

**Behavioral Responses and Risk Detection in Sexual Encounters: A Study on  
the Effects of Social Anxiety and a Brief Intervention**

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## **Abstract**

Sexual victimization among college women is a common problem. This two-part study sought to examine social interaction anxiety as a risk factor of sexual victimization and to examine the feasibility, acceptability, and preliminary efficacy of a computer-based risk reduction program. A total of 1095 undergraduate females completed an online survey to assess social anxiety as a risk factor (study part I), a subsample of whom ( $n = 136$ , including 51 above the clinical cutoff on a social anxiety measure and 85 below the cutoff) completed the subsequent in-lab study (study part II). During study part II, participants were randomly assigned to either receive a computer-based risk reduction program or an educational program on campus resources (control condition), and their predicted use of resistance techniques was assessed both before and after their assigned program. Participants also responded to an audio recording of a sexual assault vignette to assess risk detection. After controlling for past victimization and depression, social interaction anxiety was not related to predicted use of assertive resistance techniques or to risk detection. However, social anxiety positively predicted use of passive resistance techniques at the lowest level of unwanted sexual advances (i.e., breast fondling) in a series of three escalating sexual advances (i.e., breast fondling, genital fondling, and rape threat). No participants dropped out of the study, and ratings on a questionnaire assessing acceptability of the risk reduction program were positive. Program condition predicted change scores for predicted use of assertive resistance at a low level of unwanted sexual advances (i.e., breast fondling) such that the control group decreased in predicted use of assertive resistance significantly more than the risk reduction program group. Additionally, the risk reduction program group had significantly better risk detection compared to the control group. Therefore, support for the feasibility, acceptability, and preliminary efficacy of the risk reduction program was found. The finding that the control group decreased significantly more than the risk reduction program group in assertive resistance between the two story administrations is important because assertive resistance techniques tend

to be the most effective in reducing risk of completed sexual victimization. Therefore, it is important that risk reduction programs encourage women to use assertive resistance. Clinical implications and suggestions for future research are discussed.

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## Chapter 1 – Introduction

Sexual assault and sexual victimization occur at rates that are concerning (e.g., Abbey, Ross, McDuffie, & McAuslan, 1996; Koss, Gidycz, & Wisniewski, 1987), particularly on college campuses (e.g., Brener, McMahon, Warren, & Douglas, 1999; Fisher, Cullen, & Turner, 2000). Sexual victimization refers to a wide range of incidents involving unwanted sexual contact. There are three components common across all definitions of sexual assault: (1) the act, or the type of unwanted sexual contact that was compelled; (2) the tactic used, or how the offender obtained the sexual contact; and (3) expression of non-consent (Cook, Gidycz, Koss, & Murphy, 2011). Variation on the first two components results in the different types of sexual victimization often defined in research. Touching of the victim's private body parts or removing the victim's clothing without her consent is typically called *unwanted sexual contact* (Koss et al., 2007), while other incidents of sexual victimization involve attempted or completed sexual intercourse that occurs without consent.

The term *coercion* refers to non-consensual sexual intercourse (oral, vaginal, or anal sex) that occurs when the perpetrator uses some type of verbal persuasion (e.g., lies, threats of ending the relationship, threats of spreading rumors, criticizing the victim) but does not use threats of physical harm (Koss et al., 2007). *Rape* is sexual intercourse obtained without the consent of the victim when the victim was too intoxicated to consent or the other person used physical force or threats of physical violence toward the victim or her<sup>1</sup> loved ones (Koss et al., 2007). In *attempted coercion* and *attempted rape*, the offender attempted to obtain, but was not successful in obtaining, non-consensual sexual intercourse using the techniques included in the definitions of coercion and rape, respectively (Koss et al., 2007). In the past, definitions of sexual assault only included vaginal penetration, but current definitions have been expanded to include oral, vaginal, or anal penetration “by a penis, other body part, or other object” (Cook et al., 2011, p. 203). Furthermore, while many past definitions did not include coercive techniques as a tactic for sexual assault, most current definitions do include psychological coercion as a tactic that meets criteria for sexual assault (Cook et al., 2011).

Sexual victimization is prevalent, with approximately one-fifth to one-fourth of adult women reporting at least one sexual assault experience in their lifetime (Boudreaux, Kilpatrick,

Resnick, Best, & Saunders, 1998; Cloutier, Martin, & Poole, 2002; Masho, Odor, & Adera, 2005). Women are significantly more likely to experience sexual assault than are men (Elliott, Mok, & Briere, 2004), and researchers have found that college-aged women experience higher rates of sexual victimization than women of other ages (Brener et al., 1999). In a study that compared college women to non-college-attending same-age peers, rates of victimization were significantly higher among women who were attending college (Fisher et al., 2000).

Approximately 53.7 to 59% of undergraduate women report that they have experienced some type of sexual victimization since the age of 14, with 15.4 to 23% reporting that they were the victim of a rape during that time period (Abbey et al., 1996; Koss et al., 1987). Benson, Gohm, and Gross (2007) found that 21% of college women reported an experience that met criteria for attempted rape and 13% reported an experience that would meet criteria for rape since the age of 14. Over a period of 9 to 10 weeks, which is the approximate length of an academic quarter, 16.7 to 19% of undergraduate women experienced some type of sexual victimization (9.9 to 11.2% experienced unwanted sexual contact or coercion, and 7.1 to 7.8% experienced attempted or completed rape; Gidycz, Coble, Latham, & Layman, 1993; Gidycz, Hanson, & Layman, 1995; Gidycz et al., 2007; Gidycz, Van Wynsberghe, & Edwards, 2008). During a 6-month period, 26.2% of one college sample reported a sexual assault (Gidycz et al., 2007). In a longitudinal study with undergraduate women, over one-fourth of the sample experienced sexual victimization during the fall semester, with 11.4% of participants experiencing severe victimization (i.e., attempted or completed rape; Greene & Navarro, 1998). In the same study, 11.4% of the sample was victimized sexually during the spring semester, with 4.8% reporting severe victimization (Greene & Navarro, 1998). In this study, 47.4 to 54.3% of those who were victimized experienced multiple episodes of victimization in a single semester (21.1 to 37.1% reported four or more incidents in a single semester; Greene & Navarro, 1998). Unfortunately, despite an increase in research on sexual victimization and risk reduction programs, rates of victimization remained relatively stable between the 1980s and early 2000s (Rozee & Koss, 2001).

These high rates of sexual victimization are particularly concerning given the numerous psychological and physical consequences associated with sexual assault. Physically, victimized women face increased risk of sexual transmitted infections (STIs) from the incident, they tend to experience sleep difficulties (e.g., nightmares and insomnia), and they often report decreased

sexual satisfaction (Sarkar & Sarkar, 2005). Females who have been forced to have sexual intercourse are more likely to report physical violence or fighting with a romantic partner (Basile et al., 2006; Brener et al., 1999). Women who have experienced forced intercourse also report increased substance use, such as marijuana, cocaine, and cigarette use, and they report more binge drinking (Basile et al., 2006; Brener et al., 1999). Sexual victimization is associated with increased alcohol-related problems, and this relationship has been shown to be mediated by coping motives (Lindgren, Neighbors, Blayney, Mullins, & Kaysen, 2012). Young adults who have experienced sexual coercion report lower self-esteem than those who have not been sexually coerced (Zweig, Barber, & Eccles, 1997), and females who have been forced to have intercourse are more likely to have taken extreme measures to lose weight (e.g., diet pills, vomiting, or prolonged fasting; Basile et al., 2006).

Victims of sexual assault are also at an increased risk of psychological problems. Even years after being sexually assaulted, women may experience substantial traumatic stress (Elliott et al., 2004). Rape is a significant risk factor for crime-related post-traumatic stress disorder (PTSD), even after controlling for level of violence; in one study, it was the only specific type of crime that was related to likelihood of meeting criteria for PTSD (Kilpatrick et al., 1989). A history of rape also increases women's likelihood of experiencing major depressive episodes, agoraphobia, obsessive-compulsive disorder, and social phobia, but PTSD mediated the relationship between being the victim of a crime and having an additional Axis I diagnosis (Boudreaux et al., 1998). Significantly more victimized women report suicidal ideation compared to non-victimized women (Basile et al., 2006; Sarkar & Sarkar, 2005), with one study finding that the likelihood of a victimized woman reporting that they had considered suicide in the past year was twice as high as that of non-victimized women (Brener et al., 1999). Women who have been victimized are also at an increased risk of future victimization (Gidycz et al., 1993; Gidycz et al., 1995; Sarkar & Sarkar, 2005), as past victimization has been shown to predict victimization during a follow-up period (Gidycz et al., 2007). Revictimization is concerning, as it may increase the likelihood that a woman will experience problematic psychological and physical consequences or intensify problems that already exist due to past victimization.

Because of the high rates of sexual victimization and the considerable negative outcomes that many victims experience, researchers need to identify both risk factors and effective risk

reduction programs. It is important to note that to truly prevent incidents of sexual assault, we must enact social change and develop programs to decrease the likelihood that men will engage in acts of sexual perpetration (Rozee & Koss, 2001). However, a review of the literature found that studies investigating prevention programs for males have not evaluated the act of perpetration of sexual assault as an outcome (Yeater & O-Donohue, 1999). The authors also noted that no prevention program can be completely effective (i.e., prevent all sexual assaults; Yeater & O'Donohue, 1999). Therefore, teaching women about sexual assault, including ways to reduce their risk of being victimized and increase the likelihood of escaping from a risky sexual situation, is necessary and worthy of investigation (Rozee & Koss, 2001). Furthermore, it is important that risk reduction programs be developed that can be targeted to women who may be at increased risk of victimization and who may not voluntarily participate in large group interventions. Women who are socially anxious may be an especially at-risk group, and they may be likely less likely to voluntarily participate in group-based interventions.

### **1.1 - Assertiveness and Resistance Techniques**

Cross-sectional studies have found that victimization is associated with lower levels of assertiveness in the victims. Victims of rape or attempted rape report lower levels of sexual refusal assertiveness than women who have not been victimized and those who experienced less severe forms of sexual victimization (e.g., unwanted sexual contact and coercion; Corbin, Bernat, Calhoun, McNair, & Seals, 2001). A study of young adult females found that those who had been coerced into sexual intercourse reported lower self-esteem and sexual assertiveness than those who had not experienced coercion (Testa & Derman, 1999). A subsequent study, however, suggested that it may only be women who have been victimized multiple times that report decreased assertiveness. Kearns and Calhoun (2010) found that women who had been victimized more than once reported lower sexual refusal assertiveness than women who had not been victimized, those who had only been victimized in childhood, and those who had only been victimized once, and the latter three groups did not differ significantly on sexual refusal assertiveness. There were no differences between groups in this study on general assertiveness.

A longitudinal study by Greene and Navarro (1998) found that lower levels of assertiveness in situations with the opposite sex predicted later sexual victimization even when prior victimization and alcohol use were included in the predictive model. Another longitudinal

study revealed a reciprocal relationship between victimization and assertiveness in which past victimization predicted lower assertiveness at a future time point, which in turn predicted risk of subsequent victimization (Livingston, Testa, & VanZile-Tamsen, 2007).

When in a risky or violent sexual situation, women can react in a variety of ways, and they often implement multiple resistance techniques while being victimized (Gidycz et al., 2008). These different resistance techniques are not equally effective. Specifically, forceful and assertive techniques, such as fighting back, screaming, and fleeing, are more effective than nonforceful verbal resistance, such as pleading (Söchting, Fairbrother, & Koch, 2004). Multiple studies that have examined sexual assaults reported to the police have found that fighting back and screaming are associated with decreased likelihood of experiencing a completed rape and reduced severity of sexual abuse (Ullman, 1998; Ullman & Knight, 1992; Ullman & Knight, 1993; Zoucha-Jensen & Coyne, 1993). While one study found that fleeing from the offender was also associated with evading the completion of a rape (Zoucha-Jensen & Coyne, 1993), another study found that it was “only marginally related to decreased severity of sexual abuse” (Ullman & Knight, 1993, p. 30). In contrast, not resisting at all or using nonforceful verbal resistance (e.g., pleading, begging, reasoning with the perpetrator) has been associated with increased severity of sexual abuse (Ullman & Knight, 1992; Ullman & Knight, 1993). Women may choose not to use assertive and forceful resistance techniques out of fear that they will experience more physical injury. However, researchers have found that there is no relationship between strategies used to resist and additional physical injuries incurred (Zoucha-Jensen & Coyne, 1993). In fact, Ullman and Knight (1992) found that neither forceful fighting nor screaming were related to physical injury; they interpreted this finding as “indicating that men inflicted the same level of physical injury no matter how the woman responded” (p. 39). Therefore, assertive resistance techniques appear to be the most effective techniques, as they are associated with decreased level of sexual assault while not increasing the likelihood of incurring additional physical injury.

The majority of women who have been victimized report that they did not use assertive or forceful resistance techniques. Ullman (1998) found that only 8.1% of women who reported a founded (i.e., supported) sexual assault to the police reported that they used forceful physical resistance during the assault. Nearly 70% of a sample of college women who were victimized

reported that they did not use any assertive resistance techniques, and almost half (47%) reported that they used nonforceful verbal resistance (Gidycz et al., 2008), which, as noted above, has been found to be ineffective (Ullman & Knight, 1992; Ullman & Knight, 1993).

Various variables have been associated with use of resistance techniques. Potential victims must overcome psychological barriers (e.g., concerns about the ramifications of resisting) in order to resist, so it is not surprising that victim characteristics are associated with use of resistance techniques (Turchik, Probst, Chau, Nigoff, & Gidycz, 2007). A woman's confidence in her ability to resist a sexual assault has been associated with increased use of physical and verbal assertive resistance (e.g., stating the desire to stop directly and clearly), whereas self-consciousness and concerns about preserving the relationship with the perpetrator predicted increased use of nonforceful resistance (Turchik et al., 2007). History of victimization seems to influence use of resistance techniques, as women who have been victimized are more likely to use nonforceful verbal resistance techniques (Gidycz et al., 2008; Turchik et al., 2007) and to become immobile during victimization than women who have not been victimized before (Gidycz et al., 2008).

Characteristics of the incident have also been associated with resistance techniques (Turchik et al., 2007). Specifically, knowing the perpetrator was associated with increased likelihood of using nonforceful verbal resistance, and concerns about exacerbating the amount of injury was associated with increased verbal assertive techniques but not related to physical assertive techniques. Greater use of physical violence by the perpetrator was predictive of more physical assertiveness. Being isolated during the incident and feeling under the control of the perpetrator was related to greater physical and verbal assertiveness (Turchik et al., 2007). Finally, in another study, women's intention to use resistance techniques was predictive of reported use of resistance techniques during a later sexual assault, even after controlling for alcohol use, perpetrator use of physical restraint, severity of victimization, and other characteristics of the incident (Gidycz et al., 2008).

## **1.2 - Risk Detection**

Women must be able to perceive that an interaction is becoming dangerous in order to know that she should react, which makes recognition of risk important for reducing odds of sexual assault (Norris, Nurius, & Dimeff, 1996). The term *personal fable* has been used to describe the phenomenon in which adolescents see their experiences as unique and not able to be

understood by others (Elkind, 1967). Believing that certain events can happen to others, but not one's self, is also a type of personal fable. For example, many teenage girls do not take precautions during sexual intercourse to prevent pregnancy, likely due to the fact that they believe that pregnancy is something that happens to others, not them (Elkind, 1967). Because personal fables have been found to persist into young adulthood (Frankenberger, 2000), personal fables could be one reason for why college women perceive their risk of victimization as low.

Overall, although college women recognize that sexual victimization does occur, they tend to report that their personal risk of being victimized is low (Gidycz, McNamara, & Edwards, 2006; Norris et al., 1996). In fact, most college women say that they are less likely to be victimized than their peers (see Gidycz, McNamara, et al., 2006, for a review). In focus groups with sorority members, Norris and colleagues (1996) found that most women could identify strategies to help sorority sisters escape or avoid potentially dangerous sexual situations, but when asked how they would protect themselves and predict dangerous situations, the women did not identify any specific techniques. Instead, their responses reflected a belief that their own personal risk was low; for example, a typical comment was that she "would not be 'dumb enough' to get into a risky situation in the first place" (Norris et al., 1996, p. 132).

Some variables have been shown to affect women's level of perceived risk. When asked to report their own risk of being sexually assaulted in the future, women who had been victimized in the past year assigned higher ratings than those who were not victimized (Norris et al., 1996). However, recently victimized women were also more likely to expect that there would be barriers (i.e., embarrassment, fear of rejection, and the use of alcohol) to leaving a risky sexual situation and less likely to report expecting to use physical and forceful verbal resistance techniques (Norris et al., 1996). Despite acknowledging their risk of potential victimization, previously victimized women often engage in more risky behaviors, consistent with findings that past victimization is a risk factor for future victimization (e.g., Gidycz et al., 2007). Additionally, women's risk detection varies depending on her relationship with the perpetrator, as they seem to be better at detecting risk when interacting with a male they do not know compared to a male they know (Gidycz, McNamara, et al., 2006).

Risk detection processes can be studied through the use of vignettes that describe a sexual encounter that becomes increasingly dangerous (see Gidycz, McNamara, et al., 2006, for a review). Overall, the findings regarding whether risk detection in these vignettes is related to

victimization have been mixed. There are multiple possible explanations for the inconsistent findings in the literature (see Gidycz, McNamara, et al., 2006, for a review). First, a broad definition of assault has been applied in studies that have failed to show a relationship between victimization and risk detection, so it may be that risk detection is only related to certain types of sexual victimization, such as attempted and completed rape. Additionally, not only have different vignettes been used, but the formats of these vignettes have also varied between studies, with studies using written, video, and audio vignettes. Whether the study is retrospective or prospective may also influence findings. Finally, instructions given to participants may prime women to look for threat, which they may not do in real-life situations (Gidycz, McNamara, et al., 2006). Despite the inconsistencies in findings in the general risk detection vignette literature, both retrospective and prospective studies that have used an audio recording developed by Marx and Gross (1995) have found that response latency (i.e., how long a woman allows the vignette to progress before indicating that the man in the vignette should no longer make sexual advances) is related to victimization; specifically, women who have experienced victimization have longer response latencies (see Gidycz, McNamara, et al., 2006, for a review).

### **1.3 - Social Anxiety and Victimization**

#### **1.3.1 - Social Anxiety**

In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association [APA], 2013), social anxiety disorder (SAD) is defined as “marked, or intense, fear or anxiety of social situations in which the individual may be scrutinized by others” (APA, 2013, p. 203). Individuals with SAD fear being negatively evaluated by others (APA, 2013). In order for an individual to meet full diagnostic criteria for SAD, these social and/or performance fears must be persistent, excessive relative to the actual threat, and result in impairment in at least one significant life domain (e.g., social activities, occupational and academic attainment) or cause the person significant distress (APA, 2013). Prevalence estimates of SAD among adult community samples are 2.8 to 7.4% in the past 12 months and 5.0 to 13.0% during one’s lifetime (Grant et al., 2005; Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012; Ruscio et al., 2008). Typical onset of SAD occurs in the mid-teens (APA, 2013; Grant et al., 2005; Kessler et al., 2005), and if an individual does not receive

treatment, the disorder often runs a continuous course with some fluctuation in severity over time (APA, 2013; Beidel & Turner, 2007). The mean duration of SAD in adults with a lifetime diagnosis is 16.3 years (Grant et al., 2005).

Given that SAD most often begins in adolescence, with few cases with onset later than the early- to mid-20s (Grant et al., 2005; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992), it is not surprising that SAD is also common in college students, with prevalence being approximately equal to rates seen in the general adult population. Two international studies of the prevalence of SAD in college students have found past-year prevalence of 7.9 to 8.5% and lifetime prevalence of 9.4 to 9.6% (Bella & Omigbodun, 2009; Izgiç, Akyüz, Doğan, & Kuğu, 2004). Rates of SAD were slightly higher in females compared to males, particularly when looking at past-year prevalence (Izgiç et al., 2004). In a study of American college students, 10% met criteria for current SAD with an additional 8% reporting moderate symptoms and considered to be subthreshold for a diagnosis (Davila & Beck, 2002).

Social anxiety is a trait that lies on a continuum (Creed & Funder, 1998), with individuals who meet diagnostic criteria for SAD falling on the upper end of this continuum. Subclinical levels of social anxiety can also result in impairment in college students (Filho et al., 2010). Among college students, social anxiety is positively related to impairment in school, with friends, with the pursuit of other interests, and in relationships with romantic partners (Filho et al., 2010). College students with both clinical and subclinical levels of social anxiety have increased rates of comorbid anxiety and mood disorders compared to controls without social anxiety symptoms (Filho et al., 2010). In another study, a continuous measure of social anxiety was positively correlated with self-report measures of depression and general worry (Schry, Roberson-Nay, & White, 2012). Therefore, it is important to assess social anxiety continuously.

### **1.3.2 - Social Anxiety and Assertiveness**

Individuals high in social anxiety often struggle with being assertive (e.g., Creed & Funder, 1998; LeSure-Lester, 2001). In fact, in DSM-5, associated features of SAD include decreased assertiveness and increased submissiveness (APA, 2013). Also, on the SAD module of the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, DiNardo, & Barlow, 1994), being assertive in situations such as asking others to change their behavior and refusing the requests of others, even when unreasonable, is assessed because it is a common difficulty for individuals with SAD. In a sample of college students, social anxiety was

negatively correlated with dating competence and assertion in social situations (LeSure-Lester, 2001). Davila and Beck (2002) found that social anxiety was associated with decreased assertiveness, increased avoidance of conflict with others, and increased fear of being rejected by others. Fear of negative evaluation, a common cognitive component of SAD, is related to lower self-reported probability of responding assertively and more discomfort when being assertive in both a college and clinical sample (Chambless, Hunter, & Jackson, 1982). These investigators also found that social avoidance was inversely related to probability of being assertive and positively correlated with discomfort when asserting one's self in the clinical sample, but only the correlation with probability of being assertive was significant in the college sample (Chambless et al., 1982).

College students high in social anxiety demonstrate subtle cues of their difficulty being assertive when engaging in conversations with peers. In a laboratory experiment in which two college students were asked to interact in conversation, those who were high in social anxiety were rated (by peers unaware of their self-reported social anxiety) as being vulnerable to threat, but non-socially anxious participants were not rated as such (Creed & Funder, 1998). Furthermore, blind raters indicated that the peers who had conversations with participants high in social anxiety dominated the conversation, whereas peers who conversed with individuals lower in social anxiety were not viewed in this way (Creed & Funder, 1998).

### **1.3.3 - Social Anxiety and Risk of Victimization**

Social anxiety has been proposed as a risk factor for sexual victimization among college students (Schry & White, 2013). Research has shown that poor assertiveness skills are associated with increased likelihood of experiencing sexual victimization (see review above). Therefore, reduced sexual assertiveness is one way in which social anxiety may increase risk of victimization. Since socially anxious individuals are viewed as more vulnerable to threat (Creed & Funder, 1998), women who struggle to act assertively may appear to be attractive targets to men who choose to use coercive or forceful methods to obtain intercourse. Also, because of their low assertiveness and the fact that they tend to be dominated by others in conversations (Creed & Funder, 1998), women high in social anxiety may also be seen as being easy to dominate in sexual encounters. Finally, given the fact that the vast majority of sexual assaults are committed by someone known to the victim (Abbey et al., 1996; Fisher et al., 2000; Fisher,

Daigle, Cullen, & Turner, 2003; Greene & Navarro, 1998; Koss, Dinero, Seibel, & Cox, 1988), it is possible that potential offenders are aware of a socially anxious woman's difficulty in asserting herself and may take advantage of that situation.

Among college women, social anxiety has also been associated with experiencing more alcohol-related problems (Norberg, Norton, & Olivier, 2009), particularly adverse personal consequences (e.g., doing something that is later regretted, getting into a regretted sexual situation; Norberg, Olivier, Alperstein, Zvolensky, & Norton, 2011). A recent longitudinal study found that women high in social anxiety at the first assessment point (as determined by a median split) were more than four times as likely to be taken advantage of sexually or to take advantage of someone else sexually during an eight to nine week follow-up period than women low in social anxiety (with 26.2% of the women high in social anxiety women endorsing this item compared to 6.0% of the women low in social anxiety; Schry & White, 2012). Many sexual assaults occur when either the victim or the perpetrator is under the influence of alcohol (Abbey et al., 1996), and approximately 70% of college women who have been victimized reported that they were drinking at the time of the incident (Benson et al., 2007; Gidycz et al., 2008; Mohler-Kuo, Dowdall, Koss, & Wechsler, 2004). Therefore, it is possible that social anxiety also increases risk of sexual victimization through alcohol use or alcohol-related problems.

