 2002). These findings highlight the importance of

considering RSB within the broader sociocultural and economical context and the need to understand the manner in which these factors might contribute to women's increased vulnerability to RSB.

Social Influences on RSB

Despite the obvious relevance of social and cultural factors, very little research has identified social factors and explored their influence on RSB in a systematic manner. To overcome some of these limitations, the current study uses a social psychology theoretical framework and an experimental design to identify some of the most relevant social factors and to explore their impact on engagement in RSB among women. Specifically, I suggest that social rejection and interpersonal violence victimization represent critical factors underlying engagement in RSB among women. Social rejection, which occurs when an individual is refused social connection or interaction, has been shown to have a strong influence on behavior, including risky health behaviors (Baumeister & Tice, 1990; Cacioppo, Hawkley, & Bernston, 2003; Catanese & Tice, 2005; Kopetz et al., 2014; Twenge, Baumeister, Tice, & Stucke, 2001). Interpersonal violence victimization, defined in the current study as physical, psychological, or sexual violence perpetrated by a relationship partner in adulthood, has consistently been shown to be associated with engagement in RSB (e.g., Arriola et al., 2005; Testa et al., 2005; Whitmire et al., 1999).

Extensive cross-sectional research suggests that social rejection and interpersonal violence victimization are some of the most important predictors of health behaviors in general, and RSB in particular (Arriola et al., 2005; Baumeister, DeWall, Ciarocco, & Twenge, 2005; Baumeister & Tice, 1990; Cacioppo, Hawkley, & Bernston,

2003; Catanese & Tice, 2005; Kopetz et al., 2014; Leary, 1990; Lynch, 1979; Stillman et al., 2009; Twenge, Baumeister, Tice, & Stucke., 2001; Williams, 2001; Williams, Cheung, & Choi, 2000). However, few studies have isolated and explored the specific role that these factors play and the manner in which they might interact to predict engagement in RSB. These factors have typically been examined separately, but given that both represent threats to interpersonal needs and belonging, it is important to investigate how they work together to predict RSB. It's possible that past experiences of interpersonal stressors (e.g., violence victimization) intensify the effects of social rejection, leading to a response greater than that of each acting individually. Furthermore, most relevant research over-relies on self-report, warranting experimental studies that establish causality (Kopetz, et al., 2014). Lastly, although the past research has consistently shown associations between rejection and victimization with RSB, the mechanisms underlying these associations are not well understood. I proposed a rigorous experimental study and a novel assessment battery to: 1) systematically manipulate the experience of social rejection and investigate its impact on women's readiness to engage in RSB; 2) understand the role of interpersonal violence victimization as an individual vulnerability for readiness to engage in RSB; and 3) identify the mediating mechanisms underlying the relationship between these two factors, and readiness to engage in RSB. This type of a theoretical and methodological approach complements traditional approaches and affords new insights into the factors responsible for women's vulnerability for STI/HIV infection that could be subsequently targeted in STI prevention strategies.

Social rejection and interpersonal violence victimization are of particular importance for women, as previous research has identified women as more likely than

men to have experienced interpersonal violence victimization (Breiding, Black, & Ryan, 2007; Putnam, 1993) and more likely to experience negative interpersonal and health consequences following victimization (Caldwell, Swan, & Woodbrown, 2012; Little & Hamby, 1999). Additionally, women may be more sensitive to the effects of social rejection relative to men. Previous research has shown that women's sensitivity to social rejection is associated with insecurity about partners' commitment (Purdie & Downey, 2000), self-silencing (Ayduk et al. 2003), willingness to engage in extreme behaviors to preserve relationships (Purdie & Downey, 2000), romantic breakups (Downey, Freitas, Michaelis, & Khouri, 1998), and engagement in RSB over the past year (Kopetz et al., 2014).

Social Rejection

The importance of social acceptance for health and well-being is well-established (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Buss, 1990). Indeed, the need to belong is one of the most fundamental human motivations and has been examined by social scientists for more than 100 years (Baumeister & Leary, 1995; Durkheim, 1887; Ferguson, 2010; Maslow, 1954; Twenge et al., 2001; Twenge, Catanese, & Baumeister, 2003). In Maslow's hierarchy of needs (1943; 1954), belongingness is described as the most important motivation after basic physiological and safety needs have been met. Social connectedness has long been described as integral for humans' well-being. Emile Durkheim's *Suicide* (1887) emphasized that suicide often results from individuals' lack of belongingness and community integration. The culmination of philosopher and psychiatrist Alfred Adler's work rested upon one unifying principle: that social belongingness is humans' primary desire and goal (Ferguson, 2010). Consequently,

social rejection, which is often perceived as one's failure to fulfill this basic human goal, may represent a serious threat to well-being.

Numerous studies have shown that experiencing social rejection has serious negative physical and psychological health consequences including emotional distress, loneliness, guilt, jealousy, worthlessness, depression, anxiety, psychopathology, and self-destructive behavior (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Leary, 1990; Lynch, 1979; Stillman et al., 2009). These findings are corroborated by research indicating that loneliness is associated with poor physiological indices including elevated urinary cortisol (Kiecolt-Glaser et al., 1984) and reduced immune system functioning (Kiecolt-Glaser, et al., 1987). Furthermore, socially rejected individuals often exhibit unhealthy decision-making and risk-taking, potentially as a means to regain acceptance and alleviate stress associated with the experience (Baumeister & Leary, 1995; Twenge, Catanese & Baumeister, 2002). For example, individuals who are made to believe they will end up alone later in life, but not those who were made to believe they would experience frequent accidents in life, were more likely to choose unhealthy rather than healthy behaviors and engage in risky gambling decisions (Twenge, Catanese, & Baumeister, 2002). Simply the expectation of social rejection has been shown to result in increased conformity to a confederate's opinion following an online ostracism task (Williams et al., 2002), cooperation with group members in order to be accepted (Ouwerkerk et al., 2005), and imitation of a confederate's behavior if primed with an affiliation goal (Lakin & Chartrand, 2005).

Relevant to the current study, previous research has shown that social rejection is significantly associated with engagement in RSB among women substance users (Kopetz

et al., 2014; Woerner, Kopetz, Lechner, & Lejuez, 2016) and among women who experience relationship violence (Woerner, Kopetz, & Arriaga, in preparation). Women's subjective experience of rejection sensitivity was associated with their number of sexual partners and condom use (regular, casual, and commercial partners; Kopetz et al., 2014). Although cross-sectional, these studies showed a strong association between sensitivity to social rejection, and actual engagement in RSB. However, the nature of this association and the mechanisms underlying it remain unclear.

RSB is inherently interpersonal and may occur as a means to intimacy and interpersonal connection. This may be particularly important for women, for whom relationships are central to their identity and self-esteem, but are comparatively less important to men's identity (Eagly, 1987; Hyde, 2014; Markus & Oyserman, 1989; Stein, Newcomb, & Bentler, 1992; Wong & Csikszentmihalyi, 1991). In support of this, researchers have found that sexual behavior may be used to enhance the bond between partners (Covington & Surrey, 1997) and that women report engaging in casual sex to obtain a long-term relationship commitment (Regan & Dreyer, 1999; Rosenthal, Gifford, & Moore, 1998). These studies suggest that RSB may fulfill a specific interpersonal goal (Cooper, Shapiro, & Powers, 1998). Although social rejection and violence victimization may motivate sexual behavior in general, it is hypothesized that these factors motivate a desire for social reconnection strong enough that women would be willing to resort to risky behaviors if no other means for fulfilling this goal are available. RSB may be perceived as a particularly instrumental means to reduce the induced by social rejection (Derfler-Rozin, Pillutla, & Thau, 2010; Maner, DeWall, Baumeister, & Schaller, 2007), and as a consequence, the immediate benefits of RSB may be seen as more important than the

potential long-term costs (Cooper, Shapiro, & Powers, 1998; Impett & Peplau, 2003; Vasilenko, Lefkowitz, & Maggs, 2012). Amaro (1995) suggests that a loss within an interpersonal relationship does not simply represent a loss to the relationship, but also a loss of oneself. Consequently, an extreme fear of such loss may cause women to avoid relational conflict, at the expense of efforts to reduce sexual risk (e.g., negotiating condom use with male sexual partners). Furthermore, RSB is not only expected, but also sought in some social contexts in which this behavior may be considered acceptable and normative (Kopetz et al., 2010; Davey-Rothwell & Latkin, 2008; Rhodes, 1996).

Some research has provided systematic evidence of the effect of social rejection on self-defeating behavior (e.g., Twenge, Catanese, & Baumeister, 2002); however, the reasons for this have not been thoroughly investigated, and the effects specific to RSB rather than risk-taking in general are even less understood. Although RSB is a complex and multi-determined behavior, these previous findings suggest that rejection may be an important contributing factor to women's tendency to engage in RSB and warrants further research to determine its causal effect and to understand individual vulnerabilities. It is expected that social rejection will influence readiness to engage in RSB directly, that this association will be stronger among victims of interpersonal violence, and that the effect on RSB will be mediated by stress reactivity. It is expected that social rejection will pose a threat to belonging and elicit a stress response, and RSB will be perceived as an effective way to reduce this stress and restore social connection.

The Moderating Role of Interpersonal Violence Victimization

Social rejection affects everyone to some extent, but the strength and nature of this effect may vary (Blackhart, Nelson, Knowles, & Baumeister, 2009; Smart Richman &

Leary, 2009 Williams, 2007). Therefore, identifying individual vulnerabilities for social rejection that may lead to harmful health behaviors is of great theoretical and practical public health relevance. To this end, it is important to consider potential moderators of the effect of social rejection on women's readiness to engage in RSB. One important influence to consider is interpersonal violence victimization, particularly sexual, physical, and psychological violence experienced in adulthood, perpetrated by a close relationship partner. Each of these forms of interpersonal violence victimization have been recognized for their serious physical and psychological health consequences including, but not limited to, depression, anxiety, PTSD, relationship problems, revictimization, cardiovascular problems, and immune dysfunction (Berenson, Wiemann, & McCombs, 2001; Campbell, 2002; Campbell, Sefl, & Ahrens, 2004; Felitti et al., 1998; Kendall-Tackett, 2007; Repetti, Taylor, & Seeman, 2002; Woods et al., 2005).

Experiences of interpersonal violence victimization are alarmingly common. Intimate partner violence victimization estimates range from 25-29%, and sexual violence including rape has occurred in approximately 18-26% of women in the United States (Abbey, Parkhill, & Koss, 2005; Black et al., 2011; Elliot, Mok, & Briere, 2004; Finkelhor, Turner, Shattuck, & Hamby, 2013; Koss, Gidycz, & Wisniewski, 1987). In fact, women who have experienced physical, sexual, or psychological violence are 3-5 times more likely to develop depression, suicidality, and posttraumatic stress disorder (PTSD) compared to nonvictims (Dutton et al., 2006). Worse adjustment and health outcomes are generally associated with a greater frequency and severity of victimization, but may be dependent on several factors including coping and social support (Coker et al., 2002; Dutton et al., 2006; Kemp, Rawlings, & Green, 1991; Kimerling & Calhoun, 1994; Mitchell

et al., 2006; Ullman, 1996). PTSD among victims of interpersonal violence ranges from 31% to 84.4% (Golding, 1999; Jones, Hughes, & Unterstaller, 2001), which suggests that victimization represents a persistent threat to well-being.

Women's history of adulthood violence victimization is also a strong predictor of RSB (Arriola et al., 2005; Bornovalova, Daughters, & Lejuez, 2010; Brener et al., 1999; Golder & Logan, 2011; Koenig & Clark, 2004; Testa, VanZile-Tamsen, & Livingston, 2005; Whitmire et al., 1999). Women reporting a history of victimization are more likely to engage in sexual behaviors known to increase the risk for STIs, even when controlling for demographic characteristics and other unhealthy behaviors (Breiding, Black, & Ryan, 2008). Several longitudinal studies found that women who had previously been victimized were more likely to report RSB at follow-up (Gidycz, Orchowski, King, & Rich, 2008; Lang et al., 2011; Parillo, Freeman, Collier, & Young, 2001). This is true for all types of violence victimization, yet the majority of research has focused exclusively on sexual violence (Davis, Combs-Lane, & Jackson, 2002; Golder & Logan, 2011).

Victimization and RSB. Although there is not much disagreement among researchers regarding the existence of the relationship between victimization and engagement in RSB, the reasons for this association have not been thoroughly investigated. This relationship has often been reported as an empirical finding without extensive theoretical explanation (Rodriguez-Srednicki, 2002). Although some researchers have proposed explanations for this relationship, several questions remain unanswered, suggesting that additional research is necessary to delineate the specific motivations for RSB among victims.

One line of research has suggested that the relationship between victimization and RSB is mediated by drug and alcohol use. Indeed, many studies have noted an association between both victimization and subsequent substance use (Brady et al., 1994; Chermack, Fuller, & Blow, 2000; Dansky et al., 1995; El-Bassel et al., 2004; Gutierrez & Van Puymbroeck, 2006; Logan, Walker, Jordan, & Leukefeld, 2006; Tjaden & Thoennes, 2000), and between substance use and RSB (Chitwood & Comerford, 1990; Leigh, 1990; Logan, Cole, & Leukefeld, 2003; Maranda, Han, & Rainone, 2004; Rhodes, 1996; Stall & Leigh, 1994; Taylor, Fulop, & Green, 1999). Some research has suggested that drugs and alcohol provide a numbing effect for trauma symptoms related to prior sexual assault (Miranda et al., 2002). More specifically, women may use drugs and alcohol to self-medicate in sexual situations that serve as reminders of prior sexual violence (Khantzian, 1997). While this is a valid mechanism for explaining drug/alcohol use in sexual situations, it does not fully explain why individuals choose to enter these risky sexual situations in the first place. Some research has attributed RSB to the pharmacological effects of drugs and alcohol, suggesting that impairment affects individuals' ability to assess risks or facilitates sexual functioning (e.g., Buffum, 1982; Davis et al., 2007; Melis & Argiolas, 1995; Pfaus, 2009; Rawson, Washton, Domier, & Reiber, 2002; Volkow, et al., 2007). However, some studies have also found that rather than facilitate sexual behavior, prolonged substance use may in fact impair sexual functioning for both men and women (Brown, Domier, & Rawson, 2005; Cocores, Miller, Potash, Gold, 1988; Crenshaw & Goldberg, 1996), and highlight the importance of the social context and sex-related norms and expectations regarding risk that may facilitate RSB and substance use simultaneously (Amaro, 1995; Kopetz et al., 2010; Leigh, 1990;

Leigh & Stall, 1993; Stall & Leigh, 1994; Pfaus, 2009). Such norms may suggest to group members that their sexual behaviors are not actually risky, as they are perceived to be acceptable.