A recent cross-sectional study examined the relationship between social anxiety and sexual victimization (Schry & White, 2013). Social anxiety was predictive of experiencing sexual intercourse as the result of coercive techniques in the past 12 months. More importantly, when indirect effects were examined, social anxiety was associated with decreased assertiveness, which in turn increased risk of both coercion and rape. Social anxiety was not significantly related to alcohol-related problems in this study, so indirect effects through alcohol-related problems were not examined. It is possible, however, that limitations in how alcohol-related problems were measured in this study precluded finding a significant relationship. Given these findings and the theoretical rationale that social anxiety may serve as a risk factor for sexual victimization, additional research in this area is warranted.

#### **1.4 - Sexual Assault Risk-Reduction Programs**

Before reviewing the literature on sexual assault risk reduction programs, it is important to note that despite the fact that researchers have studied individual factors that may increase a woman's likelihood of being victimized and the fact that a variety of programs have been

developed to target risk reduction, a variety of factors combine to result in sexual victimization. Most importantly, regardless of a woman's risk factors, the victim is never to blame for being victimized. It has been proposed that four preconditions lead to sexual abuse: (1) an offender with a desire to commit a sexual assault must be present; (2) this offender "must overcome internal inhibitions against abusing" (Harney & Muehlenhard, 1991, p. 168); (3) the offender must overcome external barriers that are present that would prevent the offender from perpetrating the violence; and (4) the offender must overcome any resistance put up by the victim (Finkelhor, 1984, as cited in Harney & Muehlenhard, 1991). Within this model, it is apparent that potential victims have little to no control over a potential offender being present, nor do they have control over that person choosing to overcome personal inhibitions. Additionally, although a woman can attempt to implement external barriers and engage in resistance efforts, when the offender's desire to commit the act is high, her efforts may not be successful. Furthermore, it is the offender's choice to commit the act, so even if risk reduction efforts are not implemented, the victim is still not to blame for the assault.

Consistent with this knowledge, an important shift has occurred in the terminology used for programs targeting women that are designed to address rates of sexual assault. In the past, these programs were often referred to as *rape prevention programs* (Norris, 2011). However, a woman cannot completely control whether or not she experiences sexual assault (Norris, 2011), as no resistance technique or amount of assertion can guarantee that a woman will not be victimized. Therefore, the term *sexual assault risk-reduction programs* has become more common and is a more appropriate label, since women can only attempt to engage in behaviors that are likely to reduce the likelihood of being victimized, but they should not be blamed if they do not use the resistance techniques or if they do and the techniques prove ineffective.

Most sexual assault risk reduction programs are designed based on the idea that if a woman can detect that a situation is becoming dangerous, she can engage in more effective resistance (Rozee & Koss, 2001; also see discussion of risk detection above). Many programs also aim to increase use of assertive resistance techniques (Orchowski, Gidycz, & Raffle, 2008), which tend to be more effective than passive resistance techniques (see discussion above). Given that women do not have complete control over whether or not they experience a sexual assault (Norris, 2011) and that no program can prevent all instances of sexual assault, Orchowski and colleagues (2008) recommended that these programs be designed to help reduce self-blame

in women who do experience sexual assault. Recently, it has been recommended that programs also address how to deal with psychological barriers that would make the use of assertive resistance techniques unlikely (e.g., embarrassment, fear of rejection, social anxiety; Gidycz, Rich, Orchowski, King, & Miller, 2006).

Research on these programs is necessary, as few programs are based in theory (Norris, 2011) or have been evaluated empirically (Gidycz, Rich, et al., 2006; Norris, 2011). Many of the programs that have been evaluated have not resulted in clinically significant findings (Norris, 2011). For example, a variety of programs have focused primarily on changing participants' attitudes toward sexual assault, but many of these programs have not been shown to be effective, and in the cases that they are effective, the changes are typically not maintained over time (see Söchting et al., 2004, for a review). Furthermore, even though federally funded colleges and universities now must provide programs on sexual assault risk reduction and provide students with information about the programs provided (see Clery Act, 2008; Institutional security policies and statistics, 2009), rates of victimization have remained fairly stable according to research studies (Gidycz, Rich, et al., 2006).

Although many programs that are used in colleges and universities have not been tested (Gidycz, Rich, et al., 2006; Norris, 2011), some programs have been subjected to empirical validation. Gidycz and colleagues (Gidycz et al., 2001; Gidycz, Rich, et al., 2006) have developed and studied the Ohio University Sexual Assault Risk Reduction Program. The key components of this program include providing women with information about sexual assault and its prevalence (particularly local statistics), as well as two videos – *I Thought It Could Never Happen to Me* (Gidycz, Dowdall, Lynn, Marioni, & Loh, 1997) and *Sexual Assault Risk Factors: A Training Video* (Gidycz, Loh, et al., 1997). The first video consists of interviews with college women who have experienced a rape, and the second video highlights risk factors during a portrayal of a date rape (Gidycz et al., 2001). Gidycz and colleagues (2001) compared women who received the program to a control group who received no treatment. The outcome variable of interest was experiencing sexual victimization during the two follow-up periods. The program did not affect victimization rates during the first follow-up period. However, during the second follow-up period, rates of revictimization for women who had experienced moderate victimization during the first follow-up period were lower for those in the treatment program compared to those in the control group (Gidycz et al., 2001).

In a more recent study, self-defense training was added to the program described above (Gidycz, Rich, et al., 2006). Similar to the previous study, there were no differences in self-reported victimization during the follow-up periods between those in the program and a control group that did not receive the program. Despite this finding, the program did have some positive effects on the women who participated. Immediately following the program, the treatment group reported a significant increase in self-protective behaviors compared to their pre-test scores, and importantly, these changes were maintained over time (Gidycz, Rich, et al., 2006). Additionally, six months post-treatment, the group who underwent the program answered more questions about sexual assault correctly compared to the control group (Gidycz, Rich, et al., 2006). Also encouraging were the findings that many of the women who used active resistance techniques did not experience victimization during the follow-up period, regardless of group assignment, and although the program did not result in changes in sexual communication or self-efficacy, both groups showed improvements in both areas over time (Gidycz, Rich, et al., 2006).

In yet another study, Gidycz, Rich, and colleagues' (2006) program was enhanced by adding a discussion of psychological barriers that could interfere with the use of the resistance techniques taught (Orchowski et al., 2008). This program was compared to a placebo condition in which participants underwent an educational program on diseases that can be prevented by vaccines. In this study, the treatment group improved in self-protective dating behaviors (e.g., monitoring dating partners' alcohol consumption), sexual communication (e.g., discussing sexual likes and dislikes), and self-efficacy in engaging in resistance techniques while the placebo group either did not evidence a change or had decreased scores on these variables at post-test (Orchowski et al., 2008). The two groups did not differ on rates of victimization when defined broadly, but the percentage of women who experienced rape was lower in the treatment group compared to the placebo group (Orchowski et al., 2008).

Another group of researchers examined a program to reduce rates of revictimization (Marx, Calhoun, Wilson, & Meyerson, 2001). In this program, participants learned about sexual assault and risk factors for rape, how to recognize risky or dangerous situations, and how to use practical dating strategies in order to reduce risk of victimization. Unfortunately, after the program, response latency on an audio date rape vignette was not significantly different between the treatment and control groups (Marx et al., 2001). Additionally, when all types of

victimization were considered, there were no group differences in rates of revictimization during a two-month follow-up, but the treatment group was significantly less likely than the control group to experience a completed rape (12% vs. 30%, respectively; Marx et al., 2001).

The Women's Project (Foubert, 2010, as cited in Foubert, Langhinrichsen-Rohling, Brasfield, & Hill, 2010) was designed to teach women how to intervene as bystanders to protect their friends from sexual assault and how to respond when a friend discloses that they have been victimized. Women who participated in the program reported a decrease in their acceptance of rape myths from pre- to post-treatment, while those in the control group (i.e., those who attended a seminar on stress management or attention difficulties) did not report a change in rape myth acceptance (Foubert et al., 2010). Comparison of post-test scores between groups, however, failed to reveal a significant difference. Women in the program also reported increases in self-reported "confidence in their ability to intervene as a bystander and their perceived willingness to help a potential abuse victim" (Foubert et al., 2010, p. 824). While these findings are encouraging, it is not known whether this intervention actually improves women's ability to act in a risky situation or whether it was effective in reducing rates of sexual victimization.

While these studies represent admirable efforts to reduce women's risk of victimization on college campuses, all the programs examined in these studies were delivered in a group format. Because socially anxious individuals often avoid feared social interaction situations (APA, 2013), they may choose not to attend these programs and, if they do attend, their anxiety may prevent them from actively engaging in and learning from the program. The fact that many individuals with social anxiety disorder do not receive treatment (Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Schneier et al., 1992), possibly due to fears of interacting with a clinician or receiving treatment in a group setting, is consistent with this hypothesis. Furthermore, this avoidance and lack of engagement may not be limited to socially anxious individuals and may affect other populations (e.g., women experiencing depression, PTSD, etc.). Therefore, in addition to studying group interventions, it is important to examine potential interventions that can be administered individually or that can be completed via computer or other alternative methods.

To the author's knowledge, only one such program has been examined to date (Yeater, Naugle, O'Donohue, & Bradley, 2004). In this study, a bibliotherapy approach was examined. Participants in the treatment group read a self-help book on dating in college, which included

information on rape myths, identifying risky situations, and resistance techniques. A waitlist condition was used as the comparison group. The treatment was not effective in reducing rates of victimization, but the treatment group did engage in fewer risky dating behaviors and reported improved sexual communication compared to the waitlist group after treatment (Yeater et al., 2004). Furthermore, participants indicated that they willingly read the book, believed that the information included in the book was useful to them, and believed the book would help reduce the risk of sexual victimization (Yeater et al., 2004).

### **1.5 - Ethical Concerns about Research on Sexual Assault**

Some researchers and research ethics boards have expressed concern regarding having individuals participate in research in which they are asked about sexual assault, particularly since it is expected that some of the participants will likely have experienced some type of victimization. However, in a study in which participants were asked to complete trauma-related surveys, the majority of the participants reported that they did not find the study appreciably distressing, indicated that they thought they personally benefitted from participating, and reported altruistic intentions in that they believed that the research would help others (Wager, 2011). In another study, women who had been sexually victimized in the past did report higher levels of negative emotional reactions while participating in a study on victimization compared to those who had not been victimized (Edwards, Kearns, Calhoun, & Gidycz, 2009); however, the average response on the item assessing negative emotional reaction was in the “disagree” range for both groups, so it was simply that the group that had not been victimized disagreed more strongly (Edwards et al., 2009). In general, women with a history of victimization reported more personal benefits as a result of participating than nonvictimized women (Edwards et al., 2009). Furthermore, a cost-benefit analysis indicated that the benefits outweighed the costs in both groups (Edwards et al., 2009). In conclusion, although some women may react negatively to participating in such research studies, most women do not find participating in these studies distressing and, in fact, report personal benefits from participating. Furthermore, it is important to note that because research on sexual assault can help design risk reduction programs, it benefits society as a whole (Edwards et al., 2009).

### **1.6 - Current Study and Hypotheses**

The present study was designed with two separate, but related, aims. The primary aim was to examine the relationships between social anxiety and predicted use of assertive resistance

and between social anxiety and risk detection. This study expands upon previous research (Schry, 2011; Schry & White, 2013) by examining the relationship between social anxiety and specific factors that may increase risk of sexual victimization in college women. One significant limitation of previous research (Schry, 2011; Schry & White, 2013) was the cross-sectional data collection, which prohibited firmly establishing the direction of the relationship between social anxiety and sexual victimization. Specifically, victimization as the outcome variable was assessed for the preceding 12-month period. While it was proposed that social anxiety was a risk factor for sexual victimization, it is possible that victimization increases a woman's level of social anxiety. Although the design of the current study did not allow evaluation of social anxiety as a predictor of later victimization, it allowed us to determine if social anxiety is associated with variables that would increase women's risk of completed victimization (e.g., decreased assertive resistance and/or delayed risk detection). Such findings would strengthen the hypothesized relationship of social anxiety as a risk factor for victimization rather than merely an outcome of being victimized because social anxiety was measured prior to assessment of predicted behavioral responses (i.e., predicted use of resistance techniques) and risk detection. Also, these findings have implications for identifying which skills (e.g., risk detection, predicted use of resistance) should be addressed in risk reduction approaches for individuals with social anxiety.

Several hypotheses regarding social anxiety were proposed. It was expected that (1) social anxiety would negatively predict assertive resistance (e.g., getting up and trying to leave), and (2) the effect of social anxiety on predicted use of assertive resistance techniques would be mediated by sexual refusal assertiveness. Because women high in social anxiety have lower levels of sexual refusal assertiveness (Schry, 2011), it was expected that this effect would be evident in how they would likely respond to sexual pressure and aggression. Although a hypothesis was only proposed for assertive resistance, exploratory analyses examined the relationship between social anxiety and both passive and polite resistance techniques, as use of resistance techniques are not mutually exclusive. It was also hypothesized that (3) social anxiety would be positively related to response latency (i.e., delayed risk detection) on an audio vignette. While response latency on the audio vignette is typically believed to be a measure of risk recognition, it is also possible that it assesses a person's willingness to tolerate risk and/or a person's moral beliefs about sexual interactions (Marx & Soler-Baillo, 2005). Furthermore,

some women may detect risk but not indicate this until they are completely certain of their choice or perhaps wait until they would react, or resist, in the situation before pressing the button. It was anticipated that socially anxious women would have longer response latencies, as they would wait to respond until they are certain that the man has gone too far due to their fears of negative evaluation.

The secondary aim of this study was to examine the feasibility and acceptability of a brief, individually administered risk reduction program. Should the program be feasible to implement, further examination of individually administered, computer-based risk reduction programs may be warranted. It was expected that (4) the intervention program would be feasible, as evidenced by a retention rate of at least 90% (i.e., less than 10% of participants would terminate the program during the laboratory appointment). Additionally, it was hypothesized that (5) participants would find the intervention acceptable and informative. Specifically, we expected ratings on an acceptability questionnaire to indicate, on average, that participants learned new information and preferred a computer-based program to a large-group format. While it is important to first establish the feasibility and acceptability of a treatment (e.g., Leon, Davis, & Kraemer, 2011), this study also examined the preliminary efficacy of the intervention. It was anticipated that women who received the risk reduction program would (6) have shorter response latencies on the audio vignette and (7) report increases in predicted use of assertive resistance techniques between pre- and post-test, compared to women who did not receive the program (control group).

## Chapter 2 – Method

### 2.1 - Participants

Female undergraduates at Virginia Tech were recruited for the online survey (study part 1) using the Psychology Department's Sona System during the Fall 2012 and Spring 2013 semesters. Additionally, recruitment flyers (see Appendix A) were posted in the psychology building, and an advertisement (see Appendix B) was sent to psychology course instructors for posting in classes that offered Sona credit. Finally, the same advertisement was posted in the large Introduction to Psychology lecture courses followed by distribution of candy after class with the study's Sona information attached. A convenience sampling technique was used; women who were interested in participating self-selected into the study by signing up on the Sona website. Therefore, the study advertisements included minimal information regarding the study being about sexual assault (see Appendix C for the information posted to Sona). Participants could only complete the online survey during one semester (i.e., if someone completed the survey during the Fall 2012 semester, they could not complete it again during the Spring 2013 semester). Participants who completed the online survey during the Fall 2012 semester could only participate in the in-lab study during that semester.

Because no studies to date have examined the effect of social anxiety or this type of risk reduction program on risk detection and predicted assertiveness, the expected size of the effect was unknown. Therefore, a power analysis was conducted using an effect size estimate equal to that of a medium effect for each analysis. All power analyses were conducted in G\*Power 3.1.3 (Faul, Erdfelder, Lang, & Buchner, 2007). The power analysis for predicted behavioral responses was conducted using a repeated measures MANOVA, between factors effect as the estimator, as it was the closest statistical test available in G\*Power 3.1.3 (Faul et al., 2007) and the between factors effects were the primary effects of interest. In order to detect an effect size of 0.25, with an alpha of 0.05, and 0.80 power in a MANOVA with two groups (risk reduction program vs. control or high vs. low social anxiety) with three measurements, and an estimated correlation between repeated measures of 0.50, a total sample size of 86 would be required, resulting in actual power of 0.801. Although the power analysis was run assuming a MANOVA (i.e., categorical predictors), social anxiety was entered as a continuous covariate, rather than a between subjects factor (categorical variable).

The power analysis for response latency during the audio vignette was conducted based on linear multiple regression with a medium effect ( $f^2 = .15$ ). To detect that effect size, with an alpha of 0.05, power of 0.80, and one predictor of interest (i.e., social anxiety or risk reduction program group) of three total predictors (i.e., up to two control variables), a total sample of 55 would be needed, with actual power of .805. Although a total sample of 86 participants was suggested to provide adequate power for the analyses in this study, a larger sample was recruited to ensure that a sufficient number (i.e., 20) of participants high in social anxiety would be in the experimental group. A total sample of at least 120 women, including 40 participants meeting the cutoff on the SIAS (i.e., “high” in social anxiety) and 80 participants below the cutoff on the SIAS (i.e., “low” in social anxiety), was sought. While an interaction between social anxiety and group was not hypothesized or tested in this study, concerns about the effectiveness of large group risk reduction programs for socially anxious women was one reason for the development of a computer-based program. Therefore, we sought to ensure that those participants were represented in the experimental sample. Furthermore, to evaluate the effect of social anxiety, we sought to ensure that we had a full range of social anxiety, including those above and below the clinical cutoff.

A total of 1187 women began the online survey, of whom 1095 (92.2%) completed the full survey. Nearly 70% (69.9%,  $n = 765$ ) of those who completed the survey did so in the Fall 2012 semester. Demographic information for the participants who completed the online survey is presented in Table 1. In the Fall 2012 semester, 330 participants (110 high in social anxiety and 220 low in social anxiety) were invited to participate in the in-lab portion of the study, and a total of 87 women (33 high in social anxiety and 54 low in social anxiety) participated in the laboratory study during that semester. During the Spring 2013 semester, 198 participants (50 high in social anxiety and 148 low in social anxiety) were sent invitations to schedule an in-lab appointment; 49 women (18 high in social anxiety and 31 low in social anxiety) completed the in-lab portion of the study during that semester. Demographic information for the final sample of women who completed the in-lab study is provided in Table 2. A total of 136 women, 51 high in social anxiety and 85 low in social anxiety, completed the in-lab assessment.

## 2.2 - Measures

### 2.2.1 - Online questionnaire measures – primary measures.

**Demographics.** A 13-item questionnaire was completed by all participants in order to gather general demographic data (Appendix D). Participants reported their sex (in order to ensure that all participants were female), age, height and weight, year in college, college of their major, grade point average (GPA), race/ethnicity, living environment, sexual orientation, relationship status, Greek organization membership status, and involvement in extracurricular activities.

**Social interaction anxiety.** The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998; Appendix E) was used to measure anxiety in social interaction settings. The primary concerns assessed by the SIAS are those relating to “being inarticulate, boring, sounding stupid, not knowing what to say or how to respond within social interaction, and of being ignored” (Mattick & Clarke, 1998, p. 457). The SIAS includes 20 items, and participants are asked to indicate how characteristic each statement is of them on a 0 (*not at all*) to 4 (*extremely*) scale. Items that describe feeling comfortable in social interactions are reverse scored, so that higher scores on the SIAS indicate more social interaction anxiety. Total scores are then computed and range from 0 to 80. The SIAS has excellent internal consistency ( $\alpha = .90$  in an undergraduate sample; Mattick & Clarke, 1998; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998) and test-retest reliability ( $r > .90$  up to 12-weeks; Mattick & Clarke, 1998). Internal consistency in this study was excellent ( $\alpha = .922$  for entire online sample;  $\alpha = .925$  for in-lab participants). Construct validity has been demonstrated by the finding that the SIAS total score is moderately to highly correlated with other measures of social anxiety (Mattick & Clarke, 1998).

Scores on the SIAS have been shown to differentiate individuals with SAD from individuals without anxiety disorders and individuals with agoraphobia (Mattick & Clarke, 1998). A score of 34 or higher (i.e., more than one standard deviation above the community mean) is often used as a cutoff for participants considered “high” in social anxiety (e.g., Buckner, Ecker, & Proctor, 2011; Buckner & Heimberg, 2010; Norberg et al., 2009). This cutoff correctly classified 86% of individuals with social phobia and incorrectly classified only 10% of controls without social phobia in one study (Brown et al., 1997). In another study, the cutoff score of 34 on the SIAS or 24 or higher on the Social Phobia Scale (SPS; Mattick & Clarke,

1998), the companion measure of the SIAS, correctly classified 82% of individuals with social phobia and incorrectly classified 18% of participants from the community control sample (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992). Finally, this cutoff score is believed to be a conservative cutoff in samples of college students (Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006).

***Sexual refusal assertiveness.*** Sexual refusal assertiveness was assessed using the Refusal subscale of the Sexual Assertiveness Scale (SAS; Morokoff et al., 1997; Appendix F). This subscale comprises 6 statements, rated on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. Some items are reverse scored, so that higher total scores indicate greater sexual refusal assertiveness. Scores on the SAS have been shown to be a reliable and valid measure of sexual assertiveness (Morokoff et al., 1997). Internal consistency for the Refusal subscale is adequate ( $\alpha = .80$ ), and test-retest reliability for the Refusal subscale over six months is estimated between .60 and .65 and over one year is estimated at .59 (Morokoff et al., 1997). In this study, internal consistency was adequate ( $\alpha = .719$  for full online sample;  $\alpha = .744$  for sample that completed the in-lab study). Construct validity was indicated by the findings that refusal assertiveness was positively associated with self-reported refusal behavior and negatively correlated with experiencing sexual coercion and with expectation of negative responses from romantic partners (Morokoff et al., 1997).

***Unwanted sexual experiences.*** A modified version of the Sexual Experiences Survey – Short Form Victimization (SES-SFV; Koss et al., 2007; Appendix G) was used to assess unwanted sexual experiences. The 35 questions that assess victimization were created by crossing seven different unwanted sexual experiences with five different tactics that perpetrators may use to coerce their victims. The respondent reports on each item for the past 12 months and for the time period between her 14<sup>th</sup> birthday and 12 months ago. While the original SES-SFV asks participants to report the number of times each incident occurred during each time period (i.e., 0, 1, 2, or 3+), the answer choices for this study were abbreviated to *yes* or *no*. This change was made because the items are not mutually exclusive (i.e., a person may respond positively to more than one item for a single incident of victimization), so the items cannot be summed to obtain a measure of the total number of incidents that occurred and it was thought that dichotomous answer choices would make it easier for participants to respond to the items.

One strength of the SES-SFV is that the word *rape* is not used until the final question. Individuals differ in how they define the term *rape*, and some women who have had an experience that meets criteria for rape do not see themselves as rape victims. In fact, researchers have used the term *unacknowledged rape* to describe incidents that meet research or legal definitions of rape but that the victim does not define as rape (Cook et al., 2011). Therefore, by assessing rape in definitional terms and not simply asking about rape, the questionnaire can assess unacknowledged rape as well. Another strength of the SES-SFV is that the items use specific behavioral descriptions of both the unwanted sexual experiences and the perpetration tactics rather than potentially vague terms such as *coercion* or *rape* (Koss et al., 2007). Behaviorally specific descriptions help to ensure that participants have a clear description of what they are being asked to report on rather than leaving the questions open to a great deal of interpretation.

Research on the psychometric properties of this version of the SES has not yet been published. Previous versions of the SES have, however, been shown to demonstrate adequate reliability and validity (Koss & Gidycz, 1985). In research on a past version of the SES, participants' questionnaire responses were compared to coders' ratings of transcribed descriptions of the sexual victimization incident; percent agreement for incidents classified as rape ranged from 81 to 94% ( $Kappa = 0.76-0.81$ ), and percent agreement for incidents classified as coercion was between 86 and 95% ( $Kappa = 0.86-0.93$ ; Testa, VanZile-Tamsen, Livingston, & Koss, 2004).

**Depression.** Symptoms of depression were measured by the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977; Appendix H), a 20-item self-report questionnaire. Frequency of experiencing each symptom during the past week is reported on a 4-point scale (i.e., 0 [*rarely or none of the time; less than 1 day*] to 3 [*most or all of the time; 5-7 days*]). Some items are reverse coded before computing the total score, which can range from 0 to 60, with higher scores indicative of greater frequency of depressive symptoms. The reliability of CES-D scores with college student samples has been demonstrated ( $\alpha = .87$  to  $.89$ ; Radloff, 1991; Shean & Baldwin, 2008). Internal consistency in this sample range from  $\alpha = .886$  for the sample that completed the in-lab study to  $\alpha = .907$  for the full online sample. Shean and Baldwin (2008) demonstrated that scores on the CES-D have adequate convergent validity, as scores on the CES-D were moderately correlated (Spearman rank correlation coefficient =  $.56$ ) with a

clinician rating of depression severity on the Diagnostic Interview Schedule – IV (American Psychiatric Association, 1994, as cited in Shean & Baldwin, 2008) and highly correlated ( $r = .86$ ) with scores on the Beck Depression Inventory-II (BDI-II; Beck, Steer, and Brown, 1996, as cited in Shean & Baldwin, 2008).