Alternative approaches suggest that RSB following victimization is a reflection of stress-induced behavioral dysregulation (Messman-Moore, Walsh, & DiLillo, 2010; Noll, Haralson, Butler, & Shenk, 2011; Walsh, DiLillo, & Messman-Moore, 2012). From this perspective, RSB is the result of a self-regulatory failure whereby the victims of violence fail to recognize the negative consequences of engagement in risk behavior (Rodriguez-Srednicki, 2002; Walsh, DiLillo, & Messman-Moore, 2012). However, this perspective fails to fully account for why RSB, as opposed to other behaviors, is the prevailing, or most notable, response to this dysregulation. Furthermore, although all forms of violence are associated with risk-taking (Davis, Combs-Lane, & Jackson, 2002; Golder & Logan, 2011), many studies have focused exclusively on sexual victimization (Bornovalova et al., 2008; Davis, Combs-Lanes, & Jackson, 2002; Merrill, Guimond, Thomsen, & Milner, 2003; Noll, Haralson, Butler, & Shenk, 2011; Quina, Morokoff, Harlow, & Zurbrigen, 2004; Zurbrigen & Freyd, 2004) and suggest that RSB is the result of the distortion of sex-related cognitions in which expectations for sexual relationships have been altered by unwanted, violent, or inappropriate sexual experiences (Browne & Finkelhor, 1986). However, it is possible that victimization has a broader impact that extends beyond these sex-related cognitions and may affect the person's approach to interpersonal/intimate relationships.

Proposed Theoretical Mechanisms

In the current study, I propose a mechanism that generalizes to all forms (i.e., sexual, physical, psychological) of intimate partner violence victimization and focuses on the social and interpersonal processes that may affect RSB. Specifically, I suggest that experiences of violence are internalized into women's identity and heighten their susceptibility to acute experiences of social rejection (Rosen, Milich, & Harris, 2009; Wölfer & Scheithauer, 2013). Chronic or traumatic experiences of victimization may lead individuals to expect and to be sensitive to rejection and incorporate victimization into their self-schemas (Downey & Feldman, 1996; Williams et al., 2005). In other words, victims may develop strong implicit associations between their internal representations of conflict and their self-concept, such that they associate themselves with conflict in social interactions, which may have implications for expectations in interpersonal relationships (Dodge & Coie, 1987). Victimization may be experienced as a form of relational rejection, which signals women's failure to conform to gender-based norms related to intimacy and interdependence (Cross & Madson, 1997; Eagly, Wood, & Diekmann, 2000; Kopetz et al., 2014). Failure to conform to social expectations through feelings of rejection may increase feelings of stigmatization and alienation (Kopetz et al., 2014). Women who have experienced violence may become hypervigilant in social situations and more readily anticipate, perceive, and react to rejection. Experiences of everyday social rejection may trigger associations with previous traumatic experiences and be perceived as interpersonal victimization (Iffland et al., 2014; Rosen, Milich, & Harris, 2009), and consequently elicit elevated stress reactivity for victims.

As such, we could expect that any form of chronic trauma or interpersonal victimization could trigger a similar hypervigilant response to social rejection (i.e., racism, sexism). Support for this has been demonstrated by research showing that African American individuals who had experienced cumulative racial discrimination were more sensitive to rejection and reported increased willingness to drink alcohol and engage in RSB following acute rejection relative to African American individuals who had not experienced racial discrimination (Gerrard et al., 2012; Stock, Gibbons, Peterson, & Gerrard, 2013). These findings suggest that individuals' response to acute social rejection should be considered within the context of previous experiences of rejection or victimization, with the assumption that people who have experienced abuse may be more affected by these acute experiences (Stock, Gibbons, Peterson, & Gerrard, 2013).

In short, recurring rejection or victimization may have a cumulative effect similar to how repeated stress increases allostatic load (McEwen & Stellar 1993; Stock, Gibbons, Peterson, & Gerrard, 2013). In the context of perceived threats to social connection (i.e., social rejection), it may increase victims' willingness to engage in RSB as means to reconnect and alleviate stress. Indeed, one line of research proposes that sexual behavior is best understood in terms of the goals that it fulfills (Cooper, Shapiro, & Powers, 1998; Snyder & Cantor, 1997), and that RSB may serve the need for interpersonal connection (Cooper, Shapiro, & Powers, 1998). In line with these findings, RSB following interpersonal victimization may be motivated by a goal to reconnect and does not simply represent an impulsive response as a consequence of self-regulation failure. Kopetz and Orehek (2015) suggest that some behaviors that appear irrational or self-defeating may actually represent a means to a specific goal. In other words, engagement in risky

behaviors may represent self-regulatory success rather than failure. To the extent that social rejection and violence pose a threat to interpersonal relationships, behaviors that facilitate interpersonal reconnection may be perceived to be attractive. Recent research supports this idea that when belonging is threatened, people are motivated to engage in risk behaviors specific to this need rather than risk behaviors in general. Specifically, rejection sensitivity mediates the relationship between childhood abuse and RSB but not other risky behaviors (substance use or gambling behavior; Woerner, Kopetz, Lechner, & Lejuez, 2016). RSB may be perceived as an instrumental means to achieve interpersonal reconnection and stress reduction following social rejection among victims of interpersonal violence.

Stress and Coping

Psychological stress response. To understand the impact of social rejection on RSB and the moderating role of victimization, it is important to consider the mechanisms underlying these effects. According to the Cognitive Appraisal Theory of Stress framework (Lazarus & Folkman, 1984), experiences of rejection and/or victimization could elicit a stress response (Folkman et al., 1986). When an individual initially encounters a stressor (e.g., social rejection), he or she must first identify the extent to which it may cause harm. If the stressor is perceived as threatening or harmful to well-being, it might result in a stress response characterized by increased psychological and/or physiological arousal (Folkman, Lazarus, Gruen, & DeLongis, 1986; Lazarus & Folkman, 1984).

Perceived stress in general has been systematically associated with numerous markers of health including anxiety, depression, immune dysfunction, and telomere shortening (Bovier, Chamot, & Perneger, 2004; Cohen, Karmarck, & Mermelstein, 1983;

Epel et al., 2004; Glaser & Kiecolt-Glaser, 2005). In fact, perceived stress is more closely linked to health outcomes than objective reports of stressful life events (Cohen, Tyrrell, & Smith, 1993; Cohen, Karmarck, & Mermelstein, 1983; Scheier & Carver, 1985; Van Eck, Berkhof, Nicolson, & Sulon, 1996). Perceived stress is also associated with various risk behaviors including RSB; women who report higher life stress are less likely to use birth control and condoms consistently, have a higher number of sexual partners, and are more likely to report a past STI (Ethier et al., 2006; Mazzaferro et al., 2006; Spaccarelli, 1994). Folkman and colleagues (1992) also showed that sexual risk-taking may be a strategy to cope with stress. In this study, men who engaged in higher rates of RSB were more likely to self-report using sex as a means to cope compared to men who did not engage in RSB, and engagement in RSB was associated with decreased likelihood of seeking social support and using spiritual coping strategies, and increased likelihood of keeping feelings to oneself.

It is therefore possible that previous history of victimization increases one's likelihood to appraise certain stressors such as social rejection as threatening which may in turn increase their vulnerability to engagement in RSB as a means to eliminate stress and socially reconnect. This should be particularly the case among some groups (e.g., women who engage in substance abuse or sex exchange) for whom RSB may be considered normative behavior and an appropriate stress reduction technique (Pinkerton & Abramson, 1992).

Physiological stress response. Although self-reported stress may be an important indicator of experienced stress, recent investigations of both chronic life and acute laboratory stressors have increasingly been including physiological measures of

stress reactivity in order to gain a more comprehensive understanding of the stress response. Extensive research has shown that acute psychological stressors including social rejection can affect the hypothalamic-pituitary-adrenocortical (HPA) axis, which regulates the release of cortisol (Dickerson & Kemeny, 2004; Gunnar & Quevedo, 2007; Kirschbaum, Pirke, & Hellhammer, 1993). Cortisol is a steroid hormone produced within the adrenal gland that is released upon activation of the HPA axis, and is one of the most commonly assessed measures of physiological stress, often collected in saliva, blood, and urine samples. Cortisol follows a circadian rhythm in which concentrations rapidly increase upon waking and decrease gradually throughout the day, and smaller fluctuations are evident in response to individual stressors (Dickerson & Kemeny, 2004). A synthesis of research assessing cortisol responses to acute laboratory stressors has shown that the effects of psychological stressors on reactivity can be highly variable and dependent upon several contextual factors such as the duration and controllability of the stressor (Dickerson & Kemeny, 2004). Similarly, chronic stress also has a significant impact on diurnal cortisol rhythm, characterized by higher waking levels and a flatter slope throughout the day (Miller, Chen, & Zhou, 2007).

Uncontrollable stressors and social-evaluative tasks have the largest effect on cortisol reactivity (for a review, see Dickerson & Kemeny, 2004). However, the effects of social rejection and victimization on the physiological stress response remain unclear. Some research has shown that social rejection has a significant effect on psychological, but not physiological stress reactivity (e.g., Zöller, Maroof, Weik, & Deinzer, 2010), whereas others have found that rejection increases both psychological and physiological indices of stress reactivity (e.g., Blackhart, Eckel, & Tice, 2007; Stroud, Salovey, & Epel,

2002). Various potential moderators including neuroticism, extraversion, trait anxiety, and coping style do not explain this discrepancy (Dickerson & Kemeny, 2004). An examination of these inconsistent findings has suggested that the effects of rejection on the physiological response may be best understood by focusing on specific subgroups (Zöller et al., 2010). One such subgroup that has received considerable attention is victims of interpersonal violence (Blackhart et al., 2007; Bremner et al., 2003; Heim et al., 2000). However, victims' physiological response to acute stressors is even more perplexing. Whereas psychological stress is consistently elevated in victims relative to nonvictims, findings on physiological stress are again mixed (Bremner et al., 2003; Heim et al., 2002; Zwolinski, 2008). Some of these studies have shown that victims exhibit higher cortisol reactivity relative to nonvictims. For example, in one study, abused women with PTSD symptoms had a significantly greater cortisol response to reminders of traumatic events relative to women without PTSD symptoms (Elzinga et al., 2003). In another study, although individuals with abuse-related PTSD had an increased cortisol response in anticipation of cognitive challenge tasks relative to healthy individuals, there were no significant group differences in cortisol response to a subsequent lab stressor (Bremner et al., 2003). However, some studies have shown the opposite pattern in which victims experience significantly lower cortisol response to stress relative to nonvictims (Carpenter et al., 2007). This blunted response amongst victims has been explained as a potential manifestation of HPA axis sensitization to chronic stress (Carpenter et al., 2007; Yehuda, 1997).

Taken together, these findings suggest that trauma is related to changes in HPA-axis reactivity, but the directionality of this relationship may be dependent on several

factors such as duration and appraisal of the specific stressors (Elzinga et al., 2008). In either case, research seems to suggest that victims' cortisol response to acute stressors is consistently atypical (whether blunted or elevated relative to nonvictims' response), indicative of HPA axis dysregulation (Bremner et al., 2003; Heim et al., 2000; Heim et al., 2002; Zwolinski, 2008).

Coping with stress. The experience of stress does not necessarily increase the likelihood of engaging in RSB if individuals typically utilize other coping strategies to deal with stress. The secondary appraisals within the Cognitive Appraisal Theory of Stress framework are characterized by one's assessment of resources to deal with the stressor. Individuals who engage in alternative behaviors (e.g., seeking social support, positive reappraisal, spiritual strategies), or believe they that have the resources to do so, should be less likely to engage in RSB to cope with stress and socially reconnect (Cooper, Shapiro, & Powers, 1998; Folkman et al., 1992). By contrast, a coping style characterized by avoidance and self-destructive strategies may be more strongly related to likelihood of engaging in RSB following rejection-related stress. In support of this notion, men who were less likely to seek social support, engage in spiritual activities, and keep their feelings to themselves were more likely to engage in unprotected anal intercourse (Folkman et al., 1992). Additionally, among HIV positive adults with a history of childhood sexual abuse, decreased active coping strategies, and less spiritual coping was associated with increased unprotected sex (Sikemma et al., 2009).

In line with these notions, the current study aims to assess the extent to which psychological and physiological stress mediate (together and/or separately) the impact of social rejection on readiness to engage in RSB, particularly among women with a history

of victimization. Given the inconsistencies regarding physiological stress reactivity in the literature, the aim of the current study is rather exploratory; it focuses on the extent to which social rejection relates (positively or negatively) to changes in cortisol levels.

Summary and Hypotheses

Researchers have recognized the importance of social factors in understanding engagement in RSB. However, many studies have notable theoretical and methodological limitations. Although they have identified specific sociodemographic factors (e.g., gender, socioeconomic status) associated with increased vulnerability for RSB, the overreliance on self-report measures and the lack of conceptual frameworks limits understanding of the specific manner in which social factors may be responsible for the initiation and maintenance of RSB. To overcome some of the difficulties of previous research, I propose a theoretical framework which suggests that engagement in RSB among some women is motivated by the need to alleviate the stress and threat to belonging induced by the experience of social rejection and violence victimization. To test these notions I conducted an experimental study to: 1) systematically manipulate the experience of social rejection and investigate its impact on women's readiness to engage in RSB; 2) understand the role of interpersonal violence victimization as an individual vulnerability for readiness to engage in RSB; and 3) identify the mediating mechanisms underlying the relationship between social rejection, victimization, and readiness to engage in RSB.

A sample of 152 participants was recruited from the community and university and completed a laboratory study consisting of a one-way experimental design. Specifically, participants' readiness to engage in RSB was assessed as a function of social exclusion

(rejected vs. control) manipulated between participants, as well as participants' history of violence victimization. To assess the mediating role of stress, participants completed measures of psychological stress (self-report) and physiological (salivary cortisol) reactivity, as well as of strategies of coping with stress.

As depicted in Figure 1, I hypothesized that women who experience social rejection would exhibit an increased readiness to engage in RSB compared to women who are not rejected (**Hypothesis 1**). The relationship between social rejection and readiness to engage in RSB is expected to be stronger for women who have experienced high levels of interpersonal violence victimization during their lifetime compared to women who have experienced no or minimal violence victimization (**Hypothesis 2**). Readiness to engage in RSB is expected to be low for participants in the control condition, and minimally or not affected by previous experiences on interpersonal violence victimization

To investigate the mechanisms underlying this association, the study explores the mediating role of psychological and physiological stress reactivity (**Hypothesis 3**). Specifically, I hypothesize that social rejection will increase the likelihood of stress, particularly among victims, which will in turn predict increased readiness to engage in RSB. Although the role of physiological stress reactivity, measured via salivary cortisol, is exploratory, I expect that following social rejection, women who have experienced victimization will exhibit an atypical response consisting of either blunted or elevated reactivity relative to women who have not experienced victimization.

The relationship between stress and RSB should be particularly strong for women who do not have alternative means to cope with stress or to socially reconnect. Therefore, **Hypothesis 4** will assess the extent to which the impact of stress on the tendency to

engage in RSB is moderated by the individual's coping strategies. Women who typically cope with stress through other means (e.g., exercise) and find other ways to socially reconnect (e.g., seek social support) may be less likely to engage in RSB following social rejection. Therefore, the relationship between stress and readiness to engage in RSB is only expected to be significant for women who experience stress related to social rejection and do not utilize alternative means to cope with stress and restore social connections. More specifically, women who experience high levels of stress following social rejection and do not utilize alternative coping strategies, will demonstrate increased readiness to engage in RSB compared to women who do not utilize alternative strategies to cope.