### **2.2.2 - Online questionnaire measures – secondary measures.**

***Rape myth acceptance.*** The Illinois Rape Myth Acceptance Scale (IRMAS; Payne, Lonsway, & Fitzgerald, 1999; Appendix I) was administered in order to assess acceptance of rape myths. Rape myths are typically defined as “attitudes and beliefs that are generally false but are widely and persistently held, and that serve to deny and justify male sexual aggression against women” (Lonsway & Fitzgerald, 1994, p. 134). The IRMAS comprises 45 statements, and participants rate their agreement with each statement on a 1 (*not at all agree*) to 7 (*very much agree*) scale. Seven types of rape myths are assessed by the IRMAS: it wasn’t really rape, he didn’t mean to, she wanted it, she lied, rape is a trivial event, she asked for it, and rape is deviant event (Payne et al., 1999). This factor structure has been empirically supported (Payne et al., 1999). Because the number of items per scale varies from 5 to 8, the average rating for each subscale is computed. The scale also includes five filler items that are designed to prevent a response set, as the authors wanted to include oppositely worded items, but there is no true opposite wording for rape myths (Payne et al., 1999). Internal consistency is adequate to excellent (overall  $\alpha = .93$ , subscale  $\alpha$ s = .74 to .84; Payne et al., 1999). Internal consistency was adequate to excellent in this sample as well (overall  $\alpha = .944$ , subscale  $\alpha$ s = .707 to .875). Construct validity was evidenced by findings that IRMAS scores were positive related to traditional sex role stereotypes, a belief that relationships between males and females are adversarial, hostile attitudes toward women, and acceptance of both general and interpersonal violence (Payne et al., 1999). Although this measure was included as part of the online questionnaire, it was not included in any of the analyses for this dissertation project.

***Social performance anxiety.*** Participants completed the Social Phobia Scale (SPS; Mattick & Clarke, 1998; Appendix J) in order to assess anxiety related to being watched by others and engaging in behaviors (e.g., writing, eating, using the bathroom) when others are present. Like its companion measure, the SIAS, the 20 items on the SPS are rated on a 0 (*not at all*) to 4 (*extremely*) Likert scale, to yield a total score ranging from 0 to 80, with higher scores indicative of greater anxiety. Scores on the SPS have demonstrated excellent internal

consistency ( $\alpha = .94$  in a large sample,  $\alpha = .88$  to  $.91$  in an undergraduate sample; Mattick & Clarke, 1998; Osman et al., 1998), and it was excellent in this sample ( $\alpha = .926$ ). The SPS and SIAS are significantly correlated with each other ( $r = .72$ ; Mattick & Clarke, 1998). Although this measure was included as part of the online questionnaire, it was not included in any of the analyses for this dissertation project.

***Alcohol use and alcohol-related problems.*** The modified timeline followback (TLFB) (Norberg et al., 2009; Appendix K) was used to measure alcohol use and alcohol-related consequences for the past 30 days. Research on the TLFB (Sobell & Sobell, 1992, as cited in Sobell & Sobell, 2012) has indicated high test-retest reliability across populations (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2003). Content, criterion, and construct validity have all been demonstrated (NIAAA, 2003). The paper-and-pencil version of the TLFB was modified to be administered as part of the online survey. Concurrent validity of an online version of the TLFB has been established (Pedersen, Grow, Duncan, Neighbors, & Larimer, 2012). Additionally, college students reported being more comfortable completing the online version of the TLFB compared to the in-person version, which could be related to slightly higher levels of substance use reported on the online version (Pedersen et al., 2012). Participants were asked to indicate the number of drinks consumed, where and with whom they drank, the amount of time spent drinking, whether they ate while drinking, whether or not they intended to get drunk, whether they did get drunk, whether they drank for particular reasons, whether they binge drank, and whether they participated in drinking games.

Participants were also asked to indicate whether they experienced any of a list of 26 alcohol-related problems as a result of their drinking on a given day (Norberg et al., 2009). The modified TLFB (Norberg et al., 2009) assesses four categories of alcohol-related problems (Norberg et al., 2011; Schry & Norberg, in press). Reliability, convergent validity, and concurrent validity of the four categories have been established (Norberg et al., 2011; Schry & Norberg, in press). Although this measure was included as part of the online questionnaire, it was not included in any of the analyses for this dissertation project.

### **2.2.3 - In-lab measures.**

***Written sexual aggression story and behavioral responses.*** In order to assess predicted use of resistance techniques, participants read fictional stories describing an interaction between a female and a male. These stories are slightly modified versions of one of the stories used by

Norris and colleagues (2006; please contact Dr. Jeanette Norris to obtain these stories and the behavioral response questions). These stories were slightly modified to update them (e.g., changing VCR to DVD player) and to make them applicable to college students. Additionally, the second story is almost identical to the first, except that the names and activity were changed to allow for re-administration. The original story (Written Story #1) was administered at the beginning of the in-lab appointment, and the second story (Written Story #2) was administered after the participants had undergone their randomly assigned experimental condition.

The stories were written in the second person, and participants were asked to imagine that they were the female main character in the story. The first story begins with the woman (i.e., the person the participant is to imagine being) talking on the phone with a female friend (Erica) in which they talk about a man (Alex) she has been dating, and the woman clearly states that she is not ready to have sexual intercourse with Alex. Later in the evening, the woman goes to Erica's house to watch movies with a group of friends, including Alex. The group watches movies and drinks beers. Later, most of the group goes to bed, but the woman and Alex decide to watch another movie together. Before Erica goes to bed, the woman reiterates her intention to not have intercourse that night. The woman and Alex are then alone watching a movie, and Alex proceeds to make increasingly forceful sexual advances (Norris et al., 2006). In the second story, the progression of events is identical, but the names of the other individuals are changed and rather than watching movies, the group plays games.

At three points during the stories, participants were asked about their predicted behavioral responses: (1) after the man kisses her and touches her breasts; (2) after the man engages in over clothes touching of her genitals; and (3) after the man states, while holding her down, that he plans to have intercourse with her despite her refusal (Norris et al., 2006). Five items assessed assertive resistance techniques (e.g., pushing the man away), three items measured passive resistance techniques (e.g., not trying to do anything because it seems hopeless), and four items measured polite resistance techniques (e.g., nicely or apologetically telling the man that she does not want to have sex; Norris et al., 2006). Furthermore, a single item was used to assess level of consent. Participants are asked to indicate how likely it would be that they would engage in each of the behaviors on a 0 to 6 scale, where 0 = *not at all likely*, 3 = *moderately likely*, and 6 = *very likely* (Norris et al., 2006). The average score for each type of resistance technique at each of the three time points was computed. The three-factor structure of

the resistance techniques was supported by a factor analysis (Norris et al., 2006). Furthermore, Cronbach's alpha of the scales across time points was adequate to excellent ( $\alpha = .85$  to  $.90$  for assertive resistance,  $\alpha = .64$  to  $.84$  for polite resistance, and  $\alpha = .60$  to  $.78$  for passive resistance; Norris et al., 2006). In this study, internal consistency across all three time points in both stories was adequate for most scales at most time points ( $\alpha = .821$  to  $.908$  for assertive resistance,  $\alpha = .495$  to  $.826$  for polite resistance, and  $\alpha = .558$  to  $.665$  for passive resistance). For assertive and polite resistance,  $\alpha$ s tended to increase as the vignette progressed, but this pattern was not found for passive resistance. It is important to note that  $\alpha$ s for polite and passive resistance were low at some time points, but this could be due to the small number of items per subscale (3 items for passive resistance, 4 items for polite resistance, and 5 items for assertive resistance).

**Audio vignette.** In order to assess risk detection, participants listened to an audio recording of a sexual encounter between two college students. They were instructed to indicate when the male should stop making sexual advances by pausing the audio recording. A version of the vignette used by Marx and Gross (1995) was obtained for use in this study. The recording lasts a total of 293 seconds, and it is composed of six segments: consensual interaction and kissing (0-81 seconds); polite resistance (82-92 seconds); continued refusal by the female and apologies by the male (93-116 seconds); continued refusal by the female and verbal pressure by the male (117-177 seconds); verbal assertive refusals by the female and verbal threats by the male (178-240 seconds); and forced sexual intercourse (241-292 seconds; based on Marx & Soler-Baillo, 2005). Face validity of the vignette has been established (Marx & Gross, 1995). Additionally, construct validity (i.e., convergent and discriminant validity) and test-retest reliability over a two-week period ( $r = .87$ ) have been established (Bernat, Stolp, Calhoun, & Adams, 1997).

**Consensual and nonconsensual sexual intercourse vignettes.** Participants read two brief vignettes (Appendices L & M) about a couple who engages in sexual intercourse. The couples in both vignettes have dated for the same length of time (i.e., 9 months) and have a history of consensual sexual intercourse over the last 2 months of the relationship. In each vignette, the couple has gone on a date, and at the end of the date, they have sexual intercourse at the male's apartment. In the consensual intercourse vignette, the couple went to dinner and movie and then returned to the male's apartment and engaged in consensual intercourse. In the nonconsensual intercourse vignette, the couple went to a bar and drank moderately to heavily

(i.e., the male had four beers and the female had five mixed drinks). The couple then returned to the male's apartment, and although the female never physically resisted, rather than consenting to intercourse, she stated that she was tired and wanted to go to bed. After reading each vignette, participants rated how much each person wanted to have intercourse, whether the male forced himself on the female, and how consensual the encounter was. The purpose of these measures was to reduce response bias and allow for assessment of response bias between intervention groups. If participants expected that all materials would be about forced sexual experiences, they may have responded differently to materials (particularly the audio vignette). Additionally, women in the risk reduction program condition may have been primed to look for forced sexual contact and could have perceived coercion or force in consensual interactions due to their expectancies about the study. These vignettes allow for assessment of group differences (i.e., risk reduction program vs. control) and control of differences (by using ratings as a covariate in analyses of group effects), if present.

***Acceptability questionnaire.*** A brief acceptability questionnaire (Appendix N) was administered to participants who received the risk reduction program. Participants were asked to rate each question on a 1 to 5 Likert scale (1 = *completely disagree*, 3 = *neutral*, 5 = *completely agree*). Participants were asked to indicate the degree to which they found the video to be realistic, the information provided to be realistic and truthful, and the program to be distressing. Participants also indicated if they learned new information from the program, if the materials provided would likely reduce the risk of sexual assault, if the materials would benefit most undergraduate females, and if they would prefer an individually administered computer-based program to a large group intervention.

## **2.3 - Experimental and control conditions**

### **2.3.1 - Risk reduction program**

The risk reduction program in this study was designed to provide women with accurate information about sexual assault, including risk factors for sexual assault and effectiveness of specific resistance techniques. The first part of the risk reduction program consisted of portions of the video *I Thought It Could Never Happen to Me* (Gidycz, Dowdall, et al., 1997). Participants watched two college women who had experienced sexual victimization tell their stories. The full video contains four women's stories, but the video was shortened to last approximately 18.5 minutes (the total video is 33 minutes long) in order to try to ensure that the

laboratory appointments lasted an hour or less total. It was hoped that by watching the video, women would learn that sexual victimization can and does happen to women in college. Furthermore, both women in the video were victimized by acquaintances, emphasizing the fact that rape is not only perpetrated by strangers. Finally, after telling their stories, the women discuss what they learned from their experience and what they wished to share with others. These portions provide information about risk detection and coping following a sexual assault.

After watching the video, women answered questions about sexual assault (Appendix O). The 14-item questionnaire was administered on the computer as part of an online questionnaire so that corrective feedback could be provided. The purpose of these questions was not to assess women's knowledge, but instead to provide them with information about sexual assault. These questions were designed to provide information about the prevalence of sexual assault, the definition of rape, the effects of sexual assault, the prevalence of date and acquaintance rape, the role of alcohol in sexual assault (including the role of voluntarily consumed substances), the effectiveness of resistance during a sexual assault, the fact that resistance has been found to not increase risk of injury, and the low rates of reporting of sexual assault to authorities. While the information about prevalence was included to increase women's awareness of their own risk, other information was included in order to challenge any rape myths (e.g., rapes are only committed by strangers, date rape drugs are often involved when someone is too intoxicated to consent to intercourse, resisting a man will result in further injuries) that women may hold that could interfere with risk detection and/or use of assertive resistance techniques.

***Theoretical rationale of risk reduction program.*** The proposed risk reduction program was primarily based on McFall's model of social processing (McFall, 1982). According to this model, social skills are viewed as the end-result of a series of steps that a person progresses through in order to determine their response to a social environment or situation. Use of resistance techniques in a risky sexual situation can be considered a type of social skill. There are three primary skills, each consisting of multiple steps. In the first step, *decoding skills* are used to receive, perceive, and interpret information about the situation (McFall, 1982). Accurate interpretation of the situation is a necessary prerequisite for responding competently, as "[a] person who misconstrues a situation will perform in ways that will be judged incompetent" (McFall, 1982, p. 26). Next, a person must use *decision skills* to choose a response. One step in this stage is the evaluation of the value of responses; in order to evaluate response options

accurately, individuals must be able to accurately weigh the costs and benefits of acting in that way. Finally, an individual uses *encoding skills* to perform the response and alter the response according to feedback from the environment. Importantly, individuals' knowledge base will affect all the steps in this model.

In order for women to be able to implement effective resistance and escape techniques, they first must be able to detect that the situation is dangerous or could become dangerous. Therefore, this risk reduction program was designed to improve women's risk perception, or their decoding skills (i.e., the first step in social processing theory). The video and questions targeted decoding skills by presenting factual information about sexual assault and by attempting to dispel misconceptions about sexual assault. For example, it was explained that rape is broader than just vaginal sex (e.g., it can involve oral or anal sex, as well), that sexual assault is frequently perpetrated by people known to the victim rather than strangers, and that rape can occur when a victim is too intoxicated to consent, even if physical force is not used. With this information, women may be better able to recognize risky situations. For example, many women feel safe with friends and friends-of-friends. In the video, one woman describes how she was raped by a casual acquaintance while she was intoxicated at a party, and the other woman in the video describes being raped by an ex-boyfriend. These women's stories should increase women's appreciation that even in situations with people they know, they should be alert to the possibility of sexual aggression.

In addition, aspects of the Elaboration Likelihood Model, a model developed to explain individuals' changes in attitudes (Petty & Cacioppo, 1986), were used to increase the likelihood that participants would be persuaded by the information. In this model, central, rather than peripheral, processing is believed to lead to more persistent attitude change. Central processing is increased when a person is motivated to process the information and they have the ability to process the information (Petty & Cacioppo, 1986). In order to increase motivation, attempts were made to make the information more personally relevant by including information about college students (e.g., the women in the video were college students, the feedback for many questions included information specifically on college students). To increase participants' ability to process the information, attempts were made to minimize distractions (e.g., wearing headphones while watching the video and having a research assistant present to ensure

participants did not skip through the video, appeared to be watching the video, and did not rush through the questions), and the information questions were written at a reading level that was expected to be comprehensible to college students.

### **2.3.2 - Control condition**

The control condition consisted of a brief video on time management (approximately 18 minutes long; University of Central Florida Student Academic Resource Center, 2011) and an online questionnaire designed to provide information about campus resources at Virginia Tech (Appendix P). While the full video lasts 37 minutes, participants only watched the first 18 minutes, approximately the length of the risk reduction program video. Just as in the risk reduction program condition, participants received corrective feedback based on their responses to the informational questions. The number of questions administered in each condition (risk reduction and control) was identical. Additionally, the words *sexual assault* and *rape* were included in the feedback for the questions in this condition so that all participants, regardless of condition, were primed with these words, although notably to different degrees.

## **2.4 - Procedures**

All procedures were approved by the Virginia Tech Institutional Review Board (IRB) prior to beginning data collection (Appendix Q). Participants were recruited using the methods described in the Participants section above. After participants signed up for study part I on the Psychology Department's Sona System, they were provided with the link for the online survey, which they could complete anytime before the study was scheduled to close (i.e., the last day of the Fall semester or the Friday before the university's spring break, for Fall and Spring semesters, respectively). Before participants began the online survey, they implied their consent to participate by providing their name and e-mail address and creating a unique study code. The information sheet on which participants provided this information included the requirements, risks, and benefits of the study. In order to ensure security of data, participants were then automatically directed to a separate online survey which contained all of the online survey measures (both primary and secondary) described above. At the beginning of this survey, participants entered their study code, allowing the researcher to connect participant data to identifying information.

In order to ensure that participants were reading the questions and not responding randomly, random responding check items were distributed throughout the survey. On

questionnaires such as the SIAS and CES-D where rating scales are used, one item was included per page in which participants were asked to select a certain response (e.g., “For this item, please select 3.”). On the TLFB, four infrequency items (Chapman & Chapman, n.d.) were distributed throughout the different days; these items consist of yes/no statements that, if a person is reading the items, would unlikely be answered differently than expected (e.g., it is unlikely that a person cannot remember ever speaking to someone who was wearing glasses). Because many of the alcohol questions were yes/no items, these infrequency items were used as random responding check items for this part of the survey.

At the end of the survey, participants were provided with a list of local and national counseling and crisis resources. Participants received one Sona credit, which is worth extra credit in many psychology courses, for the online survey. Participants who began the survey received full credit regardless of whether they completed the survey or not.

Participant responses were reviewed weekly in order to recruit participants for the laboratory portion of the study (study part II) on a rolling basis. In order to be eligible for the in-lab appointment, participants must have completed the entire online survey and incorrectly answered no more than one of the random responding check items. In order to ensure that participants in the clinical range on the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) were included in the in-lab portion, all participants who score 34 or above on the SIAS (i.e., SIAS clinical cutoff) were invited to participate in the in-lab portion of the study until the study closed. During the Fall 2012 semester, twice as many participants with scores below 34 were randomly selected to be invited to participate in the in-lab portion each week, as we sought to have twice as many participants below the clinical cutoff included in the sample. However, because a greater percentage of participants in the high social anxiety group relative to the low social anxiety group participated in the in-lab study during the Fall 2012 semester, three times as many participants low in social anxiety were invited to participate each week during the Spring 2013 semester. Interested participants scheduled appointments to participate either by e-mailing the researcher or by signing up for a timeslot on the Sona system. After an appointment was scheduled, the consent form for the in-lab portion of the study was e-mailed to participants to ensure that they had adequate time to review the information.

At the start of the in-lab session, participants provided informed consent to participate in the study. They then completed the first written sexual aggression story as well as the behavioral

responses. Next, participants underwent either the experimental or control condition, which was determined prior to the session by using a random number generator to determine which appointments (numbered by order of sign up) would receive which condition, with randomization stratified by social anxiety group (69 participants were assigned to the risk reduction program, and 67 participants were assigned to the control condition). After receiving the assigned program, participants completed a 5-minute distraction task (a word search). All participants then read the consensual and nonconsensual intercourse vignettes and completed the associated questions. The consensual intercourse vignette was always presented first, followed by the nonconsensual intercourse vignette. The consensual intercourse vignette was presented first so that all participants had the consensual intercourse vignette for comparison when reading the nonconsensual intercourse vignette, which involved “grey rape,” as the female was too intoxicated to consent to intercourse with her boyfriend. After responding to both vignettes, participants read the second written sexual aggression story and completed the behavioral responses. The participants then listened to the audio vignette and were asked to indicate when the man should stop making advances. Finally, only participants who received the risk reduction program completed the Acceptability Questionnaire. At the end of the session, all participants were thanked for their participation and provided with the same list of local and national resources that was included at the end of the online survey. Figure 1 contains a flow chart depicting the activities completed in the in-lab portion of the study. Participants received one additional Sona credit for completing the in-lab appointment; each participant also had a 1 out of 6 chance of winning \$25, and winners were determined using a random number generator.

Either the researcher or a trained undergraduate research assistant conducted all sessions. The researcher, a doctoral student in clinical psychology, or a licensed clinical psychologist (Dr. Susan White) were present in the building where sessions were conducted during all appointments to speak with participants if they became distressed while participating. However, no participants verbalized distress or visibly displayed signs of distress, and therefore, neither the researcher nor Dr. White were ever called to speak with a distressed participant.

## **2.5 - Data Analyses**

All data were entered into Predictive Analytics Software (PASW) 18.0.0 for analysis. Due to the exploratory nature of these analyses,  $p \leq .05$  was considered statistically significant and all results where  $p < .10$  were interpreted in the results section. In analyses of the effect of

social interaction anxiety (i.e., SIAS total score), past victimization (i.e., whether or not a participant reported any type of victimization since the age of 14)<sup>2</sup> and depression (i.e., CES-D total score) were entered as covariates in order to control for the effects of these variables. Past victimization has been shown to be a risk factor for revictimization in (e.g., Gidycz et al., 1993; Gidycz et al., 1995; Sarkar & Sarkar, 2005); therefore, it is possible that past victimization may be related to predicted use of resistance techniques and risk detection. In fact, child abuse was associated with increased predicted passive resistance at two time points in a written story (Norris et al., 2006), and unacknowledged rape victims have been found to show delayed response latency on the audio vignette compared to acknowledged victims and nonvictims (Marx & Soler-Baillo, 2005). Depression was entered as a covariate in order to ensure that if an effect of social interaction anxiety was found, it could not be simply due to broader negative affect. Because participants were randomly assigned to experimental condition, covariates were not entered in those analyses, with the exception of the ANCOVA, in which scores from Written Story #1 were entered as a covariate. A series of *t*-tests were run on responses to the written vignettes in order to determine whether the risk reduction program induced response bias (i.e., resulted in women considering consensual intercourse non-consensual). First, independent samples *t*-tests were run to determine if ratings on the items differed for the two groups. Second, paired samples *t*-tests were run to determine if ratings differed between the vignettes in the expected directions (i.e., the rating of the female's desire to have intercourse would be higher in the consensual vignette, the rating that the male inappropriately forced himself on the female would be higher in the nonconsensual vignette, and the rating that the intercourse was consensual would be higher in the consensual vignette). These paired samples *t*-tests were run on the full sample and the both experimental groups separately.

### **2.5.1 - Analyses with behavioral responses as the dependent variables.**

***Social anxiety.*** To examine the effects of social interaction anxiety, a doubly multivariate general linear model (GLM) was run with participants' assertive, polite, and passive resistance scores from each of the three time points in Written Story #1 as the dependent variables. The GLM can be thought of as a multivariate linear regression model that allows for multiple predictors (Raykov & Marcoulides, 2011). Additionally, while the dependent variable in a GLM must be continuous, predictor variables can have a wide range of distributions (e.g., nominal, ordinal, continuous; Raykov & Marcoulides, 2011). The combination of a repeated

measures design and a multivariate (i.e., three types of resistance) design results in a doubly multivariate GLM. As noted above, past victimization and CES-D were entered as control variables. Because social interaction anxiety was entered as a continuous variable and because of the inclusion of covariates, separate univariate GLMs were used to examine significant effects detected by the doubly multivariate GLM.

Analyses of indirect effects through sexual refusal assertiveness were planned for when social interaction anxiety was shown to be a significant predictor of a given type of resistance. Only the time point for which social interaction anxiety had the largest effect on that type of resistance was examined. The indirect effect was estimated and tested using a bootstrapping technique (Preacher & Hayes, 2008). This technique estimates the magnitude of the *ab* path, which is the indirect path. These analyses were conducted using a macro for SPSS (Preacher & Hayes, 2008).

***Experimental condition.*** To examine the effects of experimental condition (i.e., risk reduction program vs. control), a repeated measures MANOVA was run with the change scores for each type of resistance at each administration point as the dependent variables. A MANOVA is a special case of the GLM in which all predictors are categorical (Stevens, 2009). Because the dependent variable itself is a repeated measure, change scores were used. Running a repeated analysis with six time points (three from Written Story #1 and three from Written Story #2) does not allow for comparison of matching time points (e.g., breast fondling in Written Story #2 to breast fondling in Written Story #1). Change scores were computed by subtracting scores from Written Story #1 from the corresponding scores from Written Story #2. Computation of change scores allowed for retention of the repeated measures design of the behavioral responses for each of the three types of resistance assessed.

Use of change scores assumes that the slope of the pre-test scores regressed onto the post-test scores equals one, which very rarely occurs in psychological research (Cohen, Cohen, West, & Aiken, 2003). Therefore, the average scores across the three time points from Written Story #1 and Written Story #2 for each type of resistance were computed. As a secondary exploration of the effect of the experimental program, separate ANCOVAs were then run for each type of resistance. Average scores from Written Story #1 were entered as covariates in the corresponding analyses.

### **2.5.2 - Analyses with response latency as the dependent variable.**

A hierarchical linear regression was used to examine the effect of social interaction anxiety on response latency during the audio vignette. Past victimization was entered in the first step, depression was entered in the second step, and social interaction anxiety was entered in the third step. Because no covariates were entered when examining the effect of experimental condition (i.e., risk reduction program vs. control), an independent samples *t*-test was used to evaluate whether response latency differed between the two groups. Response latency was missing for two participants. Both these participants appeared to not understand the directions for this portion of the study, as they did not pause the audio recording, but when asked after the audio recording, they stated that the male in the recording should have stopped making sexual advances at some point. Therefore, only 134 participants were included in these analyses.

## Chapter 4 – Results

The percentage of women who endorsed each type of sexual victimization since their 14<sup>th</sup> birthday is displayed in Table 3. Because the dependent variables of interest were collected during the in-lab appointments, only participants who completed the in-lab (study part II) appointment were included in the following analyses. Descriptive statistics and correlations for the primary continuous variables are presented in Tables 4 and 5, respectively. There were no differences between participants in the risk reduction program group and those in the control group on the SIAS, CES-D, SAS refusal subscale, and all Written Story #1 resistance scores (all  $ps > .124$ ). The two groups also did not differ in the proportion of participants who had experienced any past victimization, unwanted sexual contact, attempted coercion, coercion, attempted rape, or rape (all  $ps > .447$ ).

### 4.1 - Effects of social anxiety

The doubly multivariate GLM revealed that the between-subjects effect was significant for SIAS total score,  $F(3, 130) = 2.746, p = .046$ ; Pillai's trace = .060, partial  $\eta^2 = .060$ , and was significant for past victimization,  $F(3, 130) = 2.668, p = .050$ ; Pillai's trace = .058, partial  $\eta^2 = .058$ . The within-subjects effect was significant for time,  $F(6, 127) = 21.418, p < .001$ ; Pillai's trace = .503, partial  $\eta^2 = .503$ . The between-subjects effect of CES-D and the within-subjects effects of the interaction between time and each between-subjects variable were not significant (all  $ps > .15$ ).

The univariate tests of the within subjects effects revealed that time was only significant for assertive resistance,  $F(2, 264) = 79.680, p < .001$ , partial  $\eta^2 = .376$ . The effect of time was not significant for polite resistance,  $F(2, 264) = 2.206, p = .112$ , partial  $\eta^2 = .016$ , or passive resistance,  $F(2, 264) = .023, p = .977$ , partial  $\eta^2 < .001$ . Additionally, although the interaction between time and SIAS total score was not significant in the multivariate analyses, the univariate tests revealed that the effect of the interaction was significant for passive resistance,  $F(2, 264) = 3.760, p = .025$ , partial  $\eta^2 = .028$ . The tests of within-subjects contrasts for time revealed that, for assertive resistance, scores at time 1 (breast fondling) were significantly different from scores at time 2 (genital fondling),  $F(1, 132) = 26.079, p < .001$ , partial  $\eta^2 = .165$ , which differed

significantly from scores at time 3 (rape threat),  $F(1, 132) = 72.644, p < .001, \text{partial } \eta^2 = .355$ . As shown in Table 4, mean assertive resistance scores increased as intensity of the sexual aggression increased over time.

Tests of between-subjects effects indicated that the effect of SIAS total score was significant for passive resistance,  $F(1, 132) = 4.746, p = .031, \text{partial } \eta^2 = .035$ , but not assertive resistance,  $F(1, 132) = .510, p = .476, \text{partial } \eta^2 = .004$ , or polite resistance,  $F(1, 132) = 1.109, p = .294, \text{partial } \eta^2 = .008$ . The effect of past victimization approached significance for passive resistance,  $F(1, 132) = 2.765, p = .099, \text{partial } \eta^2 = .021$ . Because the interaction between time and SIAS total score was significant in the univariate tests, three separate univariate GLMs were run to examine the effects of SIAS total score on passive resistance at each time point in Written Story #1. Results of these GLMs are presented in Table 6. SIAS total score had a significant effect on passive resistance score only at the first time point (breast fondling) such that, as SIAS total score increased, passive resistance score also increased. At the second time point (genital fondling), the effect approached significance and was in the same direction. SIAS total score did not significantly predict passive resistance score at the third time point (rape threat). Past victimization was also a significant predictor of passive resistance score only at the first time point, and women who had been victimized reported higher passive resistance than those who did not report prior victimization. At the final time point (rape threat), the effect of CES-D score approached significance, with passive resistance scores being positively related to CES-D score (see Table 6).

The tests of between-subjects effects also revealed that past victimization had a significant effect on assertive resistance,  $F(1, 132) = 6.996, p = .009, \text{partial } \eta^2 = .050$ , but the effect on polite resistance was not significant,  $F(1, 132) = .549, p = .460, \text{partial } \eta^2 = .004$ . Because the interaction between time and past victimization was not significant in the multivariate test,  $F(6, 127) = 1.548, p = .168, \text{partial } \eta^2 = .068$ , or the univariate test for assertive resistance scores,  $F(2, 264) = 1.513, p = .222, \text{partial } \eta^2 = .011$ , separate GLMs were not necessary, as the effect should not change over time. For assertive resistance, women who had been victimized ( $M_{\text{breast fondling}} = 2.074, SD_{\text{breast fondling}} = 1.193; M_{\text{genital fondling}} = 3.274, SD_{\text{genital fondling}} = 1.443, M_{\text{rape threat}} = 4.708, SD_{\text{rape threat}} = 1.457$ ) reported lower predicted use than women who had not been victimized ( $M_{\text{breast fondling}} = 2.610, SD_{\text{breast fondling}} = 1.280; M_{\text{genital fondling}} = 4.023, SD_{\text{genital fondling}} = 1.418; M_{\text{rape threat}} = 5.223, SD_{\text{rape threat}} = 1.123$ ).

Before examining the indirect effect of SIAS total score on passive resistance score from Written Story #1 at the first time point (i.e., breast fondling), hierarchical linear regression analyses were run to examine whether the pathways necessary for an indirect effect (i.e., independent variable to mediator and mediator to dependent variable; Baron & Kenny, 1986) were present after controlling for past victimization and CES-D score. The results of these regression analyses are presented in Table 7. While SAS refusal score was a significant predictor of passive resistance at the time point of interest (i.e., the mediator was significant predictor of the dependent variable), SIAS total score was not a significant predictor of SAS refusal score (i.e., the independent variable did not predict the mediator). Therefore, the bootstrapping analysis (Preacher & Hayes, 2008) was not run because the prerequisites for an indirect effect were not met.

Results of the hierarchical linear regression examining the effect of social interaction anxiety on response latency during the audio vignette are presented in Table 8. The final model (Step 3) was not significant, and the addition of SIAS total score did not result in a significant change in  $R^2$ . CES-D score was the only significant predictor of response latency, but it should be noted that the model was not significant. The effect of CES-D was negative, indicating that as CES-D increased, response latency decreased.<sup>3</sup>

#### **4.2 - Feasibility, acceptability, and preliminary efficacy of the risk reduction program**

No participants requested to discontinue the in-lab appointment, and no study appointments were terminated early due to visible negative reactions of participants. The descriptive statistics for the acceptability questions are presented in Table 9. The distributions of ratings for each acceptability item are presented in Figures 2 through 8. Overall, the item means and distributions indicate that participants found both the video and the information in the questions realistic, participants were not distressed by the material, they learned new information, they believed the program would be beneficial to most undergraduate females, and they would prefer a computer-based program to a large-group program. Additionally, while the average rating for item assessing whether participants believed the material would help reduce risk of victimization was 3.67, the modal response was 4, indicating most participants believed the information would be helpful.

In order to examine whether preference of a computer-based program was affected by social anxiety, responses to item # 7 were dichotomized (i.e., ratings of 4 or 5 were considered

“agree” and ratings of 1, 2, or 3 were considered “neutral/disagree”). An independent samples *t*-test was run to compare the SIAS total scores of those who agreed with this item to those who were in the neutral/disagree group. The difference in SIAS total scores between the two groups (i.e., agree vs. neutral/disagree) was not significant ( $M_{agree} = 26.42$ ,  $SD_{agree} = 12.85$ ;  $M_{disagree} = 30.36$ ,  $SD_{disagree} = 20.99$ ;  $t(15.57) = .671$ ,  $p = .512$ ). The neutral and disagree categories were combined because, notably, only three participants assigned responses of 1 or 2 for this item. Additionally, SIAS total score was not significantly correlated with rating on this item ( $r = -.010$ ,  $p = .932$ ), but this correlation should be interpreted with caution because responses to item #7 on the acceptability questionnaire were negatively skewed.

Descriptive statistics for the responses to the vignette items are presented in Table 10. Independent samples *t*-tests revealed that the difference between groups was not significant for any of the items, but the difference on one item approached significance: ratings of the female’s desire to have intercourse in the nonconsensual intercourse vignette,  $t(134) = 1.75$ ,  $p = .082$ , with the risk reduction program participants rating her desire lower (mean difference = .23) than the control group. Differences between ratings on the other items were not significant (all  $ps > .127$ ).

The differences between corresponding items on the two vignettes were significant for the three expected items in the expected direction (i.e., the rating of the female’s desire to have intercourse would be higher in the consensual vignette, the rating that the male inappropriately forced himself on the female would be higher in the nonconsensual vignette, and the rating that the intercourse was consensual would be higher in the consensual vignette) for the full sample and for both groups (see Table 11). The ratings for the item assessing the male’s desire to have intercourse did not differ significantly between the two vignettes. Taken together, these findings indicate that the risk reduction program did not result in response bias, and therefore, ratings on the vignettes were not entered as covariates in the remaining analyses.

The repeated measures MANOVA on the change scores for the three types of resistance revealed that the between-subjects effect of experimental condition was significant,  $F(3, 132) = 2.945$ ,  $p = .035$ ; Pillai’s trace = .063, partial  $\eta^2 = .063$ , and the within-subjects effect was significant for time,  $F(6, 129) = 3.225$ ,  $p = .006$ ; Pillai’s trace = .130, partial  $\eta^2 = .130$ , and the effect approached significance for the interaction between time and condition,  $F(6, 129) = 1.969$ ,  $p = .075$ ; Pillai’s trace = .084, partial  $\eta^2 = .084$ .

The univariate tests of the within subjects effects revealed that the effect of time was only significant for assertive resistance,  $F(2, 268) = 6.185, p = .002$ , partial  $\eta^2 = .044$ . The effect of time was not significant for polite resistance,  $F(2, 268) = .883, p = .415$ , partial  $\eta^2 = .007$ , or passive resistance,  $F(2, 268) = 1.434, p = .240$ , partial  $\eta^2 = .011$ . Additionally, the univariate tests revealed that the effect of the interaction between time and condition was significant for assertive resistance only,  $F(2, 268) = 4.049, p = .019$ , partial  $\eta^2 = .029$ . This interaction was not significant for polite resistance,  $F(2, 268) = .542, p = .582$ , partial  $\eta^2 = .004$ , or passive resistance,  $F(2, 268) = .497, p = .609$ , partial  $\eta^2 = .004$ . The tests of within-subjects contrasts for time revealed that for assertive resistance, the difference between change scores at time 1 (breast fondling) and scores at time 2 (genital fondling) approached significance,  $F(1, 134) = 3.417, p = .067$ , partial  $\eta^2 = .025$ , and the difference between change scores at time 2 (genital fondling) and time 3 (rape threat) also approached significance,  $F(1, 134) = 2.756, p = .099$ , partial  $\eta^2 = .020$ . The change scores indicate that as the story (and intensity of assault) progressed, the magnitude of change scores decreased ( $M_{breast\ fondling} = -.354, SD_{breast\ fondling} = 1.024; M_{genital\ fondling} = -.166, SD_{genital\ fondling} = .975, M_{rape\ threat} = -.029, SD_{rape\ threat} = .553$ ); participants' scores between Written Story #2 and Written Story #1 were more similar at later time points.

The tests of between-subjects effects indicated that the effect of condition was only significant for assertive resistance,  $F(1, 134) = 7.555, p = .007$ , partial  $\eta^2 = .053$ . Condition did not predict polite resistance,  $F(1, 134) = .781, p = .379$ , partial  $\eta^2 = .006$ , or passive resistance,  $F(1, 134) = .587, p = .445$ , partial  $\eta^2 = .004$ . Because the interaction between time and condition was significant for assertive resistance in the univariate tests, three separate independent samples *t*-tests were run to examine the effects of condition on assertive resistance change scores at each time point. Results of these *t*-tests are presented in Table 12. Condition had a significant effect on the change scores for assertive resistance only at the first time point (breast fondling). As can be seen by the mean change scores in Table 12 and in Figure 9, both groups decreased somewhat in assertive resistance scores between the two stories at all three time points (i.e., their scores on Written Story #2 were lower than their scores on Written Story #1), but participants in the control condition decreased significantly more on assertive resistance scores between the two stories than the participants in the risk reduction program at the first time point (i.e., breast

fondling). A paired-samples *t*-test indicated that the risk reduction program group did not decrease significantly in predicted use of assertive resistance across the two stories, mean difference = .078,  $t(68) = .649$ ,  $p = .518$ .

Results of the separate ANCOVAs on the average scores from Written Story #2 for each type of resistance are presented in Table 13. Consistent with the results of the repeated measures MANOVA on the change scores, condition was only a significant predictor of assertive resistance. Participants in the risk reduction program condition had significantly higher average assertive resistance scores on Written Story #2 compared to participants in the control condition. Condition was not a significant predictor of polite or passive resistance scores.

An independent samples *t*-test indicated that the two experimental conditions differed significantly on response latency during the audio vignette,  $t(132) = 2.603$ ,  $p = .010$ . The participants who received the risk reduction program had shorter response latencies than the control group, meaning they were quicker to detect risk (see *Ms* in Table 4).<sup>4</sup>

## Chapter 5 – Discussion

### 5.1 - Effect of Social Anxiety

The primary purpose of this study was to expand upon previous research that suggested social anxiety may be a risk factor for sexual victimization in college women (Schry & White, 2013) by examining whether social anxiety was a predictor of women's predicted use of resistance techniques on a written story involving sexual aggression and/or their risk detection during an audio vignette. With respect to use of specific resistance techniques, it was hypothesized that social interaction anxiety would be associated with lower predicted use of assertive resistance strategies (Hypothesis 1). This hypothesis was not supported, as social interaction anxiety was not related to predicted use of assertive or polite resistance techniques. Additionally, while social interaction anxiety was negatively correlated with sexual refusal assertiveness, after controlling for past victimization and depression, social interaction anxiety did not significantly predict sexual refusal assertiveness. While a significant total effect of an independent variable on a dependent variable is sometimes considered the first step in testing mediational models (Baron & Kenny, 1986), indirect effects in the absence of a significant total effect can be present (MacKinnon, Krull, & Lockwood, 2000). However, the independent variable must be related to the proposed mediator, and this criterion was not met in this study. Therefore, Hypothesis 2 was also not supported.

The finding that social interaction anxiety did not predict either predicted use of assertive resistance techniques or sexual refusal assertiveness after controlling for past victimization and depression was surprising. In a previous study, Schry and White (2013) found that the relationships between social interaction anxiety and both coercion and rape were partially mediated by sexual refusal assertiveness. In addition, other researchers have found that social anxiety is negatively associated with general assertiveness and assertiveness in social situations (Chambless et al., 1982; Davila & Beck, 2002; LeSure-Lester, 2001). These previous studies were the basis for Hypothesis 1. It is important to keep in mind that the items assessed predicted use of resistance techniques. Although one study has shown that intended use of resistance techniques does predict future use of resistance techniques (Gidycz et al., 2008), it is possible that women may not be good at predicting what they will actually do in an forced or aggressive

sexual situation. This issue in reporting may be particularly relevant for socially anxious women. Socially anxious women may know what they should do but may have trouble overcoming their anxiety to act, despite their intentions, when in the actual situation.

While social interaction anxiety was not related to predicted use of assertive resistance, it was positively related to predicted use of passive resistance techniques (e.g., going along with things despite not wanting to, feeling overwhelmed and not responding, and not doing anything) at the first time point in the story, when the male is fondling the female's breasts. This finding is consistent with a previous study in which socially anxious individuals displayed passive behavior. Specifically, socially anxious college students make less eye contact, speak more softly, and engage in more fidgeting than do non-anxious peers while interacting with their romantic partner (Wenzel, Graff-Dolezal, Macho, & Brendle, 2005).

Being a victim of previous sexual victimization was also associated with increased predicted use of passive resistance at the lowest level of sexual advances, which is consistent with Norris and colleagues' (2006) finding that child abuse was related to increased predicted use of passive resistance. However, in the previous study, the effect was significant for the two later time points (i.e., genital fondling and rape threat; Norris et al., 2006).

Assertive resistance techniques, such as screaming, physically resisting, and attempting to flee, have been shown to be effective in reducing the likelihood of a woman experiencing a completed rape (Ullman, 1998; Ullman & Knight, 1992; Ullman & Knight, 1993; Zoucha-Jensen & Coyne, 1993), while more passive techniques have been associated with more severe sexual victimization (Ullman & Knight, 1992; Ullman & Knight, 1993). A retrospective study of women who were sexually assaulted in adulthood found that immobile, or passive, resistance was related to increased self-blame and decreased perceptions of personal power during the assault (Nurius, Norris, Macy, & Huang, 2004). Therefore, while it is encouraging that social interaction anxiety was not associated with decreased predicted use of assertive resistance techniques, it is concerning that social interaction anxiety was associated with increased predicted use of passive resistance strategies. Furthermore, it is possible that assertive resistance may be less effective when combined with passive resistance strategies. For example, forceful refusals and raising one's voice may be less effective when paired with being paralyzed or followed by a period of not saying anything. In particular, the combination of these techniques may send mixed messages to males, which could result in further sexual advances and increased

aggression. Finally, being immobile during a sexual assault has been associated with increased negative outcomes after the assault, including increased self-blame and worry about others not believing them (Galliano, Noble, Travis, & Puechl, 1993). Therefore, if socially anxious women use passive resistance techniques during a risky sexual situation, the risks are complex, extending beyond simply increasing the likelihood of a completed rape.

Also contrary to what was hypothesized, social interaction anxiety did not predict response latency on the audio vignette, indicating that social interaction anxiety is not associated with delayed risk detection. This finding suggests that while social interaction anxiety may increase undergraduate females' risk of sexual victimization, the increased risk is not due to a deficit in the ability to determine when a sexual situation becomes risky. Taken with the results from the predicted behavioral responses, it appears that social interaction anxiety instead may increase risk through its effect on the woman's use of resistance techniques. In other words, while socially anxious women detect risk just as quickly as non-socially anxious women, they respond differently to this information, choosing more passive resistance at lower levels of sexual advances.

Interestingly, however, depression was negatively related to response latency, indicating that women who were more depressed had significantly shorter response latencies (i.e., better risk detection). This finding was unexpected, as symptoms of both dysthymia and major depressive episodes can include indecisiveness and difficulty with concentration (APA, 2013). Therefore, research into the relationship between depression and associated factors (e.g., heightened attention to negative or threatening stimuli) and risk detection is warranted.

Clinically, these findings suggest that clinicians treating socially anxious women should consider addressing passivity in order to reduce these women's risk of victimization. Also, it may be important for risk reduction programs to not only encourage the use of assertive resistance, but also to tactfully acknowledge the tendency to rely on passive resistance by some women and discussing the risks of passive resistance (e.g., increased likelihood of completed sexual assault, increased post-assault consequences). This discussion may be important for socially anxious women, since they were more likely to report that they would be likely to use passive techniques in response to the least severe sexual advance. It is possible that being assertive is most effective in preventing sexual violence at the first signs of sexual aggression, so use of passive resistance early could be problematic. It may also be important to discuss fear of

negative evaluation, a key fear in social anxiety (APA, 2013), which may increase the likelihood of choosing passive resistance techniques and challenging these fears in order to help socially anxious women feel more comfortable not using them.

## **5.2 - Computer-based Risk Reduction Program**

To the researcher's knowledge, this is the first study to examine a computer-based risk reduction program for sexual victimization in college women. Before evaluating efficacy of an intervention program, it is important that the program is found to be both feasible to administer and acceptable to the target population (e.g., Leon et al., 2011). In the study program, participants were shown a video of women telling their personal stories of sexual assault and provided with information about sexual assault and the use of resistance techniques. The primary content of this program was based on other risk reduction programs (e.g., Gidycz et al., 2001; Gidycz, Rich, et al., 2006), and it was theoretically grounded in a model of social processing (McFall, 1982). This program was found to be feasible, in support of Hypothesis 4, as none of the participants dropped out or ended participation early. Furthermore, the clinician on call for the appointments was never needed to talk to any of the participants. Therefore, it appears that this program is not only feasible, but also potentially highly transportable. It may not be necessary to have another person (e.g., program facilitator) to monitor stress and reactivity, and perhaps the program could be delivered to women in their own homes via the internet.

Hypothesis 5 was also supported because, on average, participants who received the risk reduction program found it to be acceptable. Overall, participants reported that they believed both the video and questions were realistic and provided truthful information with the majority of participants responding on the "agree" end of the Likert scale to both items (video:  $n = 48$ , 69.57%; questions:  $n = 66$ , 95.65%). While some participants ( $n = 14$ , 20.29%) agreed with the statement that the materials were distressing, the average response was in the "disagree to neutral" range with the majority of participants ( $n = 38$ , 55.07%) disagreeing with the statement. Participants also reported, on average, that they learned new information from the study ( $n = 57$ , 82.61% agreed with this statement), that the information would be helpful in reducing risk of sexual victimization ( $n = 44$ , 63.77% agreed with this statement), and that the information would be helpful for most undergraduate females ( $n = 58$ , 84.06% agreed with this statement). Finally, participants reported preferring the computer-based program to a program administered in a large

group setting ( $n = 55$ , 79.71% agreed with this statement). This is encouraging because computer-based programs can be less expensive to administer and be tailored to individual needs more easily than large group interventions (Card et al., 2011). Also, despite the use of different Likert scales and somewhat different items, the results were similar to the acceptability of a bibliotherapy approach to a risk reduction program (Yeater et al., 2004). Computer-based programs offer some advantages over bibliotherapy approaches. First, most college students have grown up using computers and use them regularly for educational activities (Tapscott, 2008, as cited in Kay & Lauricella, 2011). Additionally, computer-based programs can use techniques to ensure that participants are attending to the program, such as having pop-up questions that participants must respond to within a short amount of time. Furthermore, in a study on the use of laptops in class, students reported that use of computers helped them to focus better (Kay & Lauricella, 2011).

Hypothesis 6 (preliminary efficacy) was supported, as participants in the risk reduction program condition had significantly shorter response latencies during the audio vignette compared to those in the control condition. This finding suggests that the participants in the risk reduction program detected risk in the vignette significantly earlier than did the control participants. While the extant literature on the relationship between risk detection in vignettes and victimization has yielded inconsistent findings, studies that have used the Marx and Gross (1995) recording have found that delayed response latency is associated with increased likelihood of victimization (Gidycz, McNamara, et al., 2006). Therefore, the finding of improved risk detection in the risk reduction program compared to the control condition is very encouraging as risk recognition is a key factor in reducing the likelihood of a woman experiencing sexual victimization (Norris et al., 1996).

Experimental condition was associated with predicted use of assertive resistance. However, while the results of the ANCOVA indicated that the participants who received the risk reduction program had significantly higher average assertive resistance scores on Written Story #2 than the control group, the descriptive statistics and the results of the repeated measures MANOVA show that this difference is due to the fact that the control group decreased significantly more than the risk reduction program group in predicted use of assertive resistance at the least severe level of sexual advances (i.e., breast fondling). The risk reduction program

group showed only small decreases in assertive resistance between the two stories. Therefore, Hypothesis 7 was not supported, as the risk reduction program was expected to increase participants' predicted use of assertive resistance.