Lastly, to test the hypothesis that these processes predict sexual risk taking specifically rather than risk taking in general, these hypotheses were investigated with a measure of general risk-taking propensity as the dependent variable. It is hypothesized that these analyses will not be significant, providing support for the idea that interpersonal stressors (i.e., victimization, rejection) increase the likelihood of engaging in behaviors that full reconnection goals rather than the likelihood of engaging in risk behaviors in general (**Hypothesis 5**).

CHAPTER 2 METHOD

Participants

Female participants were recruited from the Detroit metropolitan area community and Wayne State University. Specifically, community women were recruited from advertisements posted on websites (e.g., Craigslist, Ebay Classifieds, Detroit Backpage) and on bulletin boards inside local restaurants and businesses. College women were recruited from emails distributed to university students from a list obtained from the registrar's list and from the psychology department participant pool. Advertisements stated that Wayne State University researchers are looking for women between the ages of 18-35 years who are interested in participating in a research study about various social and sexual experiences and attitudes. A phone number and email address was provided so that interested individuals could contact the researchers to schedule a time to participate. Participants completed a short telephone prescreen to ensure that they are eligible to participate (based on the criteria outlined below). Participants recruited from the psychology department participant pool completed a prescreening survey prior to accessing the system instead of a phone screening, and a few other participants who were unavailable over the phone completed the brief screening via email.

To be eligible, participants were required to: 1) be female; 2) be between the ages of 18 and 35; 3) speak English; 4) have lived in the United States for 10 years or more; 5) have engaged in sexual intercourse at least once with a man over the past year; and 6) not be in an exclusive relationship/unwilling to date other people. Eligible participants were invited to the lab located on the Wayne State University campus to participate in a 60-90 minute session. Participants recruited from the participant pool were compensated

for their time with 1.5 research credits that could be applied towards an eligible psychology course. All other participants were compensated for their time and participation with \$10 cash prior to 2/10/2017, and \$20 after this date in order to increase the speed of recruitment and data collection.

A total of 152 participants completed the study procedures. Half ($n = 76$) were randomly assigned to the social rejection condition, and the other half ($n = 76$) were randomly assigned to the control condition. Participants were eligible to participate if they were 18-35 years old, and their actual age ranged from 18-34 years of age ($M = 21.78$, $SD = 3.65$). All participants indicated that they were single, not in an exclusive dating relationship. Additionally, 113 (74.3%) women indicated that they were exclusively heterosexual, 36 (23.7%) indicated that they were mostly heterosexual, and 3 (2.0%) indicated that they were equally heterosexual and homosexual. None of the participants identified as transgender. Participants' median annual income was \$30,000-\$39,999 and ranged from less than \$10,000 to more than \$100,000. The majority ($n = 146$, 96.1%) were current students. To assess subjective social status, participants indicated where they viewed themselves in comparison to others on a 1-10 step ladder ($M = 5.59$, $SD = 1.70$). Information on participants' ethnicity and highest educational attainment is presented in Table 1.

Procedure

Potential participants were provided with an overview of the purpose and procedures of the study during the initial eligibility screening. Sexual orientation was not an exclusion criterion if they met all of the above requirements. Eligible participants were scheduled for a single session. Study sessions were only held in the afternoons, starting

from 12:00 to 3:00, Monday-Friday to control for the circadian pattern of cortisol. Additionally, participants were asked to abstain from consuming any substances (i.e., alcohol, nicotine, caffeine, medications) the day of the study that may interfere with cortisol measurement, and to refrain from eating two hours prior to the start of the study session.

Upon arriving at the lab, the female experimenter reviewed the consent form and answered any questions the participant had. Participants were informed that they would be asked to report possible negative or violent experiences in previous relationships. Additionally, they were told that they could skip any questions they were not comfortable answering and could withdraw from the study at any point without consequence. Experimenters were trained to stop the study if they believed the participant was too distressed to continue; however, this was not necessary for any of the participants. Participants were asked to provide some sensitive information about themselves, and were ensured that all of their data would remain confidential. An arbitrary ID number was listed on all data forms. Approval from the university's Institutional Review Board was obtained prior to starting data collection.

As shown in Table 2, behavioral tasks, saliva sample collection, and self-report measures were intermixed throughout the study. First, participants provided the baseline saliva sample, then self-reported their demographics, daily habits, coping strategies, and victimization experiences. Next, they completed the social rejection task which was followed by measures of psychological stress reactivity. Then, participants completed all measures of readiness to engage in RSB (both behavioral and self-report). The RSB behavioral task was counterbalanced with the behavioral measure of general risk-taking

propensity. Participants then provided the second saliva sample to assess physiological stress reactivity (delayed to allow for the lag in detecting cortisol elevations in response to a stressor), followed by self-report measures not included in the dissertation. Finally, they provided the last saliva sample followed by payment and debriefing. All measures are described below.

Measures

Baseline/Preliminary measures.

Baseline cortisol. After reviewing the research information sheet, participants provided their first saliva sample via passive drool to assess baseline levels of cortisol. The experimenter explained to the participant how to most effectively provide this sample. Participants were given three minutes to provide the sample, after which the experimenter checked to ensure that the participant has provided enough saliva. If not, then the participant was given more time before moving on to the next task. To control for the effects of circadian and diurnal rhythms, the time of day that samples were collected was standardized for all participants, and medication/substance use was assessed. The experimenter recorded the time that each sample was obtained and subsequently weighed and vortexed each sample. Participants were then instructed to move to another desk with the computer so they could complete the series of survey questionnaires and behavioral tasks.

Demographic and daily habits information. Information about individuals' age, gender, religiosity, and ethnicity was collected for descriptive purposes. Additionally, to assess socioeconomic status, participants reported their level of education, annual

income, and subjective social status using MacArthur's social status ladder (Adler et al., 2000).

To obtain information about potential confounds of cortisol reactivity, participants reported how much they slept the previous night, what time they woke up, what they ate that day, and whether they had consumed any caffeine, nicotine, or other drugs that day. Participants were asked in advance to abstain from consuming any substances that could affect the accuracy of cortisol measurement.

Relationship and dating experiences. Participants reported their current relationship status (single, dating, living with a romantic partner, engaged, married, separated, widowed, divorced) and sexual orientation (5 point scale ranging from exclusively heterosexual to exclusively homosexual). Additionally, they were asked to report at what age they started dating, how many men and women they have dated in their lifetime, how many different people they have dated in the past year, and how often they drink alcohol on dates (Abbey, Ross, McDuffie, & McAuslan, 1996).

Coping. To assess coping strategies, participants completed the *Ways of Coping Questionnaire* (Folkman & Lazarus, 1988) which is a 66-item self-report measure assessing eight coping strategies subscales including: confrontive coping (6 items; $\alpha = .45$), distancing (6 items; $\alpha = .60$), self-controlling (7 items; $\alpha = .45$), seeking social support (6 items; $\alpha = .69$), accepting responsibility (4 items; $\alpha = .53$), escape-avoidance (8 items; $\alpha = .77$), planful problem solving (6 items; $\alpha = .67$), and positive reappraisal (7 items; $\alpha = .64$). Participants reported how often they have used each strategy in times of stress with the following response options: never used (1), used somewhat (2), used quite a bit (3), used a great deal (4). This measure has consistently demonstrated high validity and

reliability (Folkman & Lazarus, 1988) including in studies with samples consisting of HIV positive individuals and victims of interpersonal violence (e.g., Brown et al., 1995; Sikkema et al., 2009). Because internal consistency was extremely low for many of the subscales (much lower than that from the original validated study), seeking social support (e.g., “Talked to someone about how I was feeling”) was chosen to represent constructive coping in analyses, and escape-avoidance (e.g., “Refused to believe that it had happened”) was chosen to represent maladaptive coping, given their comparatively high reliability.

Victimization. Participants then completed the measure of interpersonal violence victimization, with the expectation that these experiences were salient for the remainder of the experiment. Physical, sexual, and psychological victimization experienced in adulthood was assessed with the *Partner Victimization Scale* (PVS; Hamby, 2014), which has demonstrated high validity and internal and has produced multimethod convergence with other indicators (Hamby, 2014). Participants reported whether or not a current or past partner had ever perpetrated each of six acts (described in Appendix B). If participants responded “yes”, then they were asked to report how many times each act had occurred with response options ranging from never occurred (0) to occurred five or more times (5). Responses were summed to represent the total number of victimization acts participants had experienced.

Manipulation of social rejection. To manipulate social rejection, participants completed a computerized ball-toss paradigm, *Cyberball* (Williams & Jarvis, 2006). This is the most widely used social rejection task, and has been successfully implemented among substance users whose post-task reactions significantly predict RSB among

women (Kopetz et al., 2014). Prior to the task, a message appeared on the computer screen informing participants that they would be playing an online ball-toss game with two other individuals. The instructions on the screen stated that the purpose of this task was to assess participants' mental visualization skills and that participants should do their best to mentally visualize the entire experience (e.g., imagine what the other players look like). Participants were then randomly assigned to an experimental or control condition. In the experimental condition which is designed to make the participant feel socially excluded, the other players start by throwing the ball to the participant, and then continue to throw only to each other such that the study participant appears to be excluded. In the control condition, the other players throw the ball to the study participant the entire time such that the participant appears to be included throughout the game. Participants played the game for 5 minutes with 2 other players, and the game was set for 75 total ball tosses. We have endeavored to balance internal and external validity, and although the Cyberball paradigm has limited mundane realism, it has strong experimental realism (Hartgerink et al., 2015; Williams & Jarvis, 2006). A meta-analysis indicates the effect size is large and generalizes across sampling aspects such as age and types of dependent measures (Hartgerink et al., 2015). *Cyberball* has been previously associated with psychological, physiological, and neurological indicators of stress (Alvares, Hickie, & Guastella, 2010; Boyes & French, 2009; Slavich, Way, Eisenberger, & Taylor, 2010). Despite no direct interpersonal interaction, research has consistently found that participants report significant distress and a lack of belonging following rejection (Hartgerink et al., 2015). The nature of the task also ensures standardization across experimental trials (Williams & Jarvis, 2006).

When the task ended, a sound was emitted from the computer speakers so that the experimenter could record the current time without opening the door or interrupting the participants. The time was recorded so that the experimenter could note the time duration between the end of the social rejection task and collecting the second saliva sample. At this point, participants completed the *Need-Threat Questionnaire* (WNTQ; Van Beest & Williams, 2006) to assess the effectiveness of the social rejection manipulation. This measure consists of 20 items ($\alpha = .93$) extensively used in social rejection research to assess feelings of belonging ($\alpha = .87$), self-esteem ($\alpha = .75$), control ($\alpha = .83$), and meaningful existence ($\alpha = .85$). Sample items include, “I did not feel accepted by the other players” and “I had the feeling that the other players did not like me” and the full list of items are included in Appendix C. Items were on a scale from 1 (do not agree) to 7 (agree), and coded such that higher scores reflect greater perceived threat, and were averaged to create a total combined scale score, as well as a score for each of the four subscales.

Stress reactivity. After the ball-toss game, participants completed a self-report measure of psychological stress reactivity (Primary Appraisal Secondary Appraisal Scale; Gaab et al., 2005). As described below, physiological stress reactivity was not immediately assessed given that there is a delay in detecting cortisol elevations in response to a stressor (Dickerson & Kemeny, 2004).

Psychological stress. Participants then completed the *Primary Appraisal Secondary Appraisal scale* (PASA; Appendix D), to assess participants’ appraisals of stress associated with the rejection manipulation and salient experiences of violence victimization (Gaab et al., 2005). This measure was initially validated in a study that

included a psychosocial stress situation and assessed how psychological processes related to the acute neuroendocrine stress response. The PASA is composed of four subscales. Two subscales assessed primary appraisals: challenge ($\alpha = .56$) and perceived threat ($\alpha = .46$). Two subscales assessed secondary appraisals: the self-concept of competence ($\alpha = .37$) and control expectancy ($\alpha = .54$). This measure was administered on a 5-point scale with response options ranging from strongly disagree (1) to strongly agree (5). Sample items include “I do not feel threatened by the situation” (reverse-scored) and “This situation scares me”. An additional item, “The past situation was stressful to me” was also included and assessed with the same response options. Due to the extremely low internal consistency of the primary stress appraisals, a factor analysis was conducted. Seven items that loaded on one factor, and also fit together conceptually, were averaged to create the measure of perceived psychological stress ($\alpha = .74$). This final measure included: four items from the perceived threat subscale, two items from the perceived challenge subscale, and the additional stress item.

Physiological stress. Physiological stress was assessed with salivary cortisol reactivity. Instructions appeared on the screen indicating to participants that they were to stop and let the experimenter know they were finished with that part of the study. The experimenter then directed participants to provide a second saliva sample following the same procedures outlined above in order to assess physiological stress reactivity to the social rejection. Salivary measurement is well aligned with current trends towards non-invasive assessment of stress responses in biobehavioral research and samples can be easily collected on multiple occasions (Pfaffe et al., 2011). As stated above, approximately 2.0 ml of saliva was collected at three time points via unstimulated passive

drool: 1) After the preliminary questionnaire to assess baseline levels, 2) 15 minutes after the rejection manipulation to assess initial stress reactivity, and 3) 30 minutes after the social rejection manipulation to assess stress recovery. Samples were weighed, vortexed, and immediately aliquoted to establish a biobank. Samples were frozen at -80°C until assayed using commercially available enzyme immunoassay kits (DRG International (DRG International, Inc. 841 Mountain Avenue, Springfield, New Jersey 07081, USA). Average intra-assay and inter-assay coefficients of variation were 6.33% and 9.37%, respectively. Percent change scores were computed to assess reactivity (percent change from time 1 to time 2) and recovery (percent change from time 2 to time 3). To ensure that ample time had passed for cortisol to be detected in saliva as a measure of reactivity to the rejection manipulation, the second saliva sample was collected a minimum of 15 minutes after the task ended. Because it takes time to activate the HPA axis, there is a delay in detecting cortisol elevations in response to a stressor (Dickerson & Kemeny, 2004). Although it's unclear exactly how long this lag is in the context of acute stressors, researchers commonly assess reactivity 15 minutes post-stressor (Dickerson & Kemeny, 2004). Consistent with this, research has shown that cortisol levels do not peak until 10 minutes post-stressor (Gordis et al., 2006).

Risky sexual behavior. To assess the main dependent variable, participants completed measure of 1) readiness to engage in RSB; 2) self-reported sexual intentions; 3) sexual attitudes. Each dependent variable was assessed separately in analyses.