Neither group was expected to decrease in assertive resistance between the two administrations, so it was surprising that the control group decreased significantly in assertive resistance at the least severe level of sexual advances while the risk reduction program group's scores did not change significantly. Specifically, since the two stories were nearly identical, it was expected that predicted behavioral responses would be trait based and therefore would not change over time without intervention. While this finding is surprising, Orchowski et al. (2008) found that their placebo control group decreased in self-protective behaviors over a four-month follow-up period, and the authors hypothesized that "it is likely that the use of protective behaviors may generally decline as women acclimate to college and feel safer in their surroundings" (p. 214). However, given that this study also found a decrease in predicted use of assertive resistance (arguably a self-protective behavior) within a single session, other explanations for this phenomenon should be examined. It is possible that having read almost the same story before and predicting that the story would again increase in sexual advances as it progressed, control participants chose to delay their assertive resistance until later in the vignette, possibly being somewhat desensitized to sexual advances due to familiarity with the progression in the first story. In contrast, the participants in the risk reduction program, possibly due to the information they received, were not desensitized. Additionally, while the difference in change scores is small (difference = .56), it is believed to be clinically meaningful as well as statistically significant. Because this measure uses average scores for subscale scores, these scores can only range from 0 to 6; given this small range, a difference of approximately half of a point is believed to be clinically significant.

Because prior intentions to use resistance techniques have been shown to predict later use of resistance techniques (Gidycz et al., 2008), the reduction in predicted use of assertive resistance techniques at the lowest level of sexual advances in the control group is important to note. First, the finding may be applicable to theories of revictimization. It is possible that women repeatedly exposed to sexual aggression alter their resistance techniques and/or when they choose to use resistance techniques, which could increase their risk of future victimization. This possibility is consistent with findings that previous victimization is associated with an

increased risk of future victimization (Gidycz et al., 1993; Gidycz et al., 1995; Gidycz et al., 2007; Sarkar & Sarkar, 2005) and findings that victimization is associated with decreased assertiveness, which in turn increases risk of future victimization (Livingston et al., 2007). Additionally, since completed victimization does not occur in either of the written stories, this finding suggests that even if coercion or rape does not occur, exposure to unwanted sexual advances on multiple occasions could decrease the likelihood that a woman will use assertive resistance early in a risky sexual situation.

The fact that the participants in the risk reduction program showed little change in their assertive resistance scores between the two stories is encouraging, particularly given the brief nature of the risk reduction program in this study. The finding suggests that programs that present information about prevalence of sexual victimization, risk of sexual victimization by acquaintances and romantic partners, and effectiveness of resistance techniques can maintain predicted use of assertive resistance techniques. Furthermore, these findings suggest that discussion of resistance techniques is an important part of risk reduction programs, which is consistent with the revised Ohio University Sexual Assault Risk Reduction Program (Gidycz, Rich, et al., 2006; Orchowski et al., 2008). Although further research is warranted and necessary, it seems that this discussion should include the possibility that women's use of assertive resistance may decrease if a person is exposed to unwanted sexual advances repeatedly.

### **5.3 - Limitations**

These findings should be considered in light of the limitations of this study. One limitation is the lack of longitudinal assessment of sexual victimization. This limitation precluded analyses of the effect of social anxiety on future victimization, including the possibility of mediation through predicted use of passive resistance, and of the effect of the risk reduction program on rates of sexual victimization. Therefore, while previous studies have found that social anxiety is related to increased risk of certain types of victimization cross-sectionally (Schry & White, 2013) and this study found that social anxiety is associated with increased predicted use of passive resistance early in unwanted sexual advances, it is unclear whether social anxiety predicts later victimization. Furthermore, while participants in the risk reduction program displayed better risk detection than the control group and did not display the

same decrease in predicted use of assertive resistance early in unwanted sexual advances that the control group showed, it is unknown whether the program was effective in reducing the likelihood of experiencing sexual victimization.

Another limitation of this study is that the efficacy of the risk reduction program was only assessed immediately after program administration. Therefore, it is unclear whether the effects of the risk reduction program are sustained. Furthermore, the risk reduction program in this study was very brief, as the entire study appointment, including the completion of all measures, typically lasted one hour or less. The program may not be potent enough to produce lasting change, but it may be useful as a preliminary awareness building program, a booster or augmentative program, or to prepare women for additional risk reduction programs.

Additionally, with the exception of the behavioral response measure of risk detection, all measures were self-report. Participants' responses on self-report measures can be biased, and how women are perceived by others may be an important factor in their risk of sexual victimization. Also, the measure of risk detection (i.e., response latency on the audio recording) was only assessed once, after the participants received their assigned program, so change in risk detection was not assessed.

Finally, although consistent with university demographics, the sample was predominately Caucasian. These results may not generalize to undergraduate women of other races and ethnicities. Relatedly, this study sought to test the hypotheses in a female undergraduate sample, which means these results may not generalize to women not attending college.

#### **5.4 - Future Directions**

Although the original hypotheses about assertive resistance techniques and delayed risk detection were not supported, the finding that social anxiety was associated with increased predicted use of passive resistance, as well as previous research suggesting that social anxiety may increase risk of some types of sexual victimization (Schry & White, 2012; Schry & White, 2013), indicates that longitudinal studies examining social anxiety as a risk factor for sexual victimization are warranted. Future studies should also examine both assertiveness and passivity as potential mediators.

Given that this study demonstrated that a computer-based risk reduction program is both feasible and acceptable, as well as potentially efficacious, additional studies on the efficacy of this type of program are warranted. Future studies should examine the longevity of the program

effects as well as whether the program actually reduces risk of victimization. Additionally, studies that examine other types of risk reduction programs (e.g., large group programs) may consider including computer-based booster sessions.

Research on risk reduction programs for women who are not attending college is needed (Gidycz, Rich, & Marioni, 2002). While research has shown that college women are at an increased risk of sexual victimization (Brener et al., 1999), they are not the only women who are at risk of sexual victimization. The dearth of research on programs for non-college attending women represents a significant disparity that needs to be addressed. Given the potential difficulty of large group administrations of risk reduction programs for non-college females, computer-based programs may be a feasible option for wider dissemination of risk reduction efforts.

Finally, researchers should continue to examine the relationship between response latency measures of risk detection and likelihood of experiencing sexual assault in order to aid in the development of meaningful outcome measures to be used in evaluating risk reduction programs. Additional research to identify sensitive predictors of actual behavioral responses during sexual victimization is also needed.

## **5.5 - Conclusion**

While social interaction anxiety was not related to predicted use of assertive resistance or delayed risk detection, it was related to greater predicted use of passive resistance early in a story involving unwanted sexual advances. Given that passive resistance has been shown to be ineffective in reducing the severity of sexual assault (Ullman & Knight, 1992; Ullman & Knight, 1993), this study builds on previous research (Schry & White, 2013) and provides additional evidence that social anxiety may be a risk factor for sexual victimization in college women. Further research in this area is warranted, and social anxiety should be considered a potential barrier to the use of effective resistance techniques. Additionally, this study demonstrated the feasibility, acceptability, and preliminary efficacy of a computer-based risk reduction program for college females. Women reported learning new material from the program, preferring the computer-based program to large group programs, and believing that other undergraduate women would benefit from the program. Furthermore, women were not overly disturbed emotionally by the material. Women who received the program also did not evidence a decrease in predicted use of assertive resistance between the two stories, which was present in the control

group. The women who received the program also displayed superior risk detection compared to the control group. Based on these findings, additional research into computer-based risk reduction programs is warranted.

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## Footnotes

<sup>1</sup> Sexual assault can and does happen to both males and females. However, because this study focuses on sexual victimization in female college students, female pronouns will be used when referring to victims of sexual assault in this manuscript.

<sup>2</sup> In order to determine how to best control for past victimization in the analyses, a multivariate analysis of variance (MANOVA) was conducted to examine whether a person's most severe victimization was related to the average score across the three time points on Written Story #1 and response latency on the audio vignette. The effect of most severe victimization approached significance,  $F(20, 512) = 1.530, p = .066$ ; Pillai's Trace = .226; partial  $\eta^2 = .056$ . In the tests of between-subjects effects, the effect of most severe type of victimization on average assertive resistance score was significant,  $F(5) = 2.622, p = .027$ , partial  $\eta^2 = .093$ , and the effect on passive resistance score approached significance,  $F(5) = 2.241, p = .054$ , partial  $\eta^2 = .080$ . The effects on average polite resistance score and response time on the audio vignette were not significant,  $F(5) = 1.742, p = .130$ , partial  $\eta^2 = .064$ ;  $F(5) = .528, p = .755$ , partial  $\eta^2 = .020$ , respectively. For assertive resistance scores, Tukey's post-hoc tests revealed that the significant difference was between the group that had never been victimized (i.e., nonvictims) and those who had been raped (mean difference = .8732,  $p = .016$ ); the remaining post-hoc tests for average assertive resistance score were not significant (all  $ps > .38$ ). For passive resistance scores, Tukey's post-hoc tests revealed that the difference between the group that had never been victimized (i.e., nonvictims) and those who had been raped (mean difference = -.4521,  $p = .056$ ) approached significance; the remaining post-hoc tests for average passive resistance score were not significant (all  $ps > .22$ ). Because the only significant differences were between nonvictims and rape victims and no differences between different levels of victimization emerged (e.g., between unwanted sexual coercion and coercion, between coercion and rape), past victimization was defined as experiencing any type of sexual victimization (i.e., unwanted sexual contact, attempted coercion, coercion, attempted rape, and rape) since the age of 14.

<sup>3</sup> Because some participants ( $n = 10$ ) responded during consensual activity (e.g., conversation about the date, consensual kissing), the regression was run again with these participants excluded. Overall, the result was similar, but the effect of CES-D score approached significance, rather than reaching significance,  $b = -.581$ ;  $\beta = -.201$ ;  $t = -1.919, p = .057$ .

<sup>4</sup> Because some participants ( $n = 10$ ) responded during consensual activity (e.g., conversation about the date, consensual kissing), the  $t$ -test was run again with these participants excluded, and the overall results were unchanged.

Table 1

*Demographic Information for All Participants who Completed the Online Survey (n = 1095)*

Demographic Variable	<i>M</i>	<i>SD</i>	Minimum	Maximum
Age (in years) <sup>a</sup>	19.42	1.23	18	25+
		<i>n</i>	%	
<b>Year in College</b>				
1 <sup>st</sup> Year		392	35.8	
2 <sup>nd</sup> Year		281	25.7	
3 <sup>rd</sup> Year		226	20.6	
4 <sup>th</sup> Year		174	15.9	
5 <sup>th</sup> Year or Beyond		22	2.0	
<b>College of Major Field of Study<sup>b</sup></b>				
College of Agriculture & Life Sciences		206	18.8	
College of Architecture & Urban Studies		27	2.5	
Pamplin College of Business		107	9.8	
College of Engineering		28	2.6	
College of Liberal Arts & Human Sciences		259	23.7	
College of Natural Resources & Environment		9	0.8	
College of Science		465	42.5	
University Studies		106	9.7	
<b>Race/Ethnicity<sup>b</sup></b>				
White/Caucasian, non-Hispanic, non-Arab		916	83.7	
Black/African/African American, non-Hispanic		31	2.8	
Hispanic/Latina		40	3.7	
American Indian/Alaskan Native		3	0.3	
Arab/Middle Eastern/Arab American		11	1.0	
Asian/Asian-American		126	11.5	
Pacific Islander		8	0.7	
Other		5	0.5	
Did not wish to provide this information		6	0.5	
<b>Residence Type</b>				
On-campus residence hall		507	46.3	
Fraternity or sorority house		46	4.2	
Other university housing		4	0.4	
Off-campus, non-university housing		530	48.4	
Parent or guardian's house		7	0.6	
Other		1	0.1	

Demographic Variable	<i>n</i>	%
<b>Sexual Orientation</b>		
Heterosexual	1062	97.0
Bisexual	13	1.2
Homosexual/Gay/Lesbian	7	0.6
Other	6	0.5
Did not wish to provide this information	7	0.6
<b>Relationship Status</b>		
Not dating anyone	510	46.6
Casually dating one person	112	10.2
Casually dating more than one person	18	1.6
In a serious and committed relationship	418	38.2
Living with partner	21	1.9
Engaged	15	1.4
Married	1	0.1
<b>Sorority Member</b>		
Yes	247	22.6
No	848	77.4
<b>Grade Point Average (GPA)</b>		
0.00 to 0.99	1	0.1
1.00 to 1.99	8	0.7
2.00 to 2.99	216	19.7
3.00 to 3.49	383	35.0
3.50 to 4.00	275	25.1
Not applicable (in 1 <sup>st</sup> semester of college)	212	19.4

<sup>a</sup> The item assessing age was multiple choice in order to exclude participants who were under the age of 18 as required by IRB protocol. Only two participants reported an age of 25 or higher.

<sup>b</sup> Percentages do not sum to 100% because participants could choose more than one option.

Table 2

*Demographic Information for Participants who Completed the In-Lab Appointment (n = 136)*

Demographic Variable	<i>M</i>	<i>SD</i>	Minimum	Maximum
Age (in years) <sup>a</sup>	19.40	1.26	18	25+
		<i>n</i>	%	
<b>Year in College</b>				
1 <sup>st</sup> Year		52	38.2	
2 <sup>nd</sup> Year		34	25.0	
3 <sup>rd</sup> Year		31	22.8	
4 <sup>th</sup> Year		16	11.8	
5 <sup>th</sup> Year or Beyond		3	2.2	
<b>College of Major Field of Study<sup>b</sup></b>				
College of Agriculture & Life Sciences		22	16.2	
College of Architecture & Urban Studies		8	5.9	
Pamplin College of Business		12	8.8	
College of Engineering		7	5.1	
College of Liberal Arts & Human Sciences		30	22.1	
College of Natural Resources & Environment		1	0.7	
College of Science		61	44.9	
University Studies		12	8.8	
<b>Race/Ethnicity<sup>b</sup></b>				
White/Caucasian, non-Hispanic, non-Arab		107	78.7	
Black/African/African American, non-Hispanic		9	6.6	
Hispanic/Latina		6	4.4	
American Indian/Alaskan Native		0	0.0	
Arab/Middle Eastern/Arab American		2	1.5	
Asian/Asian-American		17	12.5	
Pacific Islander		1	0.7	
Other		0	0	
Did not wish to provide this information		2	1.5	
<b>Residence Type</b>				
On-campus residence hall		71	52.2	
Fraternity or sorority house		5	3.7	
Other university housing		1	0.7	
Off-campus, non-university housing		58	42.6	
Parent or guardian's house		1	0.7	
Other		0	0.0	

Demographic Variable	<i>n</i>	%
<b>Sexual Orientation</b>		
Heterosexual	129	94.9
Bisexual	4	2.9
Homosexual/Gay/Lesbian	1	0.7
Other	1	0.7
Did not wish to provide this information	1	0.7
<b>Relationship Status</b>		
Not dating anyone	60	44.1
Casually dating one person	17	12.5
Casually dating more than one person	1	0.7
In a serious and committed relationship	53	39.0
Living with partner	5	3.7
Engaged	0	0.0
Married	0	0.0
<b>Sorority Member</b>		
Yes	18	13.2
No	118	86.8
<b>Grade Point Average (GPA)</b>		
0.00 to 0.99	0	0.0
1.00 to 1.99	2	1.5
2.00 to 2.99	22	16.2
3.00 to 3.49	46	33.8
3.50 to 4.00	40	29.4
Not applicable (in 1 <sup>st</sup> semester of college)	26	19.1

<sup>a</sup> The item assessing age was multiple choice in order to exclude participants who were under the age of 18 as required by IRB protocol. Only one participant reported an age of 25 or higher.

<sup>b</sup> Percentages do not sum to 100% because participants could choose more than one option.

Table 3

*Rates of Sexual Victimization Experienced between Age 14 and Time of Survey Among Participants who Completed the Online Survey and Participants who Completed the In-Lab Appointment*

Type of Sexual Victimization	Online Survey ( <i>n</i> = 1095) <i>n</i> (%)	In-Lab Appointments ( <i>n</i> = 136) <i>n</i> (%)
Unwanted sexual contact	395 (36.1%)	64 (47.1%)
Attempted coercion	218 (19.9%)	40 (29.4%)
Coercion	181 (16.5%)	33 (24.3%)
Attempted rape	208 (19.0%)	29 (21.3%)
Rape	215 (19.6%)	28 (20.6%)
Most Severe Type of Sexual Victimization	Online Survey ( <i>n</i> = 1095) <i>n</i> (%)	In-Lab Appointments ( <i>n</i> = 136) <i>n</i> (%)
Nonvictim	605 (55.3%)	60 (44.1%)
Unwanted sexual contact	87 (7.9%)	16 (11.8%)
Attempted coercion	50 (4.6%)	9 (6.6%)
Coercion	53 (4.8%)	14 (10.3%)
Attempted rape	85 (7.8%)	9 (6.6%)
Rape	215 (19.6%)	28 (20.6%)

Table 4

*Descriptive Statistics for Study Variables*

Variable	Full Sample ( <i>n</i> = 136)		Risk Reduction Program ( <i>n</i> = 69)		Control Group ( <i>n</i> = 67)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SIAS total	27.76	14.17	27.22	14.76	28.31	13.61
CES-D total	16.22	9.70	16.91	10.14	15.51	9.24
SAS refusal subscale	23.29	5.25	23.39	4.83	23.18	5.68
Story #1 assertive resistance – breast fondling	2.31	1.26	2.27	1.33	2.36	1.18
Story #1 assertive resistance – genital fondling	3.60	1.47	3.55	1.53	3.66	1.42
Story #1 assertive resistance – rape threat	4.94	1.34	4.84	1.44	5.03	1.23
Story #1 polite resistance – breast fondling	3.94	.96	3.96	.89	3.92	1.03
Story #1 polite resistance – genital fondling	3.71	1.22	3.73	1.27	3.70	1.17
Story #1 polite resistance – rape threat	2.94	1.67	2.89	1.79	3.00	1.56
Story #1 passive resistance – breast fondling	.80	.87	.69	.77	.92	.95
Story #1 passive resistance – genital fondling	.55	.80	.57	.81	.54	.80
Story #1 passive resistance – rape threat	.48	.78	.46	.76	.49	.81
Story #2 assertive resistance – breast fondling	1.96	1.43	2.19	1.52	1.72	1.29

Variable	Full Sample ( <i>n</i> = 136)		Risk Reduction Program ( <i>n</i> = 69)		Control Group ( <i>n</i> = 67)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Story #2 assertive resistance – genital fondling	3.44	1.61	3.50	1.67	3.37	1.55
Story #2 assertive resistance – rape threat	4.91	1.42	4.83	1.54	4.99	1.28
Story #2 polite resistance – breast fondling	3.99	1.20	4.11	1.17	3.87	1.23
Story #2 polite resistance – genital fondling	3.86	1.34	3.87	1.33	3.85	1.35
Story #2 polite resistance – rape threat	3.11	1.80	3.11	1.87	3.12	1.73
Story #2 passive resistance – breast fondling	.77	.92	.72	.93	.84	.90
Story #2 passive resistance – genital fondling	.64	.89	.64	.96	.64	.82
Story #2 passive resistance – rape threat	.47	.83	.49	.92	.45	.74
Response latency – audio vignette (in seconds)	105.72	29.85	99.25	28.13	112.39	30.31

*Note.* SIAS = Social Interaction Anxiety Scale; CES-D = Center for Epidemiologic Studies Depression Scale; SAS = Sexual Assertiveness Scale; Story #1 = Administration before program; Story #2 = Administration after program.

Table 5

*Correlations among Study Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. SIAS total	1										
2. CES-D total	.457***	1									
3. SAS refusal subscale	-.169*	-.161 <sup>†</sup>	1								
4. Story #1 assertive resistance – breast fondling	-.003	-.057	.049	1							
5. Story #1 assertive resistance – genital fondling	.078	-.051	.140	.711***	1						
6. Story #1 assertive resistance – rape threat	-.040	-.218*	.101	.480***	.710***	1					
7. Story #1 polite resistance – breast fondling	.029	-.068	-.005	.300**	.370***	.295***	1				
8. Story #1 polite resistance – genital fondling	-.117	-.078	-.061	.010	-.023	.096	.368***	1			
9. Story #1 polite resistance – rape threat	-.156 <sup>†</sup>	-.090	-.022	.050	-.137	-.116	.188*	.691***	1		
10. Story #1 passive resistance – breast fondling	.348***	.315***	-.325***	-.193*	-.178*	-.203*	-.085	-.014	-.010	1	
11. Story #1 passive resistance – genital fondling	.218*	.229**	-.287**	-.214*	-.318***	-.294**	-.115	-.047	.027	.705***	1
12. Story #1 passive resistance – rape threat	.160 <sup>†</sup>	.236**	-.352***	-.171*	-.301***	-.414***	-.151 <sup>†</sup>	-.066	.097	.512***	.665***

Variable	1	2	3	4	5	6	7	8	9	10	11
13. Story #2 assertive resistance – breast fondling	-.070	-.101	.052	.715***	.613***	.404***	.296***	.137	.141	-.203*	-.201*
14. Story #2 assertive resistance – genital fondling	.004	-.096	.143 <sup>†</sup>	.675***	.803***	.705***	.246**	.021	-.065	-.218*	-.327***
15. Story #2 assertive resistance – rape threat	-.056	-.185*	.095	.500***	.681***	.921***	.254**	.110	-.069	-.229**	-.293**
16. Story #2 polite resistance – breast fondling	.051	.019	-.023	.350***	.386***	.354***	.755***	.477***	.290**	-.080	-.150 <sup>†</sup>
17. Story #2 polite resistance – genital fondling	-.104	-.065	.059	.104	.113	.169*	.522***	.697***	.632***	-.081	-.048
18. Story #2 polite resistance – rape threat	-.083	-.066	.061	.031	-.138	-.141	.201*	.626***	.864***	.038	.069
19. Story #2 passive resistance – breast fondling	.284**	.212*	-.311***	-.245**	-.328***	-.338***	-.180*	-.045	.041	.753***	.809***
20. Story #2 passive resistance – genital fondling	.283**	.241**	-.249**	-.267**	-.316***	-.319***	-.195*	.008	.039	.649***	.747***
21. Story #2 passive resistance – rape threat	.280**	.259**	-.267**	-.215*	-.250**	-.304***	-.178*	-.028	.024	.474***	.621***
22. Response latency – audio vignette (in seconds)	-.016	-.144 <sup>†</sup>	-.209*	-.185*	-.159 <sup>†</sup>	.016	.032	-.008	-.033	.113	.015

Variable	12	13	14	15	16	17	18	19	20	21	22
12. Story #1 passive resistance – rape threat	1										
13. Story #2 assertive resistance – breast fondling	-.065	1									
14. Story #2 assertive resistance – genital fondling	-.266**	.700***	1								
15. Story #2 assertive resistance – rape threat	-.449***	.443***	.744***	1							
16. Story #2 polite resistance – breast fondling	-.149 <sup>†</sup>	.434***	.403***	.364***	1						
17. Story #2 polite resistance – genital fondling	-.059	.307***	.091	.161 <sup>†</sup>	.675***	1					
18. Story #2 polite resistance – rape threat	.117	.169*	-.106	-.104	.291**	.711***	1				
19. Story #2 passive resistance – breast fondling	.639***	-.214*	-.321***	-.368***	-.165 <sup>†</sup>	-.106	.069	1			
20. Story #2 passive resistance – genital fondling	.634***	-.215*	-.342***	-.369***	-.233**	-.044	.096	.792***	1		
21. Story #2 passive resistance – rape threat	.731***	-.176*	-.298***	-.381***	-.129	-.041	.084	.643***	.731***	1	
22. Response latency – audio vignette (in seconds)	-.027	-.166 <sup>†</sup>	-.123	-.008	-.009	-.002	-.039	.076	.017	.023	1

*Note.* SIAS = Social Interaction Anxiety Scale; CES-D = Center for Epidemiologic Studies Depression Scale; SAS = Sexual Assertiveness Scale; Story #1 = Administration before program; Story #2 = Administration after program.

<sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 6

*GLM Results Examining the Effect of Social Anxiety on Passive Resistance in Written Story #1*

Story Time Point	Predictor	Tests of Between-Subjects Effects			Parameter Estimates		
		<i>F</i>	<i>p</i>	Partial $\eta^2$	<i>b</i>	<i>t</i>	<i>p</i>
Breast fondling	Past victimization	4.528	.035	.033	.305	2.128	.035
	CES-D	2.463	.119	.018	.013	1.569	.119
	SIAS	9.622	.002	.068	.017	3.102	.002
Genital fondling	Past victimization	2.429	.121	.018	.217	1.559	.121
	CES-D	1.575	.212	.012	.010	1.255	.212
	SIAS	2.826	.095	.021	.009	1.681	.095
Rape threat	Past victimization	.297	.586	.002	.075	.545	.586
	CES-D	3.751	.055	.028	.015	1.937	.055
	SIAS	.566	.453	.004	.004	.752	.453

*Note.* Past victimization parameter estimate is for when past victimization = 1 (i.e., yes); CES-D = Center for Epidemiologic Studies Depression Scale; SIAS = Social Interaction Anxiety Scale.