Readiness to engage in RSB behavioral measure. Participants completed a behavioral task of approach/avoidance tendency to assess readiness to engage in RSB (Chen & Bargh, 1999; Markman & Brendl, 2005; Seibt, Neumann, Nussinson, & Strack,

2008). Specifically, on a computer screen, participants were presented with risky sex related target words (e.g., hook up) as well as neutral words (e.g., bookmark) enclosed by a vertical or horizontal light gray box. The words were independently generated by eight individuals, who were asked to list every word or short phrase (e.g., one night stand) they could think of that represents RSB. The ten words that appeared the most frequently were included in the task. Words were matched across categories (RSB vs. control) to contain the same number of characters.

Using a joystick, participants were instructed to decide as quickly as possible whether each target was enclosed by a vertical or horizontal light gray box. In half of the trials they pulled the joystick toward them (approach) if the target is enclosed in a vertical box and pushed the joystick away from them (avoidance) if the target was enclosed in a horizontal box. The order was reversed in the other half of the trials. Participants' reaction time to push vs. pull in reaction to the RSB and the neutral words was recorded. A difference score was computed by subtracting the mean response latency of the approach/pull trials from the mean response latency of the avoid/push trials in order to create a single index of behavioral tendency (Hofmann, Friese, & Gschwendner, 2009; Kopetz, Collado, & Lejuez, 2015). The index for neutral targets was statistically controlled in all analyses utilizing the RSB approach tendency index. The idea underlying this task is that people tend to approach goal-relevant stimuli and relevant behavioral schemas automatically. Therefore, if engagement in RSB is a relevant means to reconnect and thus alleviate stress induced by social rejection participants should be faster to approach vs. avoid RSB-related words.

This measure has been used extensively across multiple domains and it has been shown to have better predictive validity of actual behavior (e.g., restraint from eating high caloric food, aggressive behavior, alcohol use, smoking, etc.) than traditional self-report measures (Fishbach & Shah, 2006; Hofmann et al., 2009; Wiers, Rinck, Dictus, & Van den Wildenberg, 2009). These implicit measures also more effectively tap into neurobiological processes involved into the etiology and maintenance of risky behavior (Berridge, 2001; Stacy, Ames, & Knowlton, 2003; Wiers, de Jong, Havermans, & Jelicic, 2004) and are amenable to successful interventions (Wiers et al., 2011).

Risky sexual behavior self-report.

Sexual attitudes. To complement the behavioral task, participants completed the 10-item sexual permissiveness subscale of the *Sexual Attitudes Scale* (Hendrick & Hendrick, 1987), modified to assess their in-the-moment risky sex attitudes ($\alpha = .89$). Participants rated their agreement with each item on a 6-point scale (strongly disagree to strongly agree). Sample items include, “I would like to have sex with many partners” and “It is okay to have ongoing sexual relationships with more than one person at a time.” This instrument was considered one of the most complete instruments for studying sexual attitudes in a comprehensive meta-analysis (Oliver & Hyde, 1993). The permissiveness subscale has been previously shown high validity and reliability (Hendrick & Hendrick, 1987; Hendrick, Hendrick, & Reich, 2006).

Sexual intentions. Participants also reported risky sexual intentions, by responding how likely they were to engage in four behaviors (e.g., “Have sex with someone you are not in a committed relationship with?”, “Have sex with a man without a condom?”) that week, with response options ranging from extremely unlikely (1) to extremely likely (5).

This measure was highly internally consistent (Cronbach's $\alpha = .80$). Participants were also asked an open-ended question to assess what they felt like doing in that specific moment. Specifically, they were asked to report, if they weren't in the study and could be with whomever they wanted, doing whatever they wanted, what would it be?

Past RSB. To assess RSB over the past year, participants also completed items adapted from the Sexual Behavior subscale of the *HIV Risk Behavior Scale* (HRBS-SRB; Darke et al., 1991) which has frequently been used to assess RSB among diverse populations (Kopetz et al., 2014; Lejuez et al., 2004) in addition to additional items based on past research on RSB (e.g., Cooper, 2010). Specific questions address total number of sexual partners, condom non-use with regular and casual partners, instances of anal sex, discussion of sex-related risks with sexual partners, and drug/alcohol use prior to engaging in sexual activity. Items were assessed on an ordinal scale from 0 to 5 and coded such that low scores indicate no sexual risk, and high scores indicate high sexual risk. Responses were then averaged to create an index of past RSB ($\alpha = .60$), which was included in correlational analyses. Items for these self-report measures are included in Appendix E.

General risk-taking propensity behavioral measure. Participants completed the Balloon Analogue Risk Task (BART; Lejuez et al., 2002) as a measure of general risk-taking propensity. This was included in order to test the alternative hypothesis that stress reactivity following threats to belonging predicts risk-taking in general, rather than risk-taking specific to interpersonal needs. In this task, participants could click a virtual balloon to inflate it and earn a small monetary reward. Each pump of the balloon resulted in five cents added to temporary bank. If a balloon was pumped past its explosion point, the

computer made a “pop” sound and all of the money in the temporary bank was lost. At any point during a given trial, participants could stop inflating the balloon and collect the money from the temporary bank to add it to the permanent bank. Then, a new uninflated balloon appears on the screen to start the next trial, for a total of 30 balloon trials. The probability that a balloon explodes for the first pump is $1/128$. If it does not explode, then the explosion probability is $1/127$ for the second pump, $1/126$ for the third pump, and so on until the last pump in which the explosion probability is $1/1$. According to this algorithm, the average break point is approximately 64 pumps. Risk taking propensity was assessed by the pumps adjusted average, which represents the mean number of pumps of balloons that did not explode. This is the most commonly used dependent variable from this measure (e.g., Hunt et al., 2006; Lejuez et al., 2002; White, Lejuez, & de Wit, 2008). This task was counterbalanced with the RSB measures to eliminate potential order effects.

Study Completion

Upon completion of all tasks outlined above, participants provided their third saliva sample to assess cortisol recovery. This third sample was collected a minimum of 15 minutes after the second sample. Participants were then debriefed. Specifically, the experimenter explained that they were not actually playing against other participants in the ball-toss game, and whether or not they received the ball from the other players was determined randomly. They were also informed that they would not actually be receiving the money from the BART task. They were also given an opportunity to ask any questions or concerns they have about the study. Finally, participants were compensated for their time and participation.

CHAPTER 3 RESULTS

Preliminary Data Analysis

Power analysis. The primary hypotheses refer to the impact of social rejection (**Hypothesis 1**) moderated by violence victimization (**Hypothesis 2**) on readiness to engage in RSB (measured through both behavioral and self-report measures). Based on previous studies investigating the impact of these factors on relevant outcomes, we expect small to medium effect sizes ($0.1 < f < 0.25$; Aiken & West, 1991). Thus in analyses testing the main effects of rejection and victimization and their interaction on behavioral tendencies toward RSB using regression analysis, a sample of 100 would provide a power of approximately .80 using an alpha set at .05. In order to then have enough power to also test the hypothesized moderating and mediating processes, a target sample size of 160 women was set (**Hypotheses 3-5**). For the purposes of this dissertation, participants who completed the study as of May 5, 2017 ($N = 152$) were included in the analyses. Currently, there is salivary cortisol data for only 141 of the participants.

Data entry. Participants' survey and behavioral data were recorded in Inquisit Lab Version 4.0 and exported to an SPSS data file. Participant summary forms, which included the participant condition, experimenter information, date and time of participation, and the collection times and weights for saliva samples were manually entered by one research assistant and verified by a second research assistant. Salivary cortisol assays were analyzed with Gen5 software. Participants' data were linked by a unique ID number and were combined into one SPSS file.

Data screening. Frequencies and descriptive statistics were assessed for each variable. Data were first examined for missing values and distribution normality. If

participants were missing data for some items of a measure, then scale scores were computed based on summing or averaging participants' existing data (Tabachnick & Fidell, 2013). Because both reaction time data and salivary cortisol measurement are both extremely sensitive to outliers, any scores that exceed ± 3 SD from the mean were winsorized for RSB approach tendency ($n = 3$) and for cortisol reactivity (percent change from time 1 to time 2; $n = 1$). Scale scores were transformed if skewness was significant (Tabachnik & Fidell, 2013). Self-report scales were formed based on the specification of the original questionnaires or as reported above in the Method section, and the reliability of all scales were assessed prior to analysis. Social rejection was dummy coded such that 0 = control and 1 = rejection. Predictor variables were mean centered for analyses that included two continuous variables in an interaction.

Bivariate relationships. Prior to testing the study hypotheses, the bivariate correlations and descriptive statistics (Table 3) were evaluated. These analyses show that psychological reactivity was not associated with physiological reactivity. However, need-threat was modestly positively correlated ($r = .21, p < .05$) with physiological reactivity. Additionally, past RSB was significantly positively correlated with sexual intentions and sexual attitudes, but was not significantly correlated with RSB approach tendency. RSB approach tendency, however, was not significantly correlated with sexual intentions ($r = .12, p > .05$) or sexual attitudes ($r = .14, p > .05$).

Although there were no explicit hypotheses regarding the effect of victimization on stress reactivity, past research showing that victimization is associated with heightened stress (e.g., Bremner et al., 2003; Heim et al., 2002) suggests that they may be positively related in this study. Results show that victimization was not significantly associated with

psychological reactivity; however, it was significantly associated with physiological reactivity. A higher number of victimization acts experienced was positively correlated with percent change in cortisol from time 1 to time 2 (reactivity), and from time 1 to time 3, but not from time 2 to time 3 (recovery). Victimization was positively associated with past RSB, which is consistent with past research; however, it was not related to the dependent measures of RSB approach tendency, risky sexual intentions, or sexual attitudes.

Manipulation check and order effects. To assess the effectiveness of the social rejection manipulation, I conducted a one way analysis of variance (ANOVA) comparing participants in the experimental vs. control condition. As shown in Table 4, rejected participants reported significantly higher scores on the need-threat questionnaire, compared to participants in the control condition. Specifically, they reported significantly higher threats to belonging, self-esteem, meaningful existence, and control expectancies compared to participants in the control condition. Next, to assess the effect of counterbalancing the order of the RSB behavioral task and the BART, I conducted one way ANOVAs. Results suggest that there was no effect of order on either the RSB task, $F(1,151) = 0.09, p = .769$; or on the BART, $F(1,151) = 0.70, p = .405$

Hypothesis Testing

In line with the hypotheses outlined above, I first tested the main effect of social rejection on readiness to engage in RSB (RSB approach tendency, sexual intentions, sexual attitudes; **H1**). I then tested the extent to which social rejection interacts with interpersonal violence victimization to predict readiness to engage RSB (**H2**). Next, I tested the extent to which stress reactivity (psychological and physiological) mediates the

effect of social rejection and interpersonal violence victimization on readiness to engage in RSB (**H3**). Specifically, I first tested the interactive effect of social rejection and victimization on psychological and physiological stress respectively, and subsequently the effect of stress on readiness to engage in RSB. Next, I tested the extent to which participants' coping strategies moderated the association between stress reactivity and readiness to engage in RSB (**H5**). Lastly, I tested the alternative hypothesis that these factors predict risk-taking in general, rather than RSB specifically (**H6**).

Hypothesis 1: Main effects of social rejection. One way ANOVAs were conducted to assess the main effect of social rejection on readiness to engage in RSB. Contrary to what was hypothesized and as shown in Table 4, there were no significant differences between participants in the rejection vs. participants in the control condition on RSB approach tendency, risky sexual intentions, or sexual attitudes.

Hypothesis 2: Interaction between social rejection and victimization on RSB. It was also hypothesized that social rejection and violence victimization would interact such to predict readiness to engage in RSB. Specifically, it was expected that the relationship between rejection and readiness to engage in RSB would be stronger for women who have experienced high levels of interpersonal violence victimization during their lifetime compared to women who had experienced no or minimal violence victimization. Three hierarchical linear regression analyses were conducted using the PROCESS macros for SPSS (Hayes, 2012; 2013; Model 1) to assess the main effects of social rejection and victimization and their interactive effect on sexual attitudes, sexual intentions, and RSB approach tendency.

Sexual attitudes. The first model assessed the interaction between social rejection and violence victimization on sexual attitudes. Results indicate that there was neither a main effect of social rejection ($b = 0.03$, $SE = 0.19$, $p = .886$, 95% CI [-0.35, 0.40]), nor of victimization ($b = -0.04$, $SE = 0.08$, $p = .595$, 95% CI [-0.19, 0.11]) on sexual attitudes. Additionally, the interaction between rejection and victimization was not significant ($b = 0.01$, $SE = 0.02$, $p = .642$, 95% CI [-0.03, 0.05]).

Sexual intentions. Next, the second model assessed the interaction between social rejection and violence victimization on sexual intentions. There was no main effect of social rejection ($b = -0.03$, $SE = 0.21$, $p = .899$, 95% CI [-0.44, 0.38]), and a marginally significant main effect of victimization ($b = 0.15$, $SE = 0.08$, $p = .072$, 95% CI [-0.01, 0.31]) on sexual intentions. The interaction between rejection and victimization was also marginally significant ($b = -.04$, $SE = 0.02$, $p = .095$, 95% CI [-0.08, 0.01]). Hayes (2012) advises against drawing conclusions from significant conditional effects in the absence of a significant interaction term; however, the results suggest that the pattern of this interaction is not as hypothesized. The conditional effects suggest that the effect of violence victimization on sexual intentions is positive and significant among included participants ($b = 0.04$, $SE = 0.02$, $p = .049$, 95% CI [-0.01, 0.31]), and not significant among rejected participants ($b = -0.003$, $SE = 0.01$, $p = .839$, 95% CI [-0.03, 0.03]). In line with this pattern, victimization is not significantly correlated with sexual intentions among rejected women ($r = -0.02$, $p = .836$), but it is marginally positively correlated with physiological reactivity among women in the control condition ($r = .22$, $p = .056$).

RSB approach tendency. This model was then assessed with participants' RSB approach tendency as the dependent variable. Specifically, the difference score between

approach vs. avoidance was regressed on social rejection, victimization, and their interaction with neutral target approach tendency included as a covariate. There was no main effect of social rejection ($b = -20.66$, $SE = 21.78$, $p = .344$, 95% CI [-63.69, 22.37]), and no main effect of victimization ($b = -10.12$, $SE = 8.72$, $p = .248$, 95% CI [-27.36, 7.12]) on sexual intentions. The interaction between rejection and victimization was also nonsignificant ($b = 3.40$, $SE = 2.39$, $p = .158$, 95% CI [-1.34, 8.13]). As with the previous analysis, we cannot make conclusions from conditional effects when this interaction term is not significant; however, the pattern of these results show the opposite of what was found when sexual intentions were included as the dependent variable. Specifically, the conditional effects suggest that victimization is significantly associated with RSB approach tendency when participants were socially rejected ($b = 3.46$, $SE = 1.49$, $p = .021$, 95% CI [0.52, 6.40]), and is not significantly associated with RSB approach tendency when participants were included ($b = 0.06$, $SE = 0.06$, $p = .973$, 95% CI [-3.63, 3.75]). In line with this pattern, victimization is not significantly correlated with RSB approach tendency among included women ($r = 0.02$, $p = .894$; or $r = .10$, $p = .428$ when controlling for neutral word approach tendency), but it is marginally positively correlated with physiological reactivity among rejected women ($r = .24$, $p = .040$; or $r = .23$, $p = .052$ when controlling for neutral word approach tendency).

Hypothesis 3: Mediating effect of stress reactivity. It was hypothesized that social rejection and violence victimization would interact to predict stress reactivity, such that the relationship between rejection and reactivity would be stronger for women who had experienced high levels of interpersonal violence victimization during their lifetime compared to women who have experienced no or minimal violence victimization. First,

the direct effects of social rejection and victimization on stress reactivity were examined. As predicted, participants in the rejection condition reported significantly more psychological stress reactivity compared to participants in the control condition (as shown in Table 3). Rejected participants also exhibited greater physiological reactivity, evidenced by a greater percent change increase in cortisol concentration from time 1 (baseline) to time 2 (post rejection task). Although there was no specific hypothesis regarding physiological recovery, a slower decline in cortisol levels from reactivity to baseline levels is indicative of a higher, or more prolonged, stress response. Results shown that there was no main effect of social rejection on physiological recovery, as there were not significant differences between rejected and included participants on percent change in cortisol concentration from time 2 to time 3, or from time 1 to time 3. These results are depicted in Figure 2. Additionally, as shown in Table 3, interpersonal violence victimization was significantly positively associated with physiological stress, but was not related to psychological stress.

To assess the moderating effect of victimization on the relationship between social rejection and reactivity, two separate hierarchical linear regression analyses were conducted to assess the main effects of social rejection and victimization and their interactive effect on psychological and physiological reactivity respectively. The PROCESS macro for SPSS was used to test the proposed conditional effects (Hayes, 2012; 2013; Model 1). Significance was determined through 95% bias-corrected confidence intervals based on 1,000 bootstrapped samples. Confidence intervals that do not contain zero are statistically significant at a $p < .05$.

Psychological stress. First, this model was assessed with psychological reactivity as the dependent variable. The overall model was significant, $F(3,148) = 5.26$, $p = .002$, $R^2 = .10$. Results indicate that there was a main effect of social rejection ($b = 0.43$, $SE = 0.17$, $p = .014$, 95% CI [0.09, 0.77]), but no main effect of victimization ($b = -.02$, $SE = 0.01$, $p = .309$, 95% CI [-0.04, 0.01]) on psychological reactivity. Furthermore, there was no significant interaction between rejection and victimization ($b = 0.02$, $SE = 0.02$, $p = .257$, 95% CI [-0.02, 0.06]). Although the effect of social rejection was positive and significant across all levels of victimization, there was no significant association between victimization and psychological reactivity among either rejected or included participants. These results suggest that although social rejection enhances psychological reactivity, this relationship does not vary as a function of participants' experience of violence victimization

Physiological stress. Next, the model was assessed with physiological reactivity (percent change in cortisol ng/mL from time 1 to time 2) as the dependent variable. Again, the overall model was significant, $F(3,137) = 4.75$, $p = .004$, $R^2 = .09$. Results indicate that there was neither a main effect of social rejection ($b = 5.26$, $SE = 11.36$, $p = .644$, 95% CI [-17.21, 27.72]), nor a main effect of victimization ($b = 0.52$, $SE = 1.056$, $p = .625$, 95% CI [-1.57, 2.60]) on physiological reactivity. Additionally, the interaction between rejection and victimization was not significant ($b = 1.84$, $SE = 1.30$, $p = .158$, 95% CI [-0.72, 4.41]). Despite this, the conditional effects show that the effect of victimization on physiological reactivity is positive when participants are rejected ($b = 2.36$, $SE = 0.76$, $p = .002$, 95% CI [0.87, 3.85]), and not significant when participants are included ($b = 0.52$, $SE = 1.05$, $p = .625$, 95% CI [-1.57, 2.60]). Although we cannot draw conclusions from

conditional effects in the absence of a significant interaction term, simply looking at the pattern of results shows that the directionality of the associations between variables is in line with what was hypothesized.

Additionally, because there are several factors (i.e., sleep habits, nicotine, other drugs, large meals) that can influence salivary cortisol concentrations, this analysis was repeated statistically controlling for these factors. Again, the results indicated neither a main effect of social rejection ($b = 2.99$, $SE = 18.36$, $p = .800$, 95% CI [-20.37, 26.35]), nor of victimization ($b = 0.36$, $SE = 1.08$, $p = .740$, 95% CI [-1.78, 2.50]) on psychological reactivity. The interaction between rejection and victimization also did not reach significance ($b = 2.13$, $SE = 1.34$, $p = .114$, 95% CI [-0.52, 4.77]). The conditional effects show a similar pattern to that of the previous analysis. The effect of victimization on physiological reactivity is positive and significant among rejected participants ($b = 2.48$, $SE = 0.78$, $p = .002$, 95% CI [0.94, 4.03]), and not significant among included participants ($b = 0.36$, $SE = 1.08$, $p = .740$, 95% CI [-1.78, 2.50]). In line with this pattern, victimization is not significantly correlated with physiological reactivity among included women ($r = -.04$, $p = .612$), but it is significantly positively correlated with physiological reactivity among rejected women ($r = .29$, $p = .013$).

Effect of stress on readiness to engage in RSB. As can be seen in Table 3, none of the correlations between psychological or physiological stress and readiness to engage in RSB (approach tendency, intentions, and attitudes) were statistically significant. Therefore, the model assessing the mediating role of stress reactivity on the relationship between the rejection and victimization interaction and RSB was not assessed.

Hypothesis 4: Interactions between stress and coping on RSB.

Moderating effect of constructive coping. The seeking social support coping subscale was chosen to represent constructive coping. Several conditional effects analyses were conducted to determine the extent to which seeking social support moderates the relationship between stress reactivity (psychological and physiological separately) and readiness to engage in RSB (sexual attitudes, sexual intentions, RSB approach tendency). All analyses involving RSB approach tendency controlled for neutral target approach tendency, and all analyses involving physiological reactivity controlled for sleep and eating habits and substance use that day. Variables included in interactions were mean centered prior to analysis.

Psychological reactivity.

Intentions. There was no main effect of either psychological reactivity ($b = -0.09$, $SE = 0.10$, $p = .351$, 95% CI [-0.28, 0.10]) or social support seeking ($b = 0.15$, $SE = 0.15$, $p = .334$, 95% CI [-0.16, 0.46]) on sexual intentions. Furthermore, their interaction was not significant ($b = -0.13$, $SE = 0.17$, $p = .438$, 95% CI [-0.47, 0.20]).

Attitudes. There was no main effect of either psychological reactivity ($b = -0.02$, $SE = 0.09$, $p = .808$, 95% CI [-0.19, 0.15]) or social support seeking ($b = 0.07$, $SE = 0.14$, $p = .625$, 95% CI [-0.21, 0.35]) on sexual attitudes. Furthermore, their interaction was not significant ($b = -0.20$, $SE = 0.15$, $p = .202$, 95% CI [-0.50, 0.11]).

Behavioral tendency. There was no main effect of either psychological reactivity ($b = -4.88$, $SE = 10.17$, $p = .632$, 95% CI [-24.96, 15.21]) or social support seeking ($b = 6.92$, $SE = 16.33$, $p = .673$, 95% CI [-25.26, 39.19]) on RSB approach tendency. Furthermore,

their interaction was not significant ($b = 14.82$, $SE = 17.98$, $p = .411$, 95% CI [-20.71, 50.36]).

Physiological reactivity.

Intentions. Although there was no main effect of physiological reactivity ($b = -0.002$, $SE = 0.002$, $p = .307$, 95% CI [-0.004, 0.001]) or social support seeking ($b = -0.12$, $SE = 0.16$, $p = .462$, 95% CI [-0.19, 0.42]), they did significantly interact to predict sexual intentions ($b = 0.01$, $SE = 0.002$, $p = .013$, 95% CI [0.002, 0.01]). Specifically, there was a significant negative association between reactivity and sexual intentions when social support seeking is low (-1 SD; $b = -0.01$, $SE = 0.002$, $p = .017$, 95% CI [-0.01, -0.001]), and no significant association when social support seeking is average (mean; $b = -0.002$, $SE = 0.002$, $p = .307$, 95% CI [-0.004, 0.001]) or high (+1 SD; $b = 0.002$, $SE = 0.002$, $p = .268$, 95% CI [-0.002, 0.01]). This interaction is depicted in Figure 2.

Attitudes. There was no main effect of either physiological reactivity ($b = 0.001$, $SE = 0.001$, $p = .685$, 95% CI [-0.002, 0.003]) or social support seeking ($b = 0.05$, $SE = 0.14$, $p = .750$, 95% CI [-0.24, 0.33]) on sexual attitudes. Furthermore, their interaction was not significant ($b = 0.003$, $SE = 0.003$, $p = .325$, 95% CI [-0.003, 0.01]).

Behavioral tendency. There was no main effect of either physiological reactivity ($b = 0.10$, $SE = 0.17$, $p = .564$, 95% CI [-0.23, 0.42]) or social support seeking ($b = 3.03$, $SE = 16.71$, $p = .857$, 95% CI [-30.04, 36.09]) on RSB approach tendency. Furthermore, their interaction was not significant ($b = 0.05$, $SE = 0.29$, $p = .859$, 95% CI [-0.53, 0.63]).

Moderating effect of maladaptive coping. The escape-avoidance coping subscale was chosen to represent maladaptive coping. Several conditional effects analyses were conducted to determine the extent to which escape avoidance moderates

the relationship between stress reactivity (psychological and physiological) and readiness to engage in RSB (sexual attitudes, sexual intentions, RSB approach tendency). All analyses involving RSB approach tendency controlled for neutral target approach tendency, and all analyses involving physiological reactivity controlled for sleep and eating habits and substance use that day. Variables included in interactions were mean centered prior to analysis.

Psychological reactivity.

Intentions. There was no main effect of either psychological reactivity ($b = -0.11$, $SE = 0.10$, $p = .251$, 95% CI [-0.30, 0.08]) or escape-avoidance ($b = 0.16$, $SE = 0.14$, $p = .260$, 95% CI [-0.12, 0.45]) on sexual intentions. Furthermore, their interaction was not significant ($b = -0.06$, $SE = 0.17$, $p = .706$, 95% CI [-0.39, 0.27]).

Attitudes. There was no main effect of either psychological reactivity ($b = -0.04$, $SE = 0.09$, $p = .671$, 95% CI [-0.21, 0.14]) or escape-avoidance ($b = 0.18$, $SE = 0.13$, $p = .165$, 95% CI [-0.08, 0.44]) on sexual attitudes. Furthermore, their interaction was not significant ($b = -0.04$, $SE = 0.15$, $p = .768$, 95% CI [-0.34, 0.25]).

Behavioral tendency. There was no main effect of either psychological reactivity ($b = -3.55$, $SE = 10.13$, $p = .727$, 95% CI [-23.58, 16.48]), or of escape-avoidance ($b = -25.92$, $SE = 15.06$, $p = .0873$, 95% CI [-55.68, 3.84]) on RSB approach tendency. Furthermore, their interaction was not significant ($b = 14.99$, $SE = 17.47$, $p = .392$, 95% CI [-19.53, 49.52]).

Physiological reactivity.

Intentions. There was no main effect of either physiological reactivity ($b = -0.001$, $SE = 0.002$, $p = .420$, 95% CI [-0.004, 0.002]) or escape-avoidance ($b = 0.07$, $SE = 0.16$,

$p = .654$, 95% CI [-0.24, 0.38) on sexual intentions. Furthermore, their interaction was not significant ($b = 0.002$, $SE = 0.003$, $p = .442$, 95% CI [-0.003, 0.01]).

Attitudes. There was no main effect of either physiological reactivity ($b = 0.001$, $SE = 0.001$, $p = .703$, 95% CI [-0.002, 0.003]) or escape-avoidance ($b = 0.12$, $SE = 0.14$, $p = .398$, 95% CI [-0.16, 0.39) on sexual attitudes. Furthermore, their interaction was not significant ($b = 0.002$, $SE = 0.003$, $p = .488$, 95% CI [-0.003, 0.01]).

Behavioral tendency. There was no main effect of physiological reactivity ($b = 0.13$, $SE = 0.16$, $p = .430$, 95% CI [-0.19, 0.45]), and the effect of escape-avoidance was marginally significant ($b = -29.42$, $SE = 16.03$, $p = .069$, 95% CI [-61.14, 2.29]) on RSB approach tendency. Furthermore, their interaction was not significant ($b = 0.14$, $SE = 0.28$, $p = .617$, 95% CI [-0.42, 0.71]).

Hypothesis 5: Risk taking in general, or sexual risk taking specifically? It was hypothesized that social rejection and interpersonal violence victimization, via their influence on stress and coping, would only significantly predict RSB rather than risk-taking in general. Thus, to rule out the alternative hypothesis that these factors to indeed predict general risk-propensity, the analyses were repeated with the BART as the dependent variable. As can be seen in Table 3, BART scores were not significantly correlated with any of the other study variables, including victimization and both indicators of stress. Further, as shown in Table 4, there was no main effect of social rejection on the BART. Social rejection and violence victimization also did not interact to predict the BART: neither the main effect of rejection ($b = 0.93$, $SE = 2.13$, $p = .662$, 95% CI [-3.27, 5.13]), victimization ($b = -0.12$, $SE = 0.14$, $p = .395$, 95% CI [-0.40, 0.16]), nor their interaction ($b = 0.44$, $SE = 0.28$, $p = .124$, 95% CI [-0.12, 1.00]) was significant. Next, the interactions

between stress reactivity and coping to predict the BART were assessed. Consistent with hypotheses, none of these interactions were significant: psychological reactivity by social support seeking ($b = 1.02$, $SE = 2.12$, $p = .632$, 95% CI [-3.16, 5.20]); psychological reactivity by escape-avoidance ($b = 2.24$, $SE = 2.07$, $p = .744$, 95% CI [-1.84, 6.33]); physiological reactivity by social support seeking ($b = -0.01$, $SE = 0.03$, $p = .792$, 95% CI [-0.08, 0.06]); physiological reactivity by escape-avoidance ($b = -0.02$, $SE = 0.03$, $p = .653$, 95% CI [-0.08, 0.05]). These results suggest that stress reactivity does not have an effect on BART scores at any level of both types of coping.

CHAPTER 4 Discussion

The primary goal of this study was to investigate the role of social rejection and interpersonal violence victimization on women's readiness to engage in RSB. Extensive research suggests that these factors have an important effect on risk-taking, including engagement in RSB; however, the mechanisms by which they exert their influence are not fully understood. The theoretical premise that frames the current research suggests that rejection presents a threat to belonging, and this perceived threat is heightened for women who previously experienced violence victimization. Consequently, this threat to belonging would result in an elevated stress response, and an attempt to engage in behavior that reduces stress and simultaneously restores a sense of belonging. RSB may be a means to fulfill both of these goals, but only when individuals do not utilize alternative coping strategies (e.g., spending time with friends to reduce stress and restore social connections).