Table 7

*Hierarchical Linear Regression Results Examining Mediational Paths*

Outcome	Step	Predictor(s)	$R^2$	Adj. $R^2$	$F$	$\Delta R^2$	$\Delta F$	$b$	$\beta$	$t$
SAS Refusal Score	1	Past victimization	.010	.002	1.313	-	-	-1.038	-.099	-1.146
	2	Past victimization CES-D	.029	.015	2.020	.020	2.710	-.645 -.079	-.061 -.145	-.693 -1.646
	3	Past victimization CES-D SIAS	.042	.021	1.945	.013	1.770	-.765 -.046 -.047	-.073 -.084 -.128	-.820 -.845 -1.331
Written Story #1 – Passive Resistance – Breast Fondling	1	Past victimization	.049	.042	6.864*	-	-	.386	.221	2.620*
	2	Past victimization CES-D	.120	.107	9.101***	.072	10.835**	.262 .025	.150 .277	1.780 <sup>†</sup> 3.292**
	3	Past victimization CES-D SAS Refusal Score	.193	.175	10.517***	.073	11.861**	.233 .021 -.045	.133 .237 -.273	1.641 2.902** -3.444**

*Note.* Adj.  $R^2$  = adjusted  $R^2$ ;  $\Delta R^2$  = Change in  $R^2$ ;  $\Delta F$  =  $F$  statistic for the change in models; Past victimization was dummy coded (1 = yes); CES-D = Center for Epidemiologic Studies Depression Scale; SIAS = Social Interaction Anxiety Scale; SAS Refusal Score = Sexual Assertiveness Scale – Refusal Subscale.

<sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 8

*Hierarchical Linear Regression Results Examining the Effect of Social Anxiety on Response Latency*

Step	Predictor(s)	$R^2$	Adj. $R^2$	$F$	$\Delta R^2$	$\Delta F$	$b$	$\beta$	$t$
1	Past victimization	.011	.003	1.406	-	-	6.140	.103	1.186
2	Past victimization CES-D	.041	.026	2.804 <sup>†</sup>	.031	4.168*	8.790 -.561	.147 -.180	1.665 <sup>†</sup> -2.042*
3	Past victimization CES-D SIAS	.046	.024	2.080	.005	.648	9.209 -.674 .163	.154 -.217 .077	1.734 <sup>†</sup> -2.182* .805

*Note.* Adj.  $R^2$  = adjusted  $R^2$ ;  $\Delta R^2$  = Change in  $R^2$ ;  $\Delta F$  =  $F$  statistic for the change in models; Past victimization was dummy coded (1 = yes); CES-D = Center for Epidemiologic Studies Depression Scale; SIAS = Social Interaction Anxiety Scale.

<sup>†</sup>  $p < .10$ , \*  $p < .05$

Table 9

*Descriptive Statistics of Acceptability Questions (n = 69)*

Question	<i>M</i>	<i>SD</i>	Minimum	Maximum
The video was realistic.	3.99	1.06	1	5
The questions about sexual assault provided realistic and truthful information.	4.57	.58	3	5
The materials (i.e., the video and questions about sexual assault) were distressing to watch and read.	2.51	1.11	1	5
I learned new information about sexual assault by participating in this study.	4.16	.96	1	5
The materials (i.e., the video and questions about sexual assault) contained information that would reduce the risk of sexual assault.	3.67	1.00	1	5
Most undergraduate females would benefit from seeing the video and receiving the information in the questions.	4.09	.85	1	5
If given the choice between a presentation about sexual assault administered in a large group setting (e.g., in an auditorium with a large number of students) and a computer program that could be completed individually (e.g., the video and questions viewed today), I would prefer the computer program.	4.25	.93	1	5

*Note.* All items used a 1 to 5 Likert scale (1 = *Completely disagree*, 3 = *Neutral*, 5 = *Completely agree*).

Table 10

*Descriptive Statistics for Response to the Consensual and Non-consensual Intercourse Vignettes*

Vignette & Question	Full Sample ( <i>n</i> = 136)		Risk Reduction Program ( <i>n</i> = 69)		Control Group ( <i>n</i> = 67)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Consensual Intercourse Vignette</b>						
Did Lisa want to have sex with Matt?	4.73	.56	4.71	.62	4.75	.50
Did Matt want to have sex with Lisa?	4.87	.43	4.86	.43	4.90	.43
Did Matt inappropriately force himself on Lisa?	1.28	.71	1.32	.78	1.24	.63
Was the sexual intercourse between Lisa and Matt consensual?	4.79	.47	4.78	.48	4.81	.47
<b>Non- Consensual Intercourse Vignette</b>						
Did Melissa want to have sex with Greg?	2.29	.77	2.17	.77	2.40	.76
Did Greg want to have sex with Melissa?	4.92	.27	4.88	.32	4.96	.21
Did Greg inappropriately force himself on Melissa?	3.73	.92	3.80	.98	3.66	.86
Was the sexual intercourse between Melissa and Greg consensual?	2.31	1.03	2.29	1.02	2.33	1.05

*Note.* All items were rated on a 5-point Likert scale (1 = *Definitely not*, 3 = *Not sure*, 5 = *Definitely*).

Table 11

*Results of the Paired Samples t-tests Comparing Responses to Consensual and Nonconsensual Intercourse Vignettes*

Question Content	Full Sample ( <i>n</i> = 136)		Risk Reduction Program ( <i>n</i> = 69)		Control Group ( <i>n</i> = 67)	
	Mean Diff.	<i>t</i>	Mean Diff.	<i>t</i>	Mean Diff.	<i>t</i>
Did the female want to have sex with the male?	-2.44	-34.57***	-2.54	-25.30***	-2.34	-23.73***
Did the male want to have sex with the female?	.04	1.35	.03	.58	.06	1.43
Did the male inappropriately force himself on the female?	2.45	25.94***	2.48	17.77***	2.42	18.91***
Was the sexual intercourse between the female and the male consensual?	-2.49	-27.87***	-2.49	-20.23***	-2.48	-19.06***

*Note.* All items were rated on a 5-point Likert scale (1 = *Definitely not*, 3 = *Not sure*, 5 = *Definitely*).

\*\*\* *p* < .001

Table 12

*Independent Samples t-tests Examining the Effect of Condition on Assertive Resistance Change Scores*

Story Time Point	Risk Reduction Program		Control		<i>t</i> -test	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Breast fondling	-.078	1.001	-.639	.974	-3.308	.001
Genital fondling	-.049	1.030	-.287	.908	-1.424	.157
Rape threat	-.015	.556	-.045	.554	-.318	.751

Table 13

*ANCOVA of the Effect of Experimental Condition on Average Resistance Scores on Written Story #2*

Outcome	Step	Predictor(s)	$R^2$	Adj. $R^2$	$F$	$\Delta R^2$	$\Delta F$	$b$	$\beta$	$t$
Average Assertive Resistance Score – Written Story #2	1	Avg. Assert. Res. Score – WS#1	.785	.784	490.457***	-	-	.967	.886	22.146***
	2	Avg. Assert. Res. Score – WS#1 Condition	.797	.794	260.440***	.011	7.314**	.973	.892	22.775***
Average Polite Resistance Score – Written Story #2	1	Avg. Pol. Res. Score – WS#1	.744	.742	389.406***	-	-	1.022	.863	19.733***
	2	Avg. Pol. Res. Score – WS#1 Condition	.745	.742	194.774***	.001	.780	1.022	.863	19.722***
Average Passive Resistance Score – Written Story #2	1	Avg. Pass. Res. Score – WS#1	.740	.738	381.888***	-	-	.965	.860	19.542***
	2	Avg. Pass. Res. Score – WS#1 Condition	.741	.737	190.533***	.001	.527	.967	.862	19.517***
								.051	.032	.726

*Note.* Adj.  $R^2$  = adjusted  $R^2$ ;  $\Delta R^2$  = Change in  $R^2$ ;  $\Delta F$  =  $F$  statistic for the change in models; Condition was dummy coded (1 = risk reduction program); Avg. = Average; Assert. Res. = Assertive resistance; Pol. Res. = Polite Resistance; Pass. Res. = Passive Resistance; WS#1 = Written Story #1

\*\*  $p < .01$ , \*\*\*  $p < .001$

Figure 1. Flow chart of in-lab study activities.

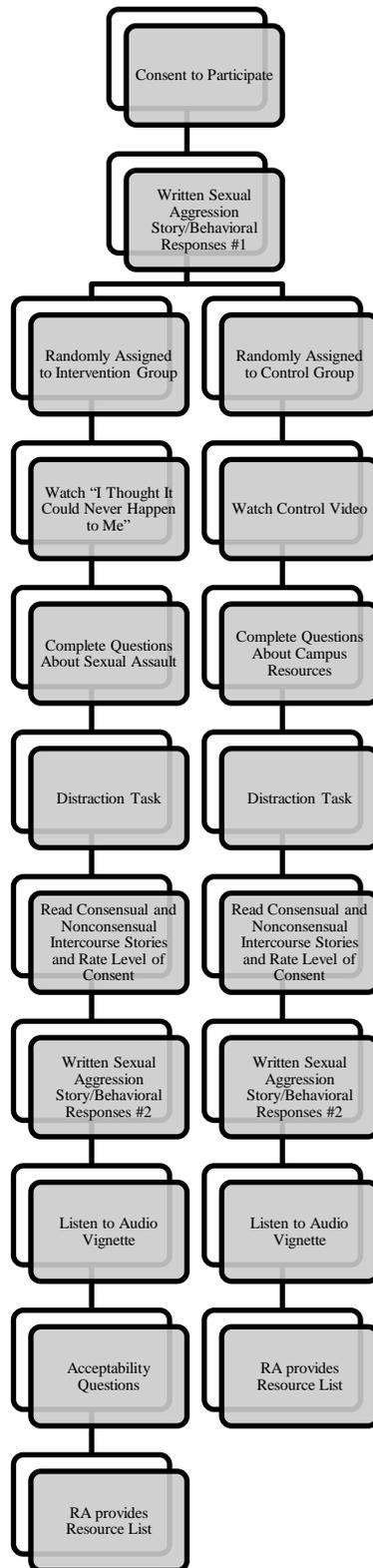


Figure 2. Histogram of responses to “The video was realistic.”

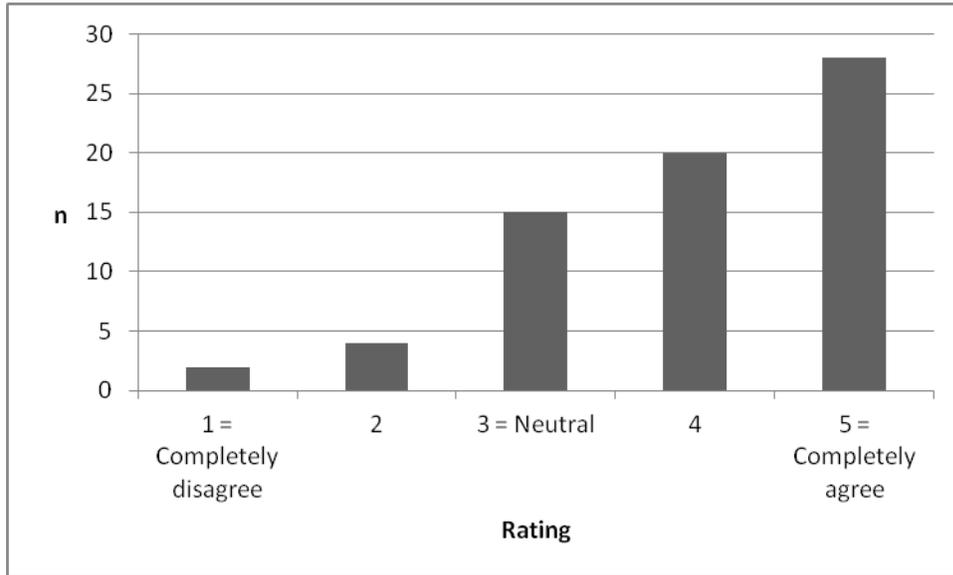


Figure 3. Histogram of responses to “The questions about sexual assault provided realistic and truthful information.”

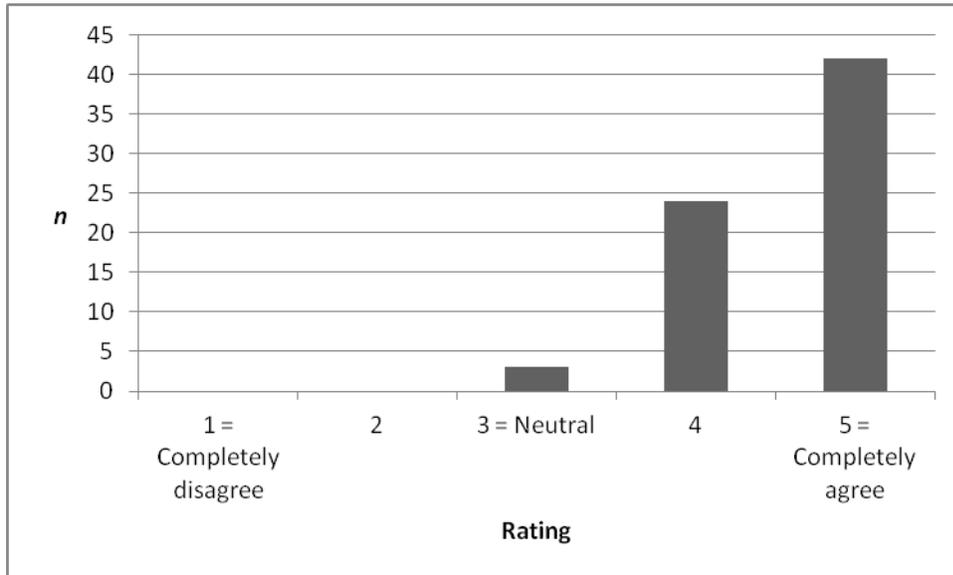


Figure 4. Histogram of responses to “The materials (i.e., the video and questions about sexual assault) were distressing to watch and read.”

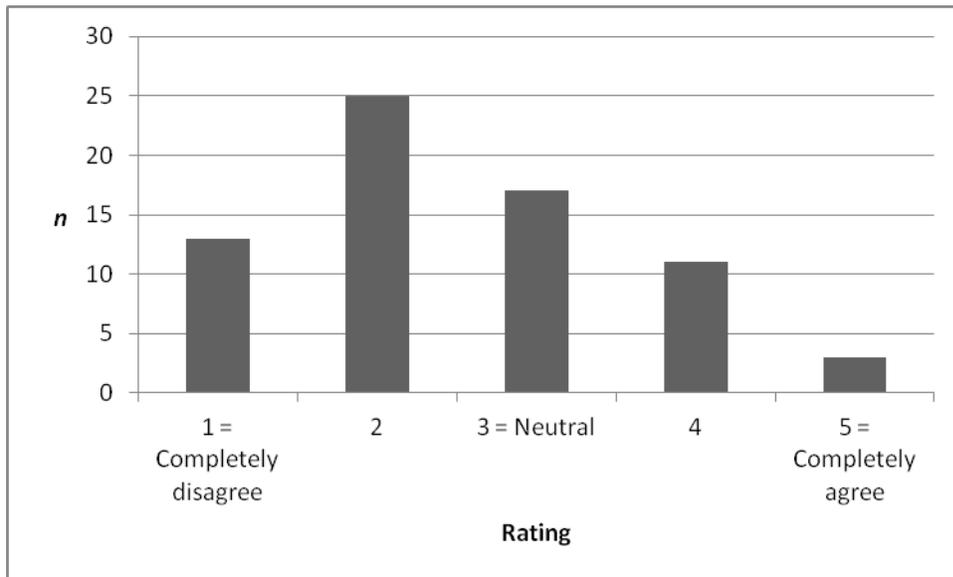


Figure 5. Histogram of responses to “I learned new information about sexual assault by participating in this study.”

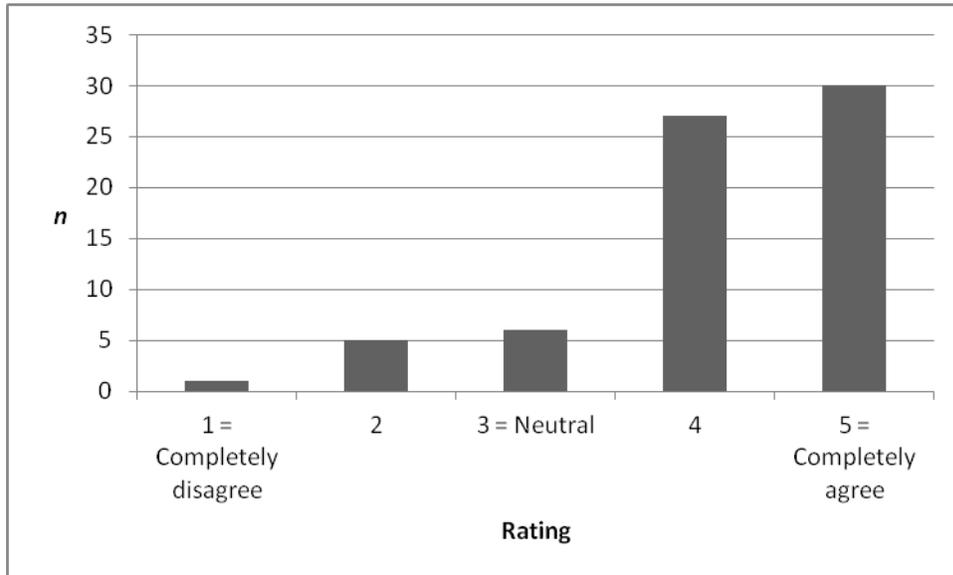


Figure 6. Histogram of responses to “The materials (i.e., the video and questions about sexual assault) contained information that would reduce the risk of sexual assault.”

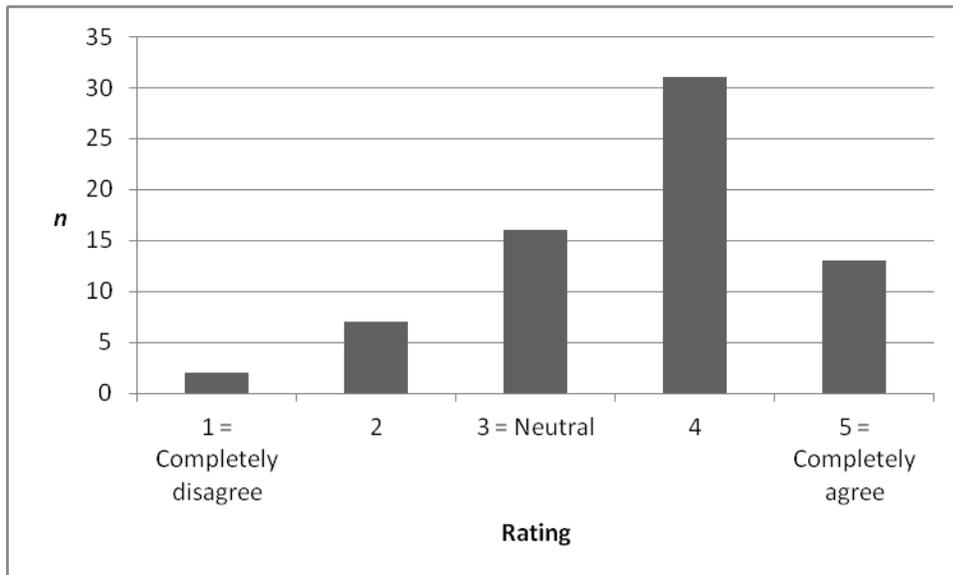


Figure 7. Histogram of responses to “Most undergraduate females would benefit from seeing the video and receiving the information in the questions.”

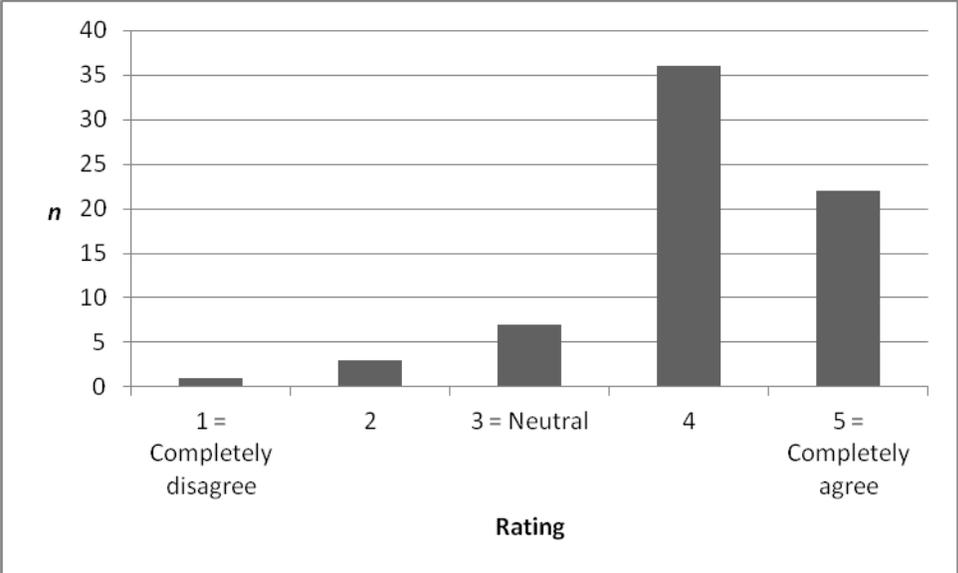


Figure 8. Histogram of responses to “If given the choice between a presentation about sexual assault administered in a large group setting (e.g., in an auditorium with a large number of students) and a computer program that could be completed individually (e.g., the video and questions viewed today), I would prefer the computer program.”

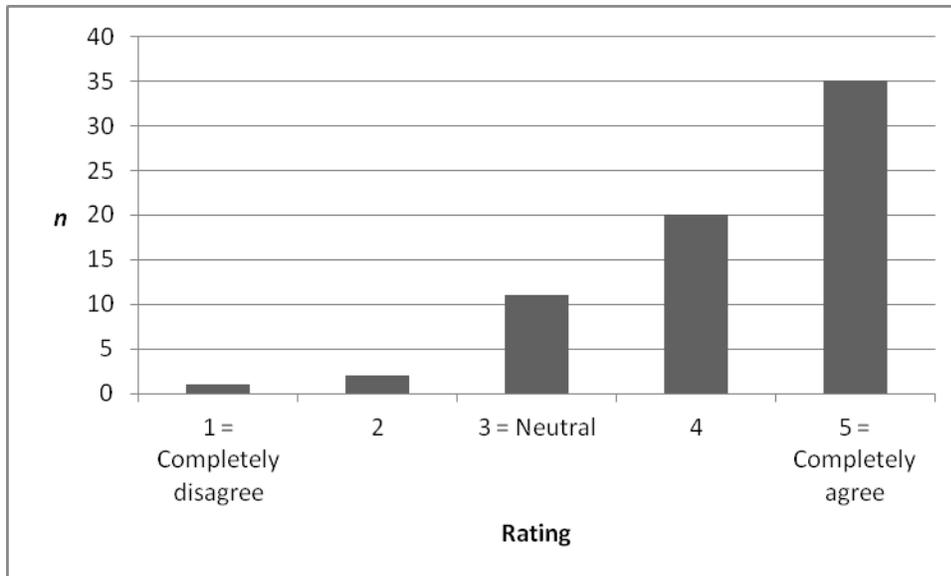
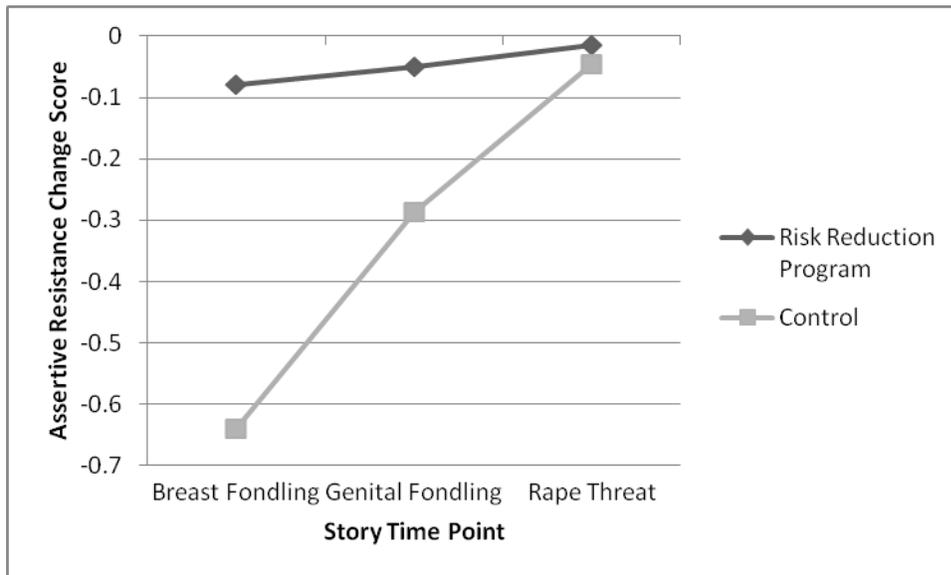


Figure 9. Graph of assertive resistance change scores at each story time point for the two experimental conditions.