Summary of Findings

Although some of the hypotheses were supported, many were not. Focusing first on direct effects, the results showed, consistent with hypotheses, that socially rejected women experienced heightened psychological and physiological reactivity compared to included women. However, rejected women did not exhibit an increased readiness to engage in RSB. Although it was hypothesized that this effect would be moderated by violence victimization, the lack of a clear interaction makes this null finding difficult to interpret. As discussed in more detail below, there are a variety of behavioral consequences of social rejection; therefore, the main effect of rejection may generally not be interpretable without considering the broader social context. Additionally, interpersonal

violence victimization was significantly positively associated with physiological reactivity, but not baseline cortisol levels. Examining this association separately across groups shows that these factors are only significantly correlated among rejected women, which suggests that women who experienced victimization are in general more physiologically reactive to social stressors. These associations also speak to the idea that, although psychological and physiological measures of stress often overlap, they remain inherently distinct constructs. Indeed, they were not significantly correlated with each other in the current study, which is a pattern also found in some previous research (Cohen et al., 2000; Hjortskov, Garde, Ørbæk, & Hansen, 2004; Oldehinkel et al., 2011). Although attempts to understand why victimization was related to physiological but not psychological indicators of stress are speculative, it is possible that many individuals' reactivity to acute stressors is simply too nuanced to subjectively report. It's also possible that some victims feel chronically stressed, and therefore self-report their current state relative to their (elevated) personal norm. Results also demonstrated that victimization was significantly positively correlated with past RSB, which is consistent with a multitude of findings from past research. However, it was surprisingly not associated with any of the RSB dependent measures (i.e., sexual attitudes, sexual intentions, RSB approach tendency) in this study. There is a significant body of research that suggests attitudes and intentions don't reliably predict actual behavior (see Sheeran, 2002 for a review), which is what warranted the decision to include a behavioral, implicit measure of readiness to engage in RSB. However, differences in the pattern of results across these RSB dependent measures make it difficult to draw conclusions about the processes that promote risky sex.

Findings regarding the interaction between social rejection and victimization are mixed. There was no significant interaction on sexual attitudes, a marginally significant interaction predicting sexual intentions in which victimization is positively associated with intentions only among included participants, and a marginally significant interaction predicting RSB approach tendency in which victimization is positively associated with RSB approach only among rejected participants. It is likely that sexual attitudes are relatively stable, thus explaining the null effect. The results for sexual intentions is intriguing, as the general pattern was counter to what was hypothesized. Given the consistent relationship between victimization and RSB found in past research, the significant positive association between victimization and intentions among included women is unsurprising; in fact, this group serves as control group for social rejection. What is surprising is the nonsignificant association between victimization and sexual intentions for rejected women, which was expected to be stronger than that for the included women. Although the interaction was not significant, the pattern suggests the possibility that social rejection caused participants to socially withdraw, rather than reach out to reestablish social connections. Although social withdrawal can be considered a typical response to social rejection (e.g., Watson & Nerdale, 2012), the opposite pattern was found for RSB approach tendency as the dependent variable; the association between victimization and RSB approach was positive only for rejected women, consistent with what was hypothesized. Both of these interaction terms were nonsignificant, so the explanation of these patterns and conditional effects must be considered cautiously.

In order to interpret these results, it is important to understand what exactly each readiness to engage in RSB measure is assessing, and reasons for their lack of concordance. Although it was initially expected that sexual intentions would assess one's desire to engage in those behaviors, they may instead be assessing one's opportunities and expectations. Given that rejection has a negative effect on self-esteem, as evidenced by both this study and prior work, it is possible that rejected women feel less worthy or capable of sexual or romantic affection. Thus, they may report decreased likelihood of engaging in sexual risk-taking given pragmatic expectations, and consequently favor social withdrawal rather than connection. In line with this, Maner et al. (2007) suggests that the social reconnection hypothesis is more likely to be upheld when individuals believe such connection is realistic. Relatedly, past research has shown that individuals sometimes withdraw from social contact in order to avoid further rejection (Watson & Nesdale, 2012), or may even experience emotional numbness (DeWall & Baumeister, 2006). Research has also shown that individuals are less likely to act in ways that facilitate social reconnection if they have a high fear of negative evaluation (Maner et al., 2007). It's also possible that, although victimization is positively associated with past engagement in RSB, these women do not value or reflect positively on past behavior due to social norms that suggest such actions are inappropriate, and consequently report lower intentions despite their possible continuation of the behavior. This may also partly explain why there wasn't much variability across groups for risky sexual attitudes. These attitudes are also likely fairly stable; although attitudes in general are not entirely resistant to change, it is unlikely that they changed that much simply as a result of manipulating social rejection. Lastly, although previous work suggests that behavioral measures similar

to the one included in the current study predict behavior above and beyond intentions (e.g., Kopetz, Collado, & Lejuez, 2015), the RSB approach tendency index was not significantly correlated with past RSB or either of the other two RSB readiness measures. Although it may very well be a better predictor of subsequent behavior, the lack of associations with other RSB indicators diminish the strong conclusions that can be made from this pattern of results. It may also be possible to reconcile the differences in patterns found across RSB variables. Maner and colleagues (2007) describe socially rejected individuals as “vulnerable but needy”; thus, these two feelings result in opposing, simultaneous motivations to both avoid further rejection and to seek social reconnection. It’s possible that sexual intentions is better at assessing the former motivation, and the behavioral task the latter, such that these findings are less contradictory than they initially appear. Understanding subtle differences between these indicators of RSB is important; future research that includes a longitudinal follow up to assess the actual predictive validity of these measures would be valuable.

Additionally, social rejection and victimization interacted (marginally) to predict physiological, but not psychological reactivity. Because victimization only had a direct effect on physiological, and not psychological reactivity, this is not entirely unexpected. Although it is common for these two indicators of stress to diverge (Cohen et al., 2000; Hjortskov, Garde, Ørbæk, & Hansen, 2004; Oldehinkel et al., 2011), it is not clear why physiological reactivity seems to be more important in this study. It could be partly a measurement issue. Although the goal of the PASA was to assess the appraisal of stress, it may not have captured the specific subjective experiences that lead to risk behavior. It’s also possible that individuals may not be fully aware of their body’s reaction to social

stressors, to the extent that they do not self-report feeling stressed. Given the weak associations between both indicators of stress and the measures of RSB, it is not clear from this study whether psychological or physiological reactivity is more predictive of subsequent behavior, or even the extent to which stress matters for engagement in RSB. Focusing more on the degree to which stress associated with social rejection represents perceived threat specific to the need to belong vs. generalized psychological/physiological arousal is an important next step to disentangle these associations.

I also evaluated the hypothesis that coping would moderate the relationship between stress and readiness to engage in RSB. To represent coping, social support seeking and escape-avoidance were evaluated. With two indicators of stress, two coping subscales, and three RSB outcomes, a total of 12 models were evaluated. However, only one of these models was significant: the moderating effect of social support seeking on the association between physiological reactivity and sexual intentions. There was a significant negative association between stress reactivity and sexual intentions when social support seeking is low, but no association at average or high levels. However, social support seeking as a means of coping could represent either of two things: 1) a strong *desire* to feel connected when stressed, or 2) *actual* social support resources that are utilized when stressed. Given that desire for social connections and actual social connections are not interchangeable and may reflect related but different processes, the interpretation of this result is somewhat unclear. It may be that when social support is perceived to be less essential, stress is less likely to lead to RSB, and other non-social behaviors may instead be viewed as more important. Alternatively, given that intentions

require conscious thinking, social rejection might have prompted participants to think more critically about their intentions and to consider what is socially appropriate. RSB may not be perceived as socially acceptable, and therefore rejected participants may be more reluctant to express conscious intentions to engage in RSB. If one has support, there may not be much deliberation about sex. If one doesn't have much social support and has just been rejected, he/she would be more likely to explicitly reject socially undesirable behaviors. Because this pattern did not hold for psychological reactivity or the other indicators of RSB readiness, this particular effect of social support seeking needs to be considered with caution. Unfortunately, the low internal consistency of many of the coping subscales made it impossible to test their moderating influence. Additionally, most of the coping subscales and items were positively correlated with each other, indicating that participants often engaged in a multitude of strategies to handle stress. Thus, higher scores may represent a general tendency to "try anything" to cope, rather than a reliance on a particular strategy.

Lastly, the hypothesis that social rejection, victimization, and underlying stress and coping processes would predict readiness to engage in RSB but not other risk behaviors was evaluated. Consistent with this hypothesis, there were no effects found for risk taking propensity as assessed with the BART. However, given that the effects for the RSB measures were weak, it's unclear what comparisons can be made between sexual risk taking in particular, and risk taking propensity in general.

Strengths and Limitations

One of the primary strengths of this study is the utilization of an experimental design that allows for causal conclusions to be made about the effects of social rejection.

Furthermore, this study drew upon a novel theoretical framework in which interpersonal violence victimization was examined as an individual vulnerability for readiness to engage in RSB. Specifically, this framework emphasized the investigation of multiple social factors that may interact to predict sexual behavior, rather than focusing solely on health knowledge and attitudes. Additionally, the inclusion of both psychological and physiological indicators of stress reactivity allows for a more complex understanding of the mechanisms that predict risky health behavior and expands knowledge of victims' responses to acute social stressors, for which previous findings have been mixed. The sample of this study was also a strength, as there was a lot of diversity in terms of ethnicity, socioeconomic status, and past sexual behavior.

As discussed previously, one of the main limitations of this study is that the measures of readiness to engage in RSB may not be representative of ensuing behavior. Although these measures have demonstrated strong validity in past research, the artificial setting of the lab may make it difficult for women to have a strong desire to engage in sexual activity in the moment, particularly with a new partner. Especially given that the independent variables influenced these RSB readiness outcomes in different ways, there are likely measurement nuances that don't translate well to women's actual RSB. When women make risky sexual decisions, it is unlikely that they have strong, explicit intentions to engage in such behavior, but are still subconsciously driven by threats to belonging.

Related to this point, social rejection, violence victimization, and their effects are likely to motivate sexual behavior in general, rather than just RSB specifically. Many women are likely to have means to obtaining sex without facing much risk. Because of this, only single women who had engaged in sexual intercourse with a man in the past

year were recruited for the current study, as such women are less likely to have a regular sexual partner or specific sexual restrictions such as avoiding premarital sex. Thus, for single women, any sexual behavior may constitute some risk (albeit minimal) without the pretext of sexual monogamy. Despite this, the theoretical perspective that guides this research argues that RSB doesn't just represent a means to sexual activity in general, but more broadly represents a desire to engage in sexual behavior at the expense of other goals (e.g., health). In other words, it was hypothesized that social rejection, particularly among victims, would motivate a desire for social reconnection strong enough that women would be willing to resort to risky behaviors if no other means for fulfilling this goal were available. However, because many women *do* have alternative means to restore social connection, it is important to evaluate these hypotheses in samples in which 1) women don't have alternative means to social reconnection, or 2) RSB is considered normative rather than risky.

Additionally, the social rejection task may elicit a stress response and feelings of rejection; however, this is likely to differ from the type of social rejection experienced from friends, acquaintances, and potential romantic partners that may more strongly direct subsequent behavior. In fact, research has shown that consequences of rejection are intensified when one is close to his or her rejecter (Blackhart, Nelson, Knowles, & Baumeister, 2009; Tesser, Millar, & Moore, 1988). Although Cyberball may elicit stress reactivity, it may not be the case that it evoked a strong motive in the current study to restore belongingness, and the lack of perceived real world consequences may have dampened the effects on participants' behavior. A meta-analysis on social exclusion concluded that different methods to induce social rejection in a laboratory setting results

in profound differences in affect and self-esteem (Blackhart, Nelson, Knowles, & Baumeister, 2009). Relatedly, this paper conceptualized social rejection and social exclusion as interchangeable constructs; however, there are subtle differences between the two that may affect behavior slightly differently. Indeed, Molden and colleagues (2009) demonstrated that motivational consequences are dependent upon this distinction; being explicitly and actively rejected is often associated with social withdrawal, whereas being ignored or passively rejected (e.g., Cyberball) is more strongly associated with reengagement in social contact. However, under the assumption that acute social stressors do in fact trigger associations with past victimization experiences as suggested by the theory framing the current research, it is likely that a wide range of experiences are evoked, resulting in a comparably diffuse range of motivational consequences and behavior. Future research that assesses more nuanced and momentary motivations is necessary.

Future Research Directions

Although this study evaluated the hypotheses in a general and representative sample, it is important to also understand these processes in samples that are at heightened risk for STIs/HIV. For example, testing these hypotheses in a sample of women who engage in regular substance use represents an opportunity to understand the effects of interpersonal threats on engagement in RSB in a population in which RSB is considered a normative behavior, and perceived to be particularly instrumental to social connection. Similarly, it could be useful to identify women who have few personal social connections or access to community resources (e.g., church, therapy groups). These

women may be more likely to engage in RSB if they have fewer alternatives for social connection.

Future studies could directly assess in the moment interpersonal goals and perceived means to attain these goals following social rejection, in addition to just the behavioral outcome. It is important to understand the extent to which women are consciously motivated to reduce stress or connect with others when confronted with threats to these needs, versus the extent to which these motivations are unconscious. Similarly, this raises the problem of how to most effectively measure readiness to engage in RSB in both experimental and longitudinal research. It is also important to then assess the extent to which different behaviors, including RSB, are perceived to be instrumental to social reconnection, as well as moderating factors that lead individuals to believe RSB is the most instrumental strategy. Increasing the accessibility of alternative means to such goals is consequently likely to reduce intentions to engage in RSB.

To overcome the issues associated with the ecological validity of laboratory studies, the implementation of longitudinal designs such as ecological momentary assessment and daily diaries could facilitate the understanding of threats to belonging, subjective evaluations of stress, and intentions to engage in RSB in women's daily lives. For instance, a woman may be socializing with her friends at a bar and feel left out of the group's conversation. These feelings of exclusion may heighten feelings of stress and a strong need to feel reconnected, and consequently seek out a sexual partner at the bar. Further, rejection may occur in contexts in which sexual behavior is not appropriate or normative (e.g., at work). As such, RSB may not be a viable immediate option; however, the desire for connection obtained through sex may still be present, and it's possible that

the culmination of multiple acts of rejection lead to a pattern of RSB rather than a single act resulting instantaneously in RSB. Again, these intentions may not be consciously deliberate, but the impetus is still present. Evaluating momentary affective states and cognitions may prove to be useful. These situations in which risky sexual decision-making are likely to occur are extremely difficult to examine in laboratory settings, but could potentially be addressed in studies utilizing virtual reality, or studies in which confederates are participants' target for reconnection. These types of studies, along with the research described above utilizing experience sampling methods, would complement and extend the findings from the current study.