**EARN YOUR EXTRA CREDIT ONLINE, FAST!**

**Social Behaviors and Psychological Health Survey – Women  
Only**

Female students enrolled in psychology classes can earn **one research participation credit** for the study “Social Behaviors and Psychological Health Survey – Women Only.” Some women who complete this survey will be invited to participate in a follow-up appointment in which they can earn **one additional research participation credit** and be eligible for **one of 20 \$25 cash prizes**. Look for the study on the Sona website.



**Social Behaviors and Psychological  
Health Survey – Men Only**



Male students enrolled in psychology classes can earn **one research participation credit** for the study “Social Behaviors and Psychological Health Survey – Men Only.” Look for the study on the Sona website.

**Please contact Amie Schry at [aschry@vt.edu](mailto:aschry@vt.edu) with questions about this study, or speak to a research assistant following this class.**

## Appendix C

### Sona System Information

#### **Recruitment Information put on the Psychology Department's Sona System**

**Study Name:** Social Behaviors and Psychological Health Survey – Women Only

**Abstract:** \*\*\*WOMEN ONLY\*\*\* On-line survey about psychological health and social and sexual experiences.

**Description:** This study involves an on-line survey regarding your psychological health and social and interpersonal/romantic experiences you may have had. After signing up for this study, you may access the survey using the link provided. The survey should take less than 60 minutes to complete. Although some of the questions in the survey are sensitive in nature, your responses will be kept strictly confidential and you can stop at any time.

**Web Study:** This is an on-line study. Participants are not given the study URL until after they sign up.

**Eligibility Requirements:** Females only; Age 18 or older

**Duration:** Approximately 60 minutes

**Credits:** 1

**Researcher:** Amie Schry     E-mail: [aschry@vt.edu](mailto:aschry@vt.edu)

## Appendix D

### Demographics Questionnaire

1. Please enter the study code you created at the bottom of the information sheet (i.e., the first two letters of the city in which you were born, the first two letters of your favorite TV show, the first two letters of your favorite movie, and the two digits of the month you were born):

\_\_\_\_\_

2. Sex:

\_\_\_\_\_ Female

\_\_\_\_\_ Male

Note: If participant responded with incorrect gender for that questionnaire (i.e., if a male completed the female version of the questionnaire), they were directed to a disqualification page.

3. How old are you (in years)?

\_\_\_\_\_ <15

\_\_\_\_\_ 15

\_\_\_\_\_ 16

\_\_\_\_\_ 17

\_\_\_\_\_ 18

\_\_\_\_\_ 19

\_\_\_\_\_ 20

\_\_\_\_\_ 21

\_\_\_\_\_ 22

\_\_\_\_\_ 23

\_\_\_\_\_ 24

\_\_\_\_\_ 25+

Note: Participants who reported their age as younger than 18 years were directed to a disqualification page and not allowed to continue to complete the survey.

4. What is your height in feet and inches?

Feet: \_\_\_\_\_

Inches: \_\_\_\_\_

5. What is your current weight in pounds?

\_\_\_\_\_ pounds

6. What year are you in college?

1<sup>st</sup> Year      2<sup>nd</sup> Year      3<sup>rd</sup> Year      4<sup>th</sup> Year      5<sup>th</sup> Year or Beyond

7. What college(s) is/are your major(s) in? (**Select all that apply**)

\_\_\_\_\_ College of Agriculture & Life Sciences

\_\_\_\_\_ College of Architecture & Urban Studies

\_\_\_\_\_ Pamplin College of Business

\_\_\_\_\_ College of Engineering

\_\_\_\_\_ College of Liberal Arts & Human Sciences

\_\_\_\_\_ College of Natural Resources

\_\_\_\_\_ College of Science

\_\_\_\_\_ University Studies

\_\_\_\_\_ Other (Please specify \_\_\_\_\_)

8. What is your cumulative college GPA?

\_\_\_\_\_ Not applicable (I am in my first semester of college)

\_\_\_\_\_ 0.00 to 0.99

\_\_\_\_\_ 1.00 to 1.99

\_\_\_\_\_ 2.00 to 2.99

\_\_\_\_\_ 3.00 to 3.49

\_\_\_\_\_ 3.50 to 4.00

9. How do you usually describe your race and/or ethnicity? (**Select all that apply**)

\_\_\_\_\_ White/Caucasian, non-Hispanic, non-Arab

\_\_\_\_\_ Black/African, African-American, non-Hispanic or African, non-Hispanic

\_\_\_\_\_ Hispanic/Latino(a)

\_\_\_\_\_ American Indian/Alaskan Native

- Arab/Middle Eastern or Arab American
- Asian/Asian-American
- Pacific Islander
- Other (Please specify \_\_\_\_\_)
- I do not wish to provide this information

10. Where do you live?

- On-campus residence hall
- Fraternity or sorority house
- Other university housing
- Off-campus, non-university housing
- Parent or guardian's house
- Other (Please specify the type of housing you live in \_\_\_\_\_)

11. How do you describe your sexual orientation?

- Heterosexual
- Bisexual
- Homosexual/Gay/Lesbian
- Other (Please specify \_\_\_\_\_)
- I do not wish to provide this information

12. What is your current relationship status?

- I am not dating anyone
- I am casually dating one person
- I am casually dating more than one person
- I am in a serious and committed relationship, but not married or living with my partner
- I am living with my partner, but not married
- I am engaged
- I am married or in a domestic partnership

I am divorced

I am widowed

13. Are you a member of a social (not academic) Greek organization/fraternity/sorority?

Yes

No

14. Are you involved in any of the following extracurricular activities? (**Select all that apply.**)

Honor Society (Academic or Professional)

Academic Professional Organization

Intercollegiate Athletics

Intramural Athletics/Club Sports

Student Government

Volunteering Organization

Political Activism Organization

Religious Organization

Arts, Music, or Media Organization

Military Organization

Other clubs or activities (Please specify \_\_\_\_\_)

No clubs

## Appendix E

### Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998)

For each question, please circle a number to indicate the degree to which you feel the statement is characteristic or true of you. The rating scale is as follows:

0 = Not at all characteristic or true of me

3 = Very characteristic or true of me

1 = Slightly characteristic or true of me

4 = Extremely characteristic or true of me

2 = Moderately characteristic or true of me

1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.).

0            1            2            3            4

2. I have difficulty making eye-contact with others.

0            1            2            3            4

3. I become tense if I have to talk about myself or my feelings.

0            1            2            3            4

4. I have difficulty mixing comfortably with the people I work with.

0            1            2            3            4

5. I find it easy to make friends of my own age.

0            1            2            3            4

6. I tense-up if I meet an acquaintance on the street.

0            1            2            3            4

7. When mixing socially, I am uncomfortable.

0            1            2            3            4

8. I feel tense if I am alone with just one other person.

0            1            2            3            4

9. I am at ease meeting people at parties, etc.

0            1            2            3            4

10. I have difficulty talking with other people.

0            1            2            3            4

11. I find it easy to think of things to talk about.  
0            1            2            3            4
12. I worry about expressing myself in case I appear awkward.  
0            1            2            3            4
13. I find it difficult to disagree with another's point of view.  
0            1            2            3            4
14. I have difficulty talking to attractive persons of the opposite sex.  
0            1            2            3            4
15. I find myself worrying that I won't know what to say in social situations.  
0            1            2            3            4
16. I am nervous mixing with people I don't know well.  
0            1            2            3            4
17. I feel I'll say something embarrassing when talking.  
0            1            2            3            4
18. When mixing in a group, I find myself worrying I will be ignored.  
0            1            2            3            4
19. I am tense mixing in a group.  
0            1            2            3            4
20. I am unsure whether to greet someone I know only slightly.  
0            1            2            3            4

Appendix F

Sexual Assertiveness Scale (SAS) – Refusal Subscale (Morokoff et al., 1997)

Please rate each of the following statements on the following scale.

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	Mixed	Somewhat Agree	Strongly Agree

1. I give in and kiss if my partner pressures me, even if I already said no.

1                      2                      3                      4                      5

2. I put my mouth on my partner's genitals if my partner wants me to, even if I don't want to.

1                      2                      3                      4                      5

3. I refuse to let my partner touch my breasts if I don't want that, even if my partner insists.

1                      2                      3                      4                      5

4. I have sex if my partner wants me to, even if I don't want to.

1                      2                      3                      4                      5

5. If I said no, I won't let my partner touch my genitals even if my partner pressures me.

1                      2                      3                      4                      5

6. I refuse to have sex if I don't want to, even if my partner insists.

1                      2                      3                      4                      5

## Appendix G

### Sexual Experiences Survey – Short Form Victimization (SES-SFV; Koss et al., 2007)

The following questions concern sexual experiences. We know these are personal questions, so your information is completely anonymous and confidential. We hope this helps you to feel comfortable answering each question honestly. Please indicate whether or not each experience has happened. If several experiences occurred on the same occasion--for example, if one night someone told you some lies and had sex with you when you were drunk, you would check both boxes a and c. **“The past 12 months” refers to the past year going back from today. “From age 14 until 1 year ago” refers to your life starting on your 14<sup>th</sup> birthday and stopping one year ago from today.**

		In the past 12 months?		From age 14 until 1 year ago?	
		Yes	No	Yes	No
1.	<p><b>Someone fondled, kissed, or rubbed up against the private areas of my body (lips, breast/chest, crotch, or butt) or removed some of my clothes without my consent (but did not attempt sexual penetration) by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<p><b>Someone had oral sex with me or made me have oral sex with them without my consent by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.	<p><b>A man put his penis into my vagina, or someone inserted fingers or objects without my consent by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	Yes	No	Yes	No
4.	<p><b>A man put his penis into my butt, or someone inserted fingers or objects without my consent by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	Yes	No	Yes	No
5.	<p><b>Even though it did not happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	Yes	No	Yes	No
6.	<p><b>Even though it did not happen, a man TRIED to put his penis into my vagina,</b></p>	Yes	No	Yes	No

	<p><b>or someone tried to stick in fingers or objects without my consent by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<p><b>Even though it did not happen, a man TRIED to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:</b></p> <p>a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to.</p> <p>b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.</p> <p>c. Taking advantage of me when I was too drunk or out of it to stop what was happening.</p> <p>d. Threatening to physically harm me or someone close to me.</p> <p>e. Using force, for example holding me down with their body weight, pinning my arms, or having a weapon.</p>	Yes	No	Yes	No
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<b>Were you raped?</b>	Yes	No	Yes	No
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix H

### Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)

Below is a list of ways that you might have felt or behaved. Please select the answer choice that describes how often you have felt this way DURING THE PAST WEEK.

- 0 = Rarely or none of the time (less than 1 day)  
1 = Some or a little of the time (1-2 days)  
2 = Occasionally or a moderate amount of time (3-4 days)  
3 = Most or all of the time (5-7 days)

1. I was bothered by things that usually don't bother me.

0                    1                    2                    3

2. I did not feel like eating; my appetite was poor.

0                    1                    2                    3

3. I felt that I could not shake off the blues even with help from my family or friends.

0                    1                    2                    3

4. I felt that I was just as good as other people.

0                    1                    2                    3

5. I had trouble keeping my mind on what I was doing.

0                    1                    2                    3

6. I felt depressed.

0                    1                    2                    3

7. I felt that everything I did was an effort.

0                    1                    2                    3

8. I felt hopeful about the future.

0                    1                    2                    3

9. I thought my life had been a failure.

0                    1                    2                    3

10. I felt fearful.

0            1            2            3

11. My sleep was restless.

0            1            2            3

12. I was happy.

0            1            2            3

13. I talked less than usual.

0            1            2            3

14. I felt lonely.

0            1            2            3

15. People were unfriendly.

0            1            2            3

16. I enjoyed life.

0            1            2            3

17. I had crying spells.

0            1            2            3

18. I felt sad.

0            1            2            3

19. I felt that people dislike me.

0            1            2            3

20. I could not get “going.”

0            1            2            3

## Appendix I

### Illinois Rape Myth Acceptance Scale (IRMAS; Payne et al., 1999)

Please rate your level of agreement with each statement using the following scale:

1	2	3	4	5	6	7
Not at All						Very Much
Agree						Agree

1. If a woman is raped while she is drunk, she is at least somewhat responsible for letting things get out of control.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

2. Although most women wouldn't admit it, they generally find being physically forced into sex a real "turn-on."

1	2	3	4	5	6	7
---	---	---	---	---	---	---

3. When men rape, it is because of their strong desire for sex.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

4. If a woman is willing to "make out" with a guy, then it's no big deal if he goes a little further and has sex.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

5. Women who are caught having an illicit affair sometimes claim that it was rape.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

6. Newspapers should not release the name of a rape victim to the public.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

7. Many so-called rape victims are actually women who had sex and "changed their minds" afterwards.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

8. Many women secretly desire to be raped.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

9. Rape mainly occurs on the “bad” side of town.

1            2            3            4            5            6            7

10. Usually, it is only women who do things like hang out in bars and sleep around that are raped.

1            2            3            4            5            6            7

11. Most rapists are not caught by the police.

1            2            3            4            5            6            7

12. If a woman doesn’t physically fight back, you can’t really say that it was rape.

1            2            3            4            5            6            7

13. Men from nice middle-class homes almost never rape.

1            2            3            4            5            6            7

14. Rape isn’t as big a problem as some feminists would like people to think.

1            2            3            4            5            6            7

15. When women go around wearing low-cut tops or short skirts, they’re just asking for trouble.

1            2            3            4            5            6            7

16. Rape accusations are often used as a way of getting back at men.

1            2            3            4            5            6            7

17. A rape probably didn’t happen if the woman has no bruises or marks.

1            2            3            4            5            6            7

18. Many women find being forced to have sex very arousing.

1            2            3            4            5            6            7

19. If a woman goes home with a man she doesn’t know, it is her own fault if she is raped.

1            2            3            4            5            6            7

20. Rapists are usually sexually frustrated individuals.

1            2            3            4            5            6            7

21. All women should have access to self-defense classes.

1            2            3            4            5            6            7

22. It is usually only women who dress suggestively that are raped.

1            2            3            4            5            6            7

23. Some women prefer to have sex forced on them so they don't have to feel guilty about it.

1            2            3            4            5            6            7

24. If the rapist doesn't have a weapon, you really can't call it a rape.

1            2            3            4            5            6            7

25. When a woman is a sexual tease, eventually she is going to get into trouble.

1            2            3            4            5            6            7

26. Being raped isn't as bad as being mugged and beaten.

1            2            3            4            5            6            7

27. Rape is unlikely to happen in the woman's own familiar neighborhood.

1            2            3            4            5            6            7

28. In reality, women are almost never raped by their boyfriends.

1            2            3            4            5            6            7

29. Women tend to exaggerate how much rape affects them.

1            2            3            4            5            6            7

30. When a man is very sexually aroused, he may not even realize that the woman is resisting.

1            2            3            4            5            6            7

31. A lot of women lead a man on and then they cry rape.
- 1            2            3            4            5            6            7
32. It is preferable that a female police officer conduct the questioning when a woman reports a rape.
- 1            2            3            4            5            6            7
33. A lot of times, women who claim they were raped just have emotional problems.
- 1            2            3            4            5            6            7
34. If a woman doesn't physically resist sex – even when protesting verbally – it really can't be considered rape.
- 1            2            3            4            5            6            7
35. Rape almost never happens in the woman's own home.
- 1            2            3            4            5            6            7
36. A woman who "teases" men deserves anything that might happen.
- 1            2            3            4            5            6            7
37. When women are raped, it's often because the way they said "no" was ambiguous.
- 1            2            3            4            5            6            7
38. If a woman isn't a virgin, then it shouldn't be a big deal if her date forces her to have sex.
- 1            2            3            4            5            6            7
39. Men don't usually intend to force sex on a woman, but sometimes they get too sexually carried away.
- 1            2            3            4            5            6            7
40. This society should devote more effort to preventing rape.
- 1            2            3            4            5            6            7

41. A woman who dresses in skimpy clothes should not be surprised if a man tries to force her to have sex.

1            2            3            4            5            6            7

42. Rape happens when a man's sex drive gets out of control.

1            2            3            4            5            6            7

43. A woman who goes to the home or apartment of a man on the first date is implying that she wants to have sex.

1            2            3            4            5            6            7

44. Many women actually enjoy sex after the guy uses a little force.

1            2            3            4            5            6            7

45. If a woman claims to have been raped but has no bruises or scrapes, she probably shouldn't be taken too seriously.

1            2            3            4            5            6            7

## Appendix J

### Social Phobia Scale (SPS; Mattick & Clarke, 1998)

For each question, please circle a number to indicate the degree to which you feel the statement is characteristic or true of you. The rating scale is as follows:

- 0 = Not at all characteristic or true of me      3 = Very characteristic or true of me  
1 = Slightly characteristic or true of me      4 = Extremely characteristic or true of me  
2 = Moderately characteristic or true of me

1. I become anxious if I have to write in front of other people.

0                    1                    2                    3                    4

2. I become self-conscious when using public toilets.

0                    1                    2                    3                    4

3. I can suddenly become aware of my own voice and of others listening to me.

0                    1                    2                    3                    4

4. I get nervous that people are staring at me as I walk down the street.

0                    1                    2                    3                    4

5. I fear I may blush when I am with others.

0                    1                    2                    3                    4

6. I feel self-conscious if I have to enter a room where others are already seated.

0                    1                    2                    3                    4

7. I worry about shaking or trembling when I'm watched by other people.

0                    1                    2                    3                    4

8. I would get tense if I had to sit facing other people on a bus or a train.

0                    1                    2                    3                    4

9. I get panicky that others might see me faint or be sick or ill.

0                    1                    2                    3                    4

10. I would find it difficult to drink something if in a group of people.

0            1            2            3            4

11. It would make me feel self-conscious to eat in front of a stranger in a restaurant.

0            1            2            3            4

12. I am worried people will think my behavior odd.

0            1            2            3            4

13. I would get tense if I had to carry a tray across a crowded cafeteria.

0            1            2            3            4

14. I worry I'll lose control of myself in front of other people.

0            1            2            3            4

15. I worry I might do something to attract the attention of other people.

0            1            2            3            4

16. When in an elevator, I am tense if people look at me.

0            1            2            3            4

17. I can feel conspicuous standing in a line/queue.

0            1            2            3            4

18. I get tense when I speak in front of other people.

0            1            2            3            4

19. I worry my head will shake or nod in front of others.

0            1            2            3            4

20. I feel awkward and tense if I know people are watching me.

0            1            2            3            4

## Appendix K

### Modified Timeline Followback (Norberg et al., 2009)

These items were administered for each day of the past month (i.e., the 30 days preceding when the participant began the survey).

1. Did you consume any alcohol in the past 30 days?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If no, skip remaining alcohol use questions.

The following questions are designed to help us get an idea of what your alcohol use was like in the past 30 days. To do this, we will be asking about your alcohol use for each day over the past 30 days.

- The calendars below are provided to help you keep track of which day we are referring to. Many holidays are marked on the calendars to help you better recall your drinking.
- If you have an appointment book or planner, you can use it to help you recall your drinking. Think about how much drank on personal holidays and events, such as birthdays, vacations, parties, or sporting events.
- When we ask about number of drinks, we want you to report your alcohol consumption using Standard Drinks. The chart below shows what we mean by a standard drink. *For example*, if you had 6 beers, write the number 6 for that day. If you drank two or more different kinds of alcoholic beverages in a day such as 2 beers and 3 glasses of wine, you would write the number 5 for that day.
- Try to be as accurate as possible.
- We recognize you won't have perfect recall. That's OKAY.
- If you are not sure whether you drank 7 or 11 drinks or whether you drank on a Thursday or a Friday, **give it your best guess!** What is important is that 7 or 11 drinks is very different from 1 or 2 drinks or 25 drinks. The goal is to get a sense of how frequently you drank, how much you drank, and your patterns of drinking.

INSERT CALENDARS AND STANDARD DRINK PICTURES HERE.

2. Did you consume any alcohol on DAY?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If no, skip to next day.

3. On DAY, how many alcoholic drinks did you consume? **By a drink, we mean half an ounce of absolute alcohol (e.g., a 12 ounce can or glass of beer or wine cooler, a 5 ounce glass of wine, or a drink containing 1 shot of liquor).**

\_\_\_\_\_

4. On DAY, how long did you spend drinking, meaning, how long was it between when you began drinking your first drink and finished drinking your last drink (please round to the nearest hour)?

\_\_\_\_\_

5. On DAY, did you eat WHILE you were drinking?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

6. On DAY, where were you and who were you with when you drank alcohol? (Check all that apply.)

	<b>Alone</b>	<b>With One or a Few Friends</b>	<b>Romantic Partner</b>	<b>Large Group</b>	<b>Your Parents</b>
<b>Dorm/Residence Hall</b>					
<b>Bar/Restaurant</b>					
<b>Fraternity House or Party</b>					
<b>Sorority House or Party</b>					
<b>Apartment/Home</b>					
<b>Major Entertainment Event (Sports, tailgate, concert, etc.)</b>					
<b>Somewhere else (please specify _____)</b>					

7. When you drank on DAY, did you drink because you were experiencing:

- a. Unpleasant emotions?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- b. Physical discomfort?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- c. Pleasant emotions?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- d. Urges or temptations to drink?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- e. Conflict with others?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- f. Social pressure to drink?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- g. A pleasant time with others?  
 Yes  
 No
8. On DAY, did you drink to test that you could control your alcohol use?  
 Yes  
 No
9. On DAY, did you participate in any drinking games?  
 Yes  
 No
10. On DAY, did you want to get drunk?  
 Yes  
 No
11. On DAY, did you get drunk?  
 Yes  
 No
12. On DAY, did you drink X (for females, X=4; for males X=5) or more drinks containing any kind of alcohol within a 2-hour period? **By a drink, we mean half an ounce of absolute alcohol (e.g., a 12 ounce can or glass of beer or wine cooler, a 5 ounce glass of wine, or a drink containing 1 shot of liquor).**  
 Yes  
 No
13. The following are some things that some individuals experience after consuming alcohol. Because of your drinking on DAY, did you experience any of the following?
- Did something you later regretted or were embarrassed by.  
 Yes     No
  - Had a verbal argument.  
 Yes     No
  - Were rude or obnoxious while under the influence of alcohol.  
 Yes     No
  - Got into a sexual situation you later regretted (e.g., unprotected sex, sex with a stranger).  
 Yes     No
  - Were taken advantage of sexually.

\_\_\_\_\_ Yes \_\_\_\_\_ No

f. Took advantage of another sexually.

\_\_\_\_\_ Yes \_\_\_\_\_ No

g. Felt sick or vomited while under the influence of alcohol.

\_\_\_\_\_ Yes \_\_\_\_\_ No

h. Urinated in a public setting.

\_\_\_\_\_ Yes \_\_\_\_\_ No

i. Damaged property.

\_\_\_\_\_ Yes \_\_\_\_\_ No

j. Put yourself in a risky or dangerous situation, other than drunk driving or risky sex.

\_\_\_\_\_ Yes \_\_\_\_\_ No

k. Drove a car under the influence of alcohol.

\_\_\_\_\_ Yes \_\_\_\_\_ No

l. Rode in a car with a driver under the influence of alcohol.

\_\_\_\_\_ Yes \_\_\_\_\_ No

m. Had a physical conflict.

\_\_\_\_\_ Yes \_\_\_\_\_ No

n. Physically hurt or injured yourself or another person (not as the result of a physical fight).

\_\_\_\_\_ Yes \_\_\_\_\_ No

o. Passed out.

\_\_\_\_\_ Yes \_\_\_\_\_ No

p. Had a hangover (headache or sick stomach) the day after drinking.

\_\_\_\_\_ Yes \_\_\_\_\_ No

q. Had memory loss (unable to remember large stretches of time while drinking).

\_\_\_\_\_ Yes \_\_\_\_\_ No

r. Had less energy or felt tired because of drinking.

\_\_\_\_\_ Yes \_\_\_\_\_ No

s. Missed class, work, or an important event.

\_\_\_\_\_ Yes \_\_\_\_\_ No

t. Not able to do school-work or study for a test.

\_\_\_\_\_ Yes \_\_\_\_\_ No

u. Spent so much money on alcohol, you missed out on something else.

\_\_\_\_\_ Yes \_\_\_\_\_ No

v. Neglected household or family responsibilities.

\_\_\_\_\_ Yes \_\_\_\_\_ No

w. Felt badly about yourself from drinking.

\_\_\_\_\_ Yes \_\_\_\_\_ No

x. Impaired athletic or sporting performance.

\_\_\_\_\_ Yes \_\_\_\_\_ No

y. Had legal trouble with the authorities (e.g., arrested).

\_\_\_\_\_ Yes \_\_\_\_\_ No

z. Required medical treatment for an alcohol overdose.

\_\_\_\_\_ Yes \_\_\_\_\_ No

aa. Other

\_\_\_\_\_ Yes (please specify \_\_\_\_\_) \_\_\_\_\_ No

## Appendix L

### Consensual Sexual Intercourse Vignette

Lisa and Matt met a year ago at a party. At the end of that night, Matt got Lisa's phone number, and he called her a few days later to ask her out. They have been dating exclusively for the past 9 months. Two months ago, they had sex for the first time, and since then, they have continued to have sex regularly. Saturday night, Lisa and Matt went out to dinner and then a movie. They spent most of the dinner talking and laughing with each other. After the movie, Matt invited Lisa back to his apartment. Once they were there, they began watching TV, but soon, they started kissing and making out. After about 15 minutes of kissing, Matt turned off the TV and asked Lisa if they should take things to the bedroom. Lisa agreed, and they moved into Matt's room, lay down on the bed, and continued to make out. Matt took off his shirt, and Lisa followed. Lisa told Matt how much she was enjoying herself and how much she liked being with him. After continuing to kiss and touch each other, they then proceeded to have sex. After they had sex, Lisa fell asleep in Matt's bed, and they slept together that night. The next day, Matt drove Lisa back to her apartment. Before saying goodbye, they made plans to get dinner together again on Monday.

#### Questions

1. Did Lisa want to have sex with Matt?

1	2	3	4	5
Definitely Did Not Want To		Not Sure		Definitely Did Want To

2. Did Matt want to have sex with Lisa?

1	2	3	4	5
Definitely Did Not Want To		Not Sure		Definitely Did Want To

3. Did Matt inappropriately force himself on Lisa?

1	2	3	4	5
Definitely Did Not Force Himself		Not Sure		Definitely Did Force Himself

4. Was the sexual intercourse between Lisa and Matt consensual (i.e., based on mutual agreement)?

1	2	3	4	5
Definitely Not Consensual		Not Sure		Definitely Consensual

## Appendix M

### Nonconsensual Sexual Intercourse Vignette

Melissa and Greg met a year ago in a class they were both taking. After class one day, Greg got Melissa's phone number, and he called her a few days later to ask her out. They have been dating exclusively for the past 9 months. Two months ago, they had sex for the first time, and since then, they have continued to have sex regularly. Friday night, Melissa and Greg went out to a bar downtown. They spent the night talking and laughing with one another. Over the course of the night, Greg had four beers and Melissa had five mixed drinks. At the end of the night, Greg invited Melissa back to his apartment. Melissa agreed, and Greg helped her walk out of the bar, because she said she felt "tipsy." Once they got to Greg's apartment, they began watching TV, but soon, they started kissing and making out. After about 15 minutes of kissing, Greg turned off the TV and Greg took Melissa's shirt off and continued to kiss her. Melissa said she felt tired but continued to kiss Greg. A few minutes later, Greg took his pants off and then took Melissa's pants off. Melissa again said she was tired and said that they should go to bed. Greg continued to kiss Melissa, and she did not push him away. Greg and Melissa then had sex. After they had sex, Melissa fell asleep in Greg's bed, and they slept together that night. The next day, Greg drove Melissa back to her apartment.

#### Questions

1. Did Melissa want to have sex with Greg?

1	2	3	4	5
Definitely Did Not Want To		Not Sure		Definitely Did Want To

2. Did Greg want to have sex with Melissa?

1	2	3	4	5
Definitely Did Not Want To		Not Sure		Definitely Did Want To

3. Did Greg inappropriately force himself on Melissa?

1	2	3	4	5
Definitely Did Not Force Himself		Not Sure		Definitely Did Force Himself

4. Was the sexual intercourse between Melissa and Greg consensual (i.e., based on mutual agreement)?

1	2	3	4	5
Definitely Not Consensual		Not Sure		Definitely Consensual

## Appendix N

### Acceptability Questionnaire

1. The video was realistic.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

2. The questions about sexual assault provided realistic and truthful information.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

3. The materials (i.e., the video and questions about sexual assault) were distressing to watch and read.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

4. I learned new information about sexual assault by participating in this study.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

5. The materials (i.e., the video and questions about sexual assault) contained information that would reduce the risk of sexual assault.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

6. Most undergraduate females would benefit from seeing the video and receiving the information in the questions.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

7. If given the choice between a presentation about sexual assault administered in a large group setting (e.g., in an auditorium with a large number of students) and a computer program that could be completed individually (e.g., the video and questions viewed today), I would prefer the computer program.

1	2	3	4	5
Completely Disagree		Neutral		Completely Agree

## Appendix O

### Information Questions for Risk Reduction Program

1. Rape can only occur when penile-vaginal penetration occurs.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” Current definitions of rape include oral, vaginal, or anal penetration by a penis, another body part, or an object (Cook, Gidycz, Koss, & Murphy, 2011).**

Message if participant selects “False”: **That’s right. Current definitions of rape include oral, vaginal, or anal penetration by a penis, another body part, or an object (Cook, Gidycz, Koss, & Murphy, 2011).**

2. Compared to women who experience other types of sexual victimization, only women who are raped experience psychological distress.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” Women who experience sexual contact or intercourse as a result of coercive techniques (e.g., when a man expresses displeasure, threatens to end the relationship, or tells lies) can also experience serious psychological consequences (Koss et al., 2007).**

Message if participant selects “False”: **Great work. Women who experience sexual contact or intercourse as a result of coercive techniques (e.g., when a man expresses displeasure, threatens to end the relationship, or tells lies) can also experience serious psychological consequences (Koss et al., 2007).**

3. Many women who experience an event that meets the definition of rape do not define it as rape.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **That’s right. It is estimated that nearly 50% of women who have had an experience that meets the definition of rape do not define their experience as rape (Fisher, Cullen, & Turner, 2000).**

Message if participant selects “False”: **The correct answer is “True.” It is estimated that nearly 50% of women who have had an experience that meets the definition of rape do not define their experience as rape (Fisher, Cullen, & Turner, 2000).**

4. One in every \_\_\_\_\_ American women has been the victim of an attempted or completed rape in her lifetime.

\_\_\_\_\_ 3

\_\_\_\_\_ 5

\_\_\_\_\_ 10

\_\_\_\_\_ 20

Message if participant selects “5”: **Good job. A recent national study found that 1 out of 5 women had been the victim of a rape or attempted rape (Rabin, 2011). This study found that 1% of women had been the victim of a rape or attempted rape in the past year; therefore, an estimated 1.3 million American women are victims of attempted or completed rape each year (Rabin, 2011). 14.8% of American women have experienced a completed rape, and an additional 2.8% have experienced an attempted rape (Rape, Abuse, and Incest National Network [RAINN], 2011).**

Message if participant selects “3,” “10,” or “20”: **The correct answer is “5.” A recent national study found that 1 out of 5 women had been the victim of a rape or attempted rape (Rabin, 2011). This study found that 1% of women had been the victim of a rape or attempted rape in the past year; therefore, an estimated 1.3 million American women are victims of attempted or completed rape each year (Rabin, 2011). 14.8% of American women have experienced a completed rape, and an additional 2.8% have experienced an attempted rape (Rape, Abuse, and Incest National Network [RAINN], 2011).**

5. Every \_\_\_\_\_ minutes, someone in the United States is sexually assaulted.

\_\_\_\_\_ 2

\_\_\_\_\_ 4

\_\_\_\_\_ 6

\_\_\_\_\_ 10

Message if participant selects “2”: **That’s right. Someone in the U.S. is sexually assaulted every 2 minutes.**

Message if participant selects “4,” “6,” or “10”: **That’s not quite right. Someone in the U.S. is sexually assaulted every 2 minutes.**

6. Most rapes are committed by strangers.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” Approximately two-thirds of rapes were committed by someone known to the victim (RAINN, 2011).**

Message if participant selects “False”: **That’s correct. Approximately two-thirds of rapes were committed by someone known to the victim (RAINN, 2011).**

7. Women are frequently raped by romantic partners or friends.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Good work. One study found that, among college women, 12.6% of rapes are committed by current or ex romantic partners of the victim and 31.3% are committed by friends of the victim. Additionally, 27.8% of rapes are committed by fellow students, 20.9% by strangers, and 7.5% by known others (Fisher, Daigle, Cullen, & Turner, 2003). A recent national study found that of female rape victims, more than half had been raped by an intimate partner and 40% had been raped by an acquaintance (Rabin, 2011).**

Message if participant selects “False”: **The correct answer is “True.” Studies have found that 12.6% of rapes are committed by current or ex romantic partners of the victim and 31.3% are committed by friends of the victim. Additionally, 27.8% of rapes are committed by fellow students, 20.9% by strangers, and 7.5% by known others (Fisher, Daigle, Cullen, & Turner, 2003). A recent national study found that of female rape victims, more than half had been raped by an intimate partner and 40% had been raped by an acquaintance (Rabin, 2011).**

8. Victims and perpetrators of rape were often under the influence of alcohol or drugs when the event occurred.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Excellent. In one study, the victim and/or perpetrator were under the influence of alcohol or drugs during the rape or attempted rape in 70% of the incidents (Fisher, Daigle, Cullen, & Turner, 2003).**

Message if participant selects “False”: **The correct answer is “True.” In one study, the victim and/or perpetrator were under the influence of alcohol or drugs during the rape or attempted rape in 70% of the incidents (Fisher, Daigle, Cullen, & Turner, 2003).**

9. Most sexual assaults occur because the perpetrator used physical force.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” In a sample of college women, 5.4% reported that they had experienced a forcible sexual assault, while 29.6% reported that they had experienced a drug-related sexual assault (Lawyer, Resnick, Bakanic, Burkett, & Kilpatrick, 2010). Most women (over 95%) who reported a drug-related sexual assault were under influence of alcohol at the time of the assault (Lawyer et al., 2010).**

Message if participant selects “False”: **That’s right. In a sample of college women, 5.4% reported that they had experienced a forcible sexual assault, while 29.6% reported that they had experienced a drug-related sexual assault (Lawyer, Resnick, Bakanic, Burkett, & Kilpatrick, 2010). Most women (over 95%) who reported a drug-related sexual assault were under influence of alcohol at the time of the assault (Lawyer et al., 2010).**

10. Most women who experience drug-related sexual assault voluntarily consumed the alcohol or drug that they were under the influence of at the time of the assault.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Right. Nearly 85% of women who reported that they had experienced a drug-related sexual assault voluntarily consumed the substance (Lawyer et al., 2010).**

Message if participant selects “False”: **The correct answer is “True.” Nearly 85% of women who reported that they had experienced a drug-related sexual assault voluntarily consumed the substance (Lawyer et al., 2010).**

11. Women should not attempt to resist during a sexual assault, because it is hopeless to do so.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” Although no form of resistance will work in every scenario, research has shown that women who scream or fight back are less likely to experience a completed rape and tend to experience less severe sexual abuse (Ullman, 1998; Ullman & Knight, 1992; Ullman & Knight, 1993; Zoucha-Jensen & Coyne, 1993).**

Message if participant selects “False”: **That’s correct. Although no form of resistance will work in every scenario, research has shown that women who scream or fight back are less likely to experience a completed rape and tend to experience less severe sexual abuse (Ullman, 1998; Ullman & Knight, 1992; Ullman & Knight, 1993; Zoucha-Jensen & Coyne, 1993).**

12. Women who fight back or scream are no more likely to suffer physical injury than women who do not physically resist.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Good work. Researchers have found that there is no relationship between strategies used to resist and additional injuries incurred (Zoucha-Jensen & Coyne, 1993), and that neither forceful fighting nor screaming were related to physical injury (Ullman & Knight, 1992; Ullman & Knight, 1993).**

Message if participant selects “False”: **The correct answer is “True.” Researchers have found that there is no relationship between strategies used to resist and additional injuries incurred (Zoucha-Jensen & Coyne, 1993), and that neither forceful fighting nor screaming were related to physical injury (Ullman & Knight, 1992; Ullman & Knight, 1993).**

13. Most rape victims report the crime to the police.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” According to the Rape, Abuse, and Incest National Network’s website, 60% of rapes are unreported. However, in a study of college students, only 2.1% of rapes were reported to the police and 4.0% were reported to campus authorities (Fisher, Daigle, Cullen, & Turner, 2003). Although it is estimated that 1.3 million American women are victims of completed or attempted rape each year, according to Federal Bureau of Investigation statistics, in 2010, only 84,767 assaults defined as forcible rape were reported (Rabin, 2011).**

Message if participant selects “False”: **That’s right. According to the Rape, Abuse, and Incest National Network’s website, 60% of rapes are unreported. However, in a study of college students, only 2.1% of rapes were reported to the police and 4.0% were reported to campus authorities (Fisher, Daigle, Cullen, & Turner, 2003). Although it is estimated that 1.3 million American women are victims of completed or attempted rape each year, according to Federal Bureau of Investigation statistics, in 2010, only 84,767 assaults defined as forcible rape were reported (Rabin, 2011).**

14. Most rape victims tell someone about the incident.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Yes. Nearly 70% of victims told someone other than police or campus authorities about the incident (Fisher, Daigle, Cullen, & Turner, 2003).**

Message if participant selects “False”: **The correct answer is “True.” Nearly 70% of victims told someone other than police or campus authorities about the incident (Fisher, Daigle, Cullen, & Turner, 2003).**

Appendix P

Information Questions for Control Condition

1. 4Help provides technological assistance to students and faculty of Virginia Tech.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **That’s right! 4Help assists students who are having technological problems. Their goal is to assist students and faculty when their computers are not working properly. More information on 4Help and the services they provide is available at [http://www.computing.vt.edu/help\\_and\\_tutorials/4help/index.html](http://www.computing.vt.edu/help_and_tutorials/4help/index.html)**

Message if participant selects “False”: **The correct answer is “True.” 4Help assists students who are having technological problems. Their goal is to assist students and faculty when their computers are not working properly. More information on 4Help and the services they provide is available at [http://www.computing.vt.edu/help\\_and\\_tutorials/4help/index.html](http://www.computing.vt.edu/help_and_tutorials/4help/index.html)**

2. The Services for Students with Disabilities Office is located in Squires Student Center.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” The Services for Students with Disabilities (SSD) Office, which coordinates services for students with documented disabilities, is located in Lavery Hall (room 310).**

Message if participant selects “False”: **Great work! The Services for Students with Disabilities (SSD) Office, which coordinates services for students with documented disabilities, is located in Lavery Hall (room 310).**

3. The Virginia Tech Women’s Center has advocacy and counseling programs for female students.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **That’s right! The Women’s Center (<http://www.womenscenter.vt.edu/index.html>) provides a wide variety of services, including counseling and advocacy, outreach, educational programming, awareness programs of violence against women, and other services for women at Virginia Tech. Specifically, the VT Women’s Center provides counseling and advocacy**

services for women who have been the victim of sexual assault, rape, harassment, stalking, and partner violence. The Women’s Center also coordinates presentations by the Sexual Assault and Violence Education by Students (SAVES) peer education team. Staff at the Women’s Center can also present guest lectures on topics such as Online Harassment & Cyberstalking, Healthy Relationships 101, Sexual Assault Education & Awareness, Drug Facilitated Sexual Assault, Stalking.

Message if participant selects “False”: **The correct answer is “True.”** The Women’s Center (<http://www.womenscenter.vt.edu/index.html>) provides a wide variety of services, including counseling and advocacy, outreach, educational programming, awareness programs of violence against women, and other services for women at Virginia Tech. Specifically, the VT Women’s Center provides counseling and advocacy services for women who have been the victim of sexual assault, rape, harassment, stalking, and partner violence. The Women’s Center also coordinates presentations by the Sexual Assault and Violence Education by Students (SAVES) peer education team. Staff at the Women’s Center can also present guest lectures on topics such as Online Harassment & Cyberstalking, Healthy Relationships 101, Sexual Assault Education & Awareness, Drug Facilitated Sexual Assault, Stalking.

4. Virginia Tech students can work out at two gyms on campus. What are they called?

- Kent Gym and Williams Hall
- Cook Hall and Schiffert Hall
- McComas Hall and War Memorial Hall
- Eggleston Hall and Derring Hall

Message if participant selects “McComas Hall and War Memorial Hall”: **Good job! Both locations have fitness equipment and are available for use by currently enrolled students at Virginia Tech.**

Message if participant selects “Kent Gym and Williams Hall,” “Cook Hall and Schiffert Hall,” or “Eggleston Hall and Derring Hall”: **The correct answer is “McComas Hall and War Memorial Hall.” Both locations have fitness equipment and are available for use by currently enrolled students at Virginia Tech.**

5. Which of the following services is **NOT** provided at Schiffert Health Center?

- HIV antibody testing
- Women’s clinic services
- Dental services

\_\_\_\_\_ Primary care services

\_\_\_\_\_ Allergy and immunization services

Message if participant selects “Dental services”: **That’s right! Schiffert Health Center has a primary care clinic, women’s clinic, and allergy and immunization clinic. Additionally, they also do HIV antibody testing.**

Message if participant selects “HIV antibody testing,” “Women’s clinic services,” or “Primary care services”: **The correct answer is “Dental services.” Schiffert Health Center has a primary care clinic, women’s clinic, and allergy and immunization clinic. Additionally, they also do HIV antibody testing.**

6. Virginia Tech does **NOT** have an on-campus pharmacy for students to use.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” There is a pharmacy that is part of the Schiffert Health Center in McComas Hall. Students can fill basic prescriptions from the Schiffert Health Center as well as prescriptions for oral and injectable contraceptives. Condoms and spermicides are also available at the pharmacy.**

Message if participant selects “False”: **That’s correct! There is a pharmacy that is part of the Schiffert Health Center in McComas Hall. Students can fill basic prescriptions from the Schiffert Health Center as well as prescriptions for oral and injectable contraceptives. Condoms and spermicides are also available at the pharmacy.**

7. The Campus Alcohol Abuse Prevention Center has resources for students regarding alcohol use on college campuses.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Good work! The Campus Alcohol Abuse Prevention Center (CAAPC), located in War Memorial Gym, provides information on alcohol use on college campuses. Additionally, students who need information to reduce their alcohol use or who wish to participate in alcohol recovery programs can contact CAAPC for help with finding information about these services.**

Message if participant selects “False”: **The correct answer is “True.” The Campus Alcohol Abuse Prevention Center (CAAPC), located in War Memorial Gym, provides information on alcohol use on college campuses. Additionally, students who need information to reduce their alcohol use or who wish to participate in**

**alcohol recovery programs can contact CAAPC for help with finding information about these services.**

8. SafeWatch is a program through which students can view security camera footage on the Virginia Tech Blacksburg campus.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” SafeWatch is a program where students can complete an online report of violations of university policies and community expectations. Students can fill out a report at <http://www.safewatch.vt.edu/>**

Message if participant selects “False”: **That’s right! SafeWatch is a program where students can complete an online report of violations of university policies and community expectations. Students can fill out a report at <http://www.safewatch.vt.edu/>**

9. Virginia Tech does **NOT** try to ensure that students from various backgrounds can succeed at Virginia Tech.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” According to the Office of Diversity and Inclusion website, “The Office for Diversity and Inclusion will work to establish a collaborative approach to achieving inclusive excellence at Virginia Tech. We will provide leadership for building and sustaining a diverse and inclusive community where all individuals are appreciated and respected.” One of the aspirations for diversity and inclusion at Virginia Tech is that Virginia Tech will be “a community where there are intentional and sustained efforts to remove barriers that prevent any of our students, faculty, or staff from reaching their full academic, personal, and global potential.”**

Message if participant selects “False”: **Very good! According to the Office of Diversity and Inclusion website, “The Office for Diversity and Inclusion will work to establish a collaborative approach to achieving inclusive excellence at Virginia Tech. We will provide leadership for building and sustaining a diverse and inclusive community where all individuals are appreciated and respected.” One of the aspirations for diversity and inclusion at Virginia Tech is that Virginia Tech will be “a community where there are intentional and sustained efforts to remove barriers that prevent any of our students, faculty, or staff from reaching their full academic, personal, and global potential.”**

10. Virginia Tech students can practice their interviewing skills with trained individuals.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Good work! The Career Services Office, <http://www.career.vt.edu/>, offers a variety of services to students to help with securing employment after graduation. They do presentations on campus, offer both walk-in and scheduled appointments for advising, and will help students practice interviews for jobs.**

Message if participant selects “False”: **The correct answer is “True.” The Career Services Office, <http://www.career.vt.edu/>, offers a variety of services to students to help with securing employment after graduation. They do presentations on campus, offer both walk-in and scheduled appointments for advising, and will help students practice interviews for jobs.**

11. The Office of University Scholarships and Financial Aid (USFA) is located in Burruss Hall.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” The Office of University Scholarships and Financial Aid (USFA), <http://www.finaid.vt.edu/>, is located in the Student Services Building. The USFA Office provides resources for students regarding scholarships, loans, grants, and other forms of financial aid that are available to students.**

Message if participant selects “False”: **Good! The Office of University Scholarships and Financial Aid (USFA), <http://www.finaid.vt.edu/>, is located in the Student Services Building. The USFA Office provides resources for students regarding scholarships, loans, grants, and other forms of financial aid that are available to students.**

12. Virginia Tech does **NOT** post information about tuition and other fees on-line for students and their families to view.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **The correct answer is “False.” Information about tuition and other fees are posted on the Virginia Tech website at <http://www.bursar.vt.edu/tuition/>.**

Message if participant selects “False”: **Excellent! Information about tuition and other fees are posted on the Virginia Tech website at <http://www.bursar.vt.edu/tuition/>.**

13. The Safe Zone program identifies allies who are concerned, empathetic, and knowledgeable about Lesbian, Gay, Bisexual, Transgendered, and Questioning student issues.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Good job! According to the Safe Zone website, “The goal of the Safe Zone program is to provide a more accepting environment for lesbian, gay, bisexual, transgendered, and questioning students (LGBTQ) and their allies at Virginia Tech. This environment is created utilizing a network of individuals that are committed to providing both a supportive environment for — and accurate information about — LGBT students and their allies.”**

Message if participant selects “False”: **The correct answer is “True.” According to the Safe Zone website, “The goal of the Safe Zone program is to provide a more accepting environment for lesbian, gay, bisexual, transgendered, and questioning students (LGBTQ) and their allies at Virginia Tech. This environment is created utilizing a network of individuals that are committed to providing both a supportive environment for — and accurate information about — LGBT students and their allies.”**

14. Virginia Tech students can receive counseling services through the Cook Counseling Center.

\_\_\_\_\_ True

\_\_\_\_\_ False

Message if participant selects “True”: **Yes! The Cook Counseling Center at Virginia Tech offers counseling for a range of psychological concerns, including, but not limited to, alcohol use problems, trauma (such as sexual assault or rape), and eating disorders.**

Message if participant selects “False”: **The correct answer is “True.” The Cook Counseling Center at Virginia Tech offers counseling for a range of psychological concerns, including, but not limited to, alcohol use problems, trauma (such as sexual assault or rape), and eating disorders.**

Appendix Q  
IRB Approval Letter



Office of Research Compliance  
Institutional Review Board  
2000 Kraft Drive, Suite 2000 (1497)  
Blacksburg, VA 24050  
540/231-4606 Fax 540/231-0969  
email [irb@ut.edu](mailto:irb@ut.edu)  
website <http://www.irb.vt.edu>

**MEMORANDUM**

**DATE:** August 7, 2012  
**TO:** Susan Williams White, Amie R Schry  
**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires May 31, 2014)  
**PROTOCOL TITLE:** Social Behaviors and Psychological Health Study  
**IRB NUMBER:** 12-573

Effective July 23, 2012, the Virginia Tech Institutional Review Board (IRB), at a convened meeting, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

**PROTOCOL INFORMATION:**

Approved As: **Full Review**  
Protocol Approval Date: **July 23, 2012**  
Protocol Expiration Date: **July 22, 2013**  
Continuing Review Due Date\*: **July 8, 2013**

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

**FEDERALLY FUNDED RESEARCH REQUIREMENTS:**

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

*Invent the Future*

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY  
*An equal opportunity, affirmative action institution*

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

\* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office ([irbadmin@vt.edu](mailto:irbadmin@vt.edu)) immediately.