Implications

Results from this study may provide some preliminary insight into the important processes that can inform STI/HIV prevention programs. Interventions that serve to reduce HIV-risk behavior, particularly RSB, would be better served by acknowledging and targeting the specific social factors known to impact this behavior and the mechanisms through which they exert their influence. These results suggest that various forms of threats to interpersonal belonging (i.e., victimization and social rejection) increase (physiological) stress levels, and potentially have implications for social reconnection. Although the evidence from this particular study remains unclear, it is still possible that RSB may be perceived as a means to reduce stress and restore feelings of social connection. If this is the case, then interventions that support alternative means for these goals, such as group therapy, group fitness classes, or involvement in a church or community, may decrease the motivation to engage in RSB. Assessing stress and coping as mechanisms underlying the relationship between social rejection and readiness to

engage in RSB is particularly important as these specific factors may be amenable to interventions (Försterling, 1985; Walton & Cohen, 2007).

This type of research may also have important implications for victims of interpersonal violence. Extensive research has shown that there are devastating physical, psychological, and social consequences for individuals who experience violence victimization. Although many researchers have suggested and provided evidence for strategies that lessen these effects, targeting social factors such as those described in this study could effectively complement other strategies to improve victims' overall well-being. By conducting further research that aims to better understand the processes that lead to risk behavior among victims, researchers and clinicians can target these mechanisms such that certain detrimental health behaviors and outcomes are not viewed as inevitable for victims.

Conclusion

Despite the limited definitive takeaways from these results, this study raises several new important questions that should be addressed in future research. Specifically, it suggests a need to understand how readiness to engage in RSB can best be assessed in a laboratory setting, and how these measures actually predict subsequent behavior. Based on the conflicting pattern of results, this study also emphasizes the importance of conducting research that aims to understand factors that promote victims' motives for social reconnection vs. social withdrawal following rejection. In summary, understanding the processes that increase propensity to engage in RSB is a critical public health concern. Programs of research that emphasize social and contextual factors for engagement in health behaviors, including RSB, are essential.

Table 1. Demographic Information

	Rejection Condition (<i>n</i> = 76)	Control Condition (<i>n</i> = 76)	Total (<i>N</i> = 152)
Ethnicity			
Caucasian/White	42.1% (32)	34.2% (26)	38.2% (58)
African American/Black	21.1% (16)	36.8% (28)	28.9% (44)
Arabic or Middle Eastern	10.5% (8)	9.2% (7)	9.9% (15)
Asian, East Asian, Pacific Islander	7.9% (6)	10.5% (8)	9.2% (14)
Hispanic	5.3% (4)	3.9% (3)	4.6% (7)
Multiracial	11.8% (9)	2.6% (2)	7.2% (11)
Other or Not Reported	1.3% (1)	2.6% (2)	2.0% (3)
Highest Educational Attainment			
Did not complete high school	1.3% (1)	0.0% (0)	0.7% (1)
High school graduate or GED	64.5% (49)	68.4% (52)	66.4% (101)
Vocational/technical/associate's degree	7.9% (6)	15.8% (12)	11.8% (18)
Bachelor's degree	22.4% (17)	13.2% (10)	17.8% (27)
Master's degree	3.9% (3)	1.3% (1)	2.6% (4)
Professional or doctorate degree	0.0% (0)	1.3% (1)	0.7% (1)

Table 2. Summary of study procedures

Prior to lab session:
1. Community and student recruitment
2. Phone/email eligibility screening
Lab session:
1. Informed consent
2. Saliva sample (Time 1)
3. Background information
<i>Demographics</i>
<i>Daily habits</i>
<i>Coping strategies</i>
4. Assessment of victimization
5. Random assignment to Cyberball condition:
<i>Condition 1: Inclusion</i>
<i>Condition 2: Rejection</i>
6. Assessment of readiness to engage in RSB
<i>Behavioral approach/avoidance task</i>
<i>Sexual attitudes/intentions self-report</i>
7. Saliva sample (Time 2)
8. Other measures
<i>Past RSB</i>
<i>Additional measures not included in dissertation hypotheses</i>
9. Saliva sample (Time 3)
10. Debriefing and compensation

Table 3. Descriptive statistics and bivariate correlations (N = 152)

	M (SD)	Range	1	2	3	4	5	6	7	8	9	10	11	12	13
Victimization															
1. Number of IPV Acts	5.33 (7.74)	0-30	-												
Manipulation Check															
2. Need Threat	4.27 (1.46)	1-7	.05	-											
Stress Reactivity															
3. Psychological Stress	1.96 (0.90)	1-5	.02	.44**											
4. Baseline Cortisol ng/ml	1.98 (1.51)	.14-11.01	-.11	-.18*	-.06	-									
5. Cort. % Change: T1-T2	7.52 (56.98)	-70.57-280.65	.26**	.21*	-.06	-.31**	-								
6. Cort. % Change: T2-T3	-2.75 (33.87)	-74.60-160.8	-.09	.07	.10	-.21*	-.13	-							
Coping															
7. Seek Social Support	2.62 (0.56)	1-4	.17*	-.12	-.12	.08	.10	-.07	-						
8. Escape-Avoidance.	2.43 (0.60)	1-4	.07	.25**	.16*	.13	.12	-.10	.12	-					
Risk Behavior															
9. Approach Tendency	52.91 (110.27)	-253-418	.15	-.01	-.04	.11	.05	.21*	.03	-.15	-				
10. RSB Intentions	2.28 (1.05)	0-5	.07	-.15	-.08	-.02	-.04	.04	.09	.08	.12	-			
11. RSB Attitudes	2.81 (0.95)	0-5	-.04	-.06	-.02	.04	.06	.07	.05	.11	.14	.46**	-		
12. Past RSB	1.97 (0.71)	0-5	.18*	-.07	.02	.12	.04	.12	.00	.12	.09	.43**	.36**	-	
13. BART	23.35 (12.99)	70-66.07	-.04	-.01	-.04	-.15	-.06	.03	.01	-.09	.07	.06	.06	-.06	-

Note. * $p < .05$, ** $p < .01$

Table 4. Effects of Social Rejection

	Rejection (<i>n</i> = 76)	Control (<i>n</i> = 76)	<i>F</i>	<i>p</i>	η^2
Manipulation Check					
Need Threat – Total	5.41 (0.76)	3.13 (1.03)	240.31	<.001**	.62
NT: Belongingness	6.13 (0.84)	3.27 (1.55)	201.28	<.001**	.57
NT: Self Esteem	3.42 (1.52)	2.10 (0.95)	41.63	<.001**	.22
NT: Control	6.21 (0.80)	3.79 (1.48)	156.40	<.001**	.51
NT: Meaning. Exist.	5.88 (1.16)	3.38 (1.42)	140.95	<.001**	.48
Risk Behavior					
RSB Approach Tendency	54.04 (119.69)	51.79 (100.76)	0.02	.900	.00
Sexual Intentions	2.18 (1.02)	2.38 (1.05)	1.34	.248	.01
Sexual Attitudes	2.85 (0.92)	2.78 (0.99)	0.18	.669	.00
BART	23.70 (12.99)	23.00 (13.00)	0.11	.743	.00
Stress Reactivity					
Psychological Stress	2.23 (0.97)	1.70 (0.75)	14.51	<.001**	.09
Cortisol % Change: T1 to T2	16.98 (70.04)	-2.08 (37.75)	4.03	.047*	.03
Cortisol % Change: T2 to T3	-1.89 (39.32)	-3.61 (27.52)	0.09	.765	.00
Cortisol % Change: T1 to T3	7.01 (59.30)	-3.51 (53.80)	1.22	.272	.01

Note. **p* < .05, ** *p* < .01

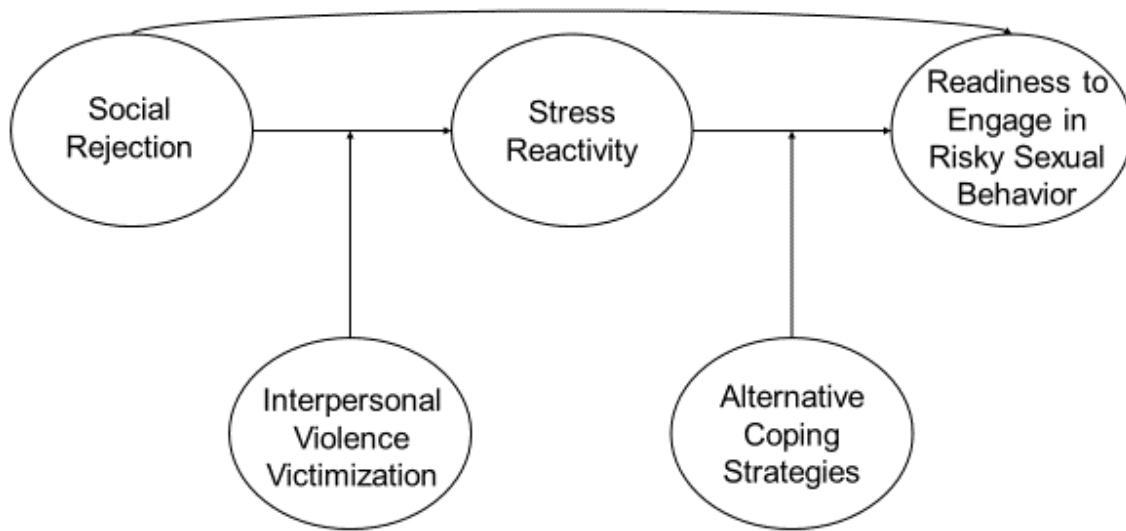


Figure 1. Theoretical model of readiness to engage in risky sexual behavior

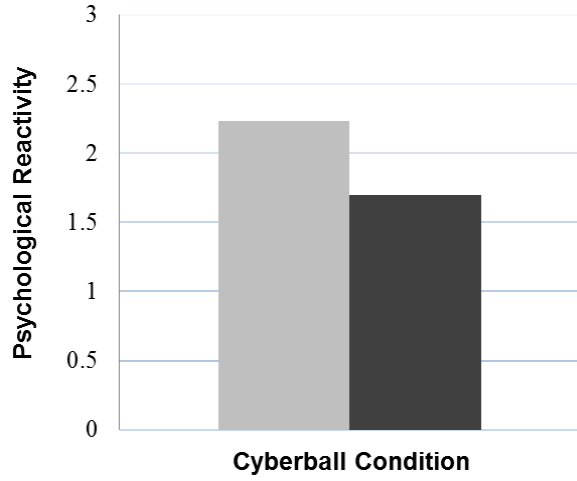
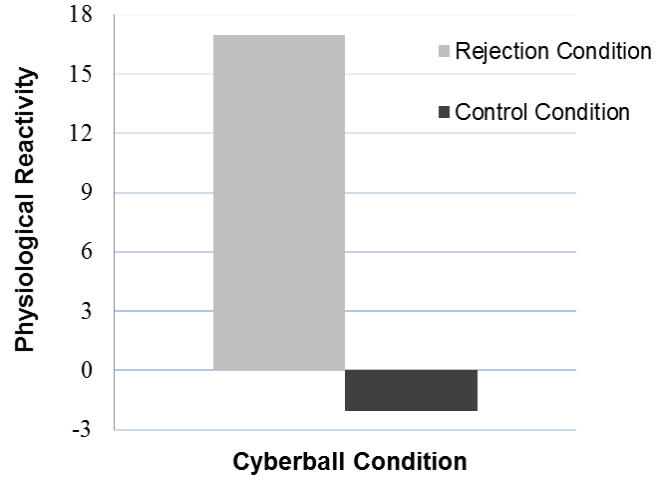
A.**B.**

Figure 2. The main effect of social rejection on psychological and physiological stress reactivity

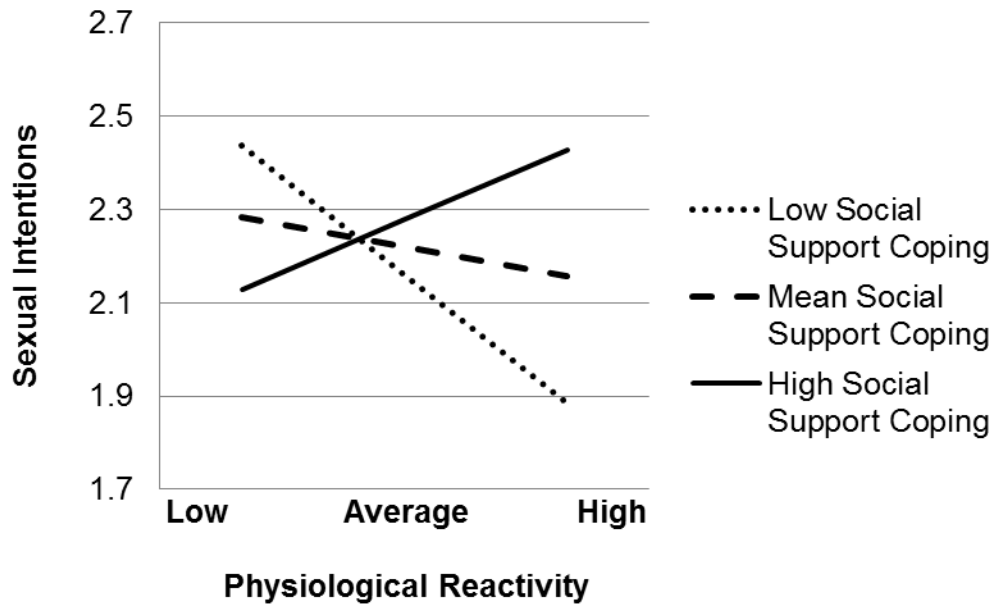


Figure 3. The effect of stress reactivity on readiness to engage in RSB at different levels of coping

APPENDIX A

BACKGROUND INFORMATION

First, we would like to ask a few general background questions. This is important because we would like to be sure that the study includes a wide range of people from different backgrounds and with different types of experiences. You will be able to skip any question in this survey that you do not feel comfortable answering.

1. How old did you turn on your last birthday? _____

2. What is your ethnicity?

African American / Black

Arabic or Middle Easterner

Asian, East Asian, or Pacific Islander

Caucasian / White

Hispanic

Native American / American Indian

Multiracial

Other _____

3. What is your current relationship status? (pick one only)

Not dating or seeing any one person exclusively

In an exclusive dating relationship

Living with a romantic partner

Married

Separated

Divorced

Widowed

How long have you been _____? (*current relationship status filled in*)

less than one month (1)

One to 6 months (2)

7 months to 1 year (3)

1 to 2 years (4)

2 to 5 years (5)

More than 5 years (6)

4. Which of the following best describes your sexual experiences?

Exclusively heterosexual

Mostly heterosexual with some homosexual experience

Equally heterosexual and homosexual experience

Mostly homosexual with some heterosexual experience

Exclusively homosexual

5. Do you identify as transgendered?

Yes

No

6. How many years have you lived in the United States or Canada?

All my life

More than 10 years, but not all my life

5 – 10 years

1 – 4 years

Less than one year

I do not live in the US or Canada

7. What is your highest level of education?

1. Did not complete high school

2. High school graduate (or GED)

3. Vocational / technical degree or associate's degree

4. Bachelor's degree

5. Master's degree

6. Professional degree (M.D., D.D.S., J.D., etc.) or doctoral degree (Ph.D.)

7. Other (Please describe) _____

7b. Are you attending college now?

Yes

No

8. What is your occupation? _____

9. Are you currently employed?

Yes, full time

Yes, part time

No

10. What is your annual household income?

1. Less than \$10,000

2. \$10,000-\$19,999

3. \$20,000-\$29,999

4. \$30,000-\$39,999

5. \$40,000-\$49,999

6. \$50,000-\$59,999

7. \$60,000-\$69,999

8. \$70,000-\$79,999

9. \$80,000-\$89,999

10. \$90,999-\$99,999

11. More than \$100,000

11. Think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are the best off, those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off, those who

have me least money, least education, and worst jobs or no job." Considering your current social status, please place an X on the rung that best represents where you think you stand on the ladder.

12. How strong are your religious beliefs?

5	4	3	2	1
Very strong	Fairly strong	Moderate	Fairly weak	Very weak

13. How much did you sleep last night?

0-1 hours
2-3 hours
4-5 hours
6-7 hours
8-9 hours
10+ hours

14. What time did you wake up today?

_____ am/pm

15. Have you eaten anything yet today?

No
Yes – specify _____

16. Have you had any caffeine today (caffeinated soda/pop, coffee, energy drink)?

No
Yes – specify quantity _____

17. Have you had any nicotine/smoked cigarettes today?

No
Yes – specify quantity _____

Dating experiences

These next questions concern your dating behavior and sexual experiences. A "date" is defined as a social activity with a man or woman for whom you have sexual or romantic feelings. He/she might be someone you are just getting to know or someone you've been seeing a while or someone with whom you are in a serious relationship. Examples would include going to a movie, out to dinner, watching a football game, going to a party, or getting together with friends. Some of these questions may mean that you have to think back several years. It is okay to give your best estimate to those questions.

1. How old were you when you first began dating? ___ years old
2. Since you first started dating, about how many different people have you dated?

___ # of men (*It is okay to estimate*)
 ___ # of women

3. How many different people have you dated during the past year? (*It is okay to estimate*)

___ # of men
 ___ # of women

4. How often do you drink alcohol when you are on a date?

- | | |
|------------------------------------|-------------------------------|
| 1. Nearly every time or every time | 4. Less than half of the time |
| 2. More than half of the time | 5. Once in a while |
| 3. About half of the time | 6. Never |

7. On those occasions when you have been drinking, what is the typical number of alcoholic drinks that you consume when you are on a date?

- | | |
|-------------------|---------------------|
| 1. One or two | 5. Nine or ten |
| 2. Three or four | 6. Eleven or twelve |
| 3. Five or six | 7. Thirteen or more |
| 4. Seven or eight | |

APPENDIX B

VICTIMIZATION EXPERIENCES

Please answer the next questions about any boyfriend, girlfriend, husband, or wife you have had, including exes.

1. Not including horseplay or joking around, a partner threatened to hurt me and I thought I might really get hurt.

Yes

No

a. How many times did this occur?

Only one time ever

Twice

3 times

4 times

5 or more times

2. Not including horseplay or joking around, a partner pushed, grabbed, or shook me.

Yes

No

a. How many times did this occur?

Only one time ever

Twice

3 times

4 times

5 or more times

3. Not including horseplay or joking around, a partner hit me.

Yes

No

a. How many times did this occur?

Only one time ever

Twice

3 times

4 times

5 or more times

4. Not including horseplay or joking around, a partner beat me up.

Yes

No

a. How many times did this occur?

Only one time ever

Twice

3 times

4 times

5 or more times

5. Not including horseplay or joking around, a partner made me do sexual things when I didn't want to.

Yes

No

a. How many times did this occur?

Only one time ever

Twice

3 times

4 times

5 or more times

6. Not including horseplay or joking around, a partner yelled at me or verbally threatened me to the point that I was afraid.

Yes

No

a. How many times did this occur?

Only one time ever

Twice

3 times

4 times

5 or more times

APPENDIX C

NEED THREAT QUESTIONNAIRE

The following questions refer to the ball-toss game that you just played with others. Please respond to how you felt about this experience on a response scale range from 1 (do not agree) to 7 (agree).

(1) do not agree – (7) agree

1. I felt as one with the other players.
2. I had the feeling that I belonged to the group during the game.
3. I did not feel accepted by the other players.
4. During the game I felt connected with one or more of the other players.
5. I felt like an outsider during the game.
6. Playing the game made me feel insecure.
7. I had the feeling that I failed during the game.
8. I had the idea that I had the same value as the other players.
9. I was concerned about what the other players thought about me during the game.
10. I had the feeling that the other players did not like me.
11. I had the feeling that I could throw as often as I wanted to the other players.
12. I felt in control over the game.
13. I had the idea that I affected the course of the game.
14. I had the feeling that I could influence the direction of the game.
15. I had the feeling that the other players decided everything.
16. During the game it felt as if my presence was not meaningful.
17. I think it was useless that I participated in the game.
18. I had the feeling that my presence during the game was important.
19. I think that my participation in the game was useful.
20. I believed that my contribution to the game did not matter.

21. If you weren't in this study right now and could be doing whatever you want with whoever you want, what would it be?

APPENDIX D

STRESS AND COPING

The following questions refer to the ball-toss game that you just played with others. Please respond to how you felt about this experience on a response scale range from 1 (strongly disagree) to 6 (strongly agree).

(1) strongly disagree – (6) strongly agree

1. I did not feel threatened by the situation
2. The situation was important to me.
3. In this situation I knew what I could do.
4. It mainly depended on me whether the other players threw the ball to me.
5. I found this situation very unpleasant.
6. I did not care about this situation.
7. I have no idea what I should do now.
8. I can best protect myself against failure in this ball-toss game through my behavior.
9. I do not feel worried because the situation did not represent any threat for me.
10. The situation was not a challenge for me.
11. In this situation I could think of lots of action alternatives.
12. I was able to determine a great deal of what happens in this game myself.
13. This situation scared me.
14. This task challenged me.
15. I could think of lots of solutions for solving this task.
16. If the other players judged me positively it would be a consequence of my effort and personal commitment.
17. The past situation was stressful for me.
18. I found the past situation to be a challenge.
19. I knew what I had to do to influence the past situation.
20. I was able to do something to influence the course of the previous situation.

Please think about how you tend to deal with stress. Please read each item below and indicate, by using the following rating scale, to what extent you have used each particular strategy in general in times of stress.

Not Used (0) – Used Somewhat (1) – Used Quite a Bit (2) – Used a Great Deal (3)

- _____ 1. Just concentrated on what I had to do next – the next step.
- _____ 2. I tried to analyze the problem in order to understand it better.
- _____ 3. Turned to work or substitute activity to take my mind off things.
- _____ 4. I felt that time would make a difference – the only thing to do was to wait.
- _____ 5. Bargained or compromised to get something positive from the situation.
- _____ 6. I did something which I didn't think would work, but at least I was doing something.
- _____ 7. Tried to get the person responsible to change his or her mind.
- _____ 8. Talked to someone to find out more about the situation.
- _____ 9. Criticized or lectured myself.
- _____ 10. Tried not to burn my bridges, but leave things open somewhat.
- _____ 11. Hoped a miracle would happen.
- _____ 12. Went along with fate; sometimes I just have bad luck.
- _____ 13. Went on as if nothing had happened.
- _____ 14. I tried to keep my feelings to myself.
- _____ 15. Looked for the silver lining, so to speak; tried to look on the bright side of things.
- _____ 16. Slept more than usual.
- _____ 17. I expressed anger to the person(s) who caused the problem.
- _____ 18. Accepted sympathy and understanding from someone.
- _____ 19. I told myself things that helped me to feel better.
- _____ 20. I was inspired to do something creative.
- _____ 21. Tried to forget the whole thing.
- _____ 22. I got professional help.
- _____ 23. Changed or grew as a person in a good way.
- _____ 24. I waited to see what would happen before doing anything.
- _____ 25. I apologized or did something to make up.
- _____ 26. I made a plan of action and followed it.
- _____ 27. I accepted the next best thing to what I wanted.
- _____ 28. I let my feelings out somehow.
- _____ 29. Realized I brought the problem on myself.
- _____ 30. I came out of the experience better than when I went in.
- _____ 31. Talked to someone who could do something concrete about the problem.
- _____ 32. Got away from it for a while; tried to rest or take a vacation.
- _____ 33. Tried to make myself feel better by eating, drinking, smoking, using drugs or medication, etc.
- _____ 34. Took a big chance or did something very risky.
- _____ 35. I tried not to act too hastily or follow my first hunch.
- _____ 36. Found new faith.
- _____ 37. Maintained my pride and kept a stiff upper lip.

- _____ 38. Rediscovered what is important in life.
- _____ 39. Changed something so things would turn out all right.
- _____ 40. Avoided being with people in general.
- _____ 41. Didn't let it get to me; refused to think too much about it.
- _____ 42. I asked a relative or friend I respected for advice.
- _____ 43. Kept others from knowing how bad things were.
- _____ 44. Made light of the situation; refused to get too serious about it.
- _____ 45. Talked to someone about how I was feeling.
- _____ 46. Stood my ground and fought for what I wanted.
- _____ 47. Took it out on other people.
- _____ 48. Drew on my past experiences; I was in a similar situation before.
- _____ 49. I knew what had to be done, so I doubled my efforts to make things work.
- _____ 50. Refused to believe that it had happened.
- _____ 51. I made a promise to myself that things would be different next time.
- _____ 52. Came up with a couple of different solutions to the problem.
- _____ 53. Accepted it, since nothing could be done.
- _____ 54. I tried to keep my feelings from interfering with other things too much.
- _____ 55. Wished that I could change what had happened or how I felt.
- _____ 56. I changed something about myself.
- _____ 57. I daydreamed or imagined a better time or place than the one I was in.
- _____ 58. Wished that the situation would go away or somehow be over with.
- _____ 59. Had fantasies or wishes about how things might turn out.
- _____ 60. I prayed.
- _____ 61. I prepared myself for the worst.
- _____ 62. I went over in my mind what I would say or do.
- _____ 63. I thought about how a person I admire would handle this situation and used that as a model.
- _____ 64. I tried to see things from the other person's point of view.
- _____ 65. I reminded myself how much worse things could be.
- _____ 66. I jogged or exercised.

APPENDIX E

SEXUAL ATTITUDES AND BEHAVIOR

Listed below are several statements that reflect different attitudes about sex. For each statement select the response that indicates how much you agree or disagree with that statement.

(1) strongly agree with statement – (2) moderately agree with the statement – (3) neutral: neither agree nor disagree – (4) moderately disagree with the statement – (5) strongly disagree with the statement

1. I do not need to be committed to a person to have sex with him/her.
2. Casual sex is acceptable.
3. I would like to have sex with many partners.
4. One-night stands are sometimes very enjoyable.
5. It is okay to have ongoing sexual relationships with more than one person at a time.
6. Sex as a simple exchange of favors is okay if both people agree to it.
7. The best sex is with no strings attached.
8. Life would have fewer problems if people could have sex more freely.
9. It is possible to enjoy sex with a person and not like that person very much.
10. It is okay for sex to be just good physical release.

11. In the next week, how likely are you to.....

a. Have sex?

Very unlikely

Somewhat unlikely

Neutral

Somewhat likely

Very likely

(repeat above response options for b-k)

b. Have sex with someone you are not in a committed relationship with?

c. Have sex with a man without a condom?

d. take a nap

e. go see a movie with a good friend

f. go to a bar and have a drink

g. call a sex partner and see if they can meet up

h. go to a bar and pick someone up

i. go to a restaurant and order my favorite food

j. call a friend and talk to them about what happened

k. go for a run (or to the gym or whatever you like to do for a workout)

1) How many sexual partners have you had in the past year?

0) None

1) One

2) Two

- 3) 3-5 people
 4) 6-10 people
 5) More than ten
- 2) How many casual sexual partners have you had in the past year?
- 0) None
 1) One
 2) Two
 3) 3-5 people
 4) 6-10 people
 5) More than ten
- 3) How often do you use a condom when engaging in sexual intercourse...
- a. With a regular partner in the past year?
- 0) No regular partner
 1) Every time
 2) Often
 3) Sometimes
 4) Rarely
 5) Never
- b. With a casual partner in the past year?
- 0) No casual partner
 1) Every time
 2) Often
 3) Sometimes
 4) Rarely
 5) Never
- 4) How often have you consumed drugs or alcohol before engaging in sexual intercourse in the past year?
- 0) Do not ever consume drugs or alcohol
 1) Every time
 2) Often
 3) Sometimes
 4) Rarely
 5) Never
- 5) Which of the following topics did you discuss with your most recent sexual partner prior to having sex? Check all that apply. (Note: coded as a count of items checked 0-5)
- Pregnancy
 STI risks
 Partner's sexual experiences
 IV drug use history
 Use of condoms or birth control
6. How many times did you have anal sex in the past year?
- Zero times..... 0
 One time..... 1
 Two times..... 2
 3-5 times..... 3
 6-10 times..... 4
 More than 10 times..... 5

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ABSTRACT**WOMEN'S READINESS TO ENGAGE IN RISKY SEXUAL BEHAVIOR: THE EFFECTS OF INTERPERSONAL VIOLENCE VICTIMIZATION AND SOCIAL REJECTION**

by

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The current study explores the role of psychosocial factors in women's likelihood to engage in risky sexual behavior (RSB). Social rejection is particularly relevant as it is linked to a wide range of negative outcomes including engagement in self-reported RSB; however, its causal role has been rarely studied in a systematic manner. Furthermore, interpersonal violence victimization has been associated with RSB, but the processes underlying this relationship are largely unknown. This study aimed to: 1) test the impact of social rejection on women's tendency to engage in RSB; 2) understand victimization as an individual vulnerability for engaging in RSB; and 3) explore the mechanisms underlying this relationship. Women ($N = 152$) completed a laboratory study including a social rejection manipulation, self-report measures of victimization, subjective and physiological measures of stress, and self-report and behavioral measures of risk-taking. Results suggest that social rejection and victimization predict physiological stress reactivity, and that social rejection also predicts psychological stress. However, these factors and their interactions did not have a significant effect on readiness to engage in

RSB. Despite some inconclusive results, this research raises several new questions to be addressed in future research and emphasizes importance of assessing social factors that contribute to RSB.

AUTBIOGRAPHICAL STATEMENT

Jackie Woerner majored in social psychology with a minor in quantitative methods as a doctoral student at Wayne State University under the direction of Dr. Antonia Abbey and Dr. Catalina Kopetz. She previously graduated summa cum laude with a Bachelor of Science in Psychology and Bachelor of Arts in Global Studies from Appalachian State University in 2012. The overarching goal of her research is to understand why people engage in behaviors that are detrimental to themselves or to others, such as risk-taking and aggression. She is specifically interested in the social and environmental factors (e.g., psychosocial adversity) that increase likelihood of engagement in risk behaviors, including substance use and risky sex. She is also interested in the health outcomes of victims of interpersonal violence, and the etiology of violence perpetration. She will continue to expand this program of research as a NIDA postdoctoral trainee at the Yale University School of Medicine.