

**A META-ANALYSIS OF THE RELATIONSHIP BETWEEN SEXUAL  
VICTIMIZATION AND RISK PERCEPTION: A REVIEW FROM 1990 TO 2013**

A Dissertation

by

NATALIA JIMENEZ

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|                        |                                 |
|------------------------|---------------------------------|
| Chair of Committee,    | Daniel Brossart                 |
| Co-Chair of Committee, | Timothy Elliott                 |
| Committee Members,     | Victor Willson<br>Lizette Ojeda |
| Head of Department,    | Victor Willson                  |

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## **ABSTRACT**

Sexual victimization is a growing problem among women. Sexual victimization can be described as an event where an individual undergoes an unwanted sexual experience. There are many factors that could increase a woman's risk for sexual victimization. One of the most important factors is risk perception. Risk perception is embedded in the way individuals perceive, interpret, and react to a risky situation. Sexual victimization and risk perception has been an area of focus for many during the past few years. Although, there is a large body of evidence in this area, many of the studies are inconsistent and currently only one literature review exists. Therefore, there is a need for a meta-analysis study to try to understand the sexual victimization and risk perception relationship from a quantitative perspective, as well as to detect the types of moderator variables that may influence it.

This study sought to analyze and synthesize the empirical findings of the relationship between sexual victimization and risk perception from 1990 through March 2013. A secondary goal is to better understand the relationship between sexual victimization and risk perception. A tertiary purpose was to understand the moderating influence of a number of factors on this relationship. Consistent with the guidelines and procedures for a meta-analysis set forth by Cooper in 2010, 51 studies were identified producing a total 116 effect sizes. These effect sizes were not calculated independently. Instead, the effect sizes from each study were averaged in order to form a mean effect

size per study. The mean effects were then averaged to form the omnibus mean effect size.

The omnibus mean effect size from the 51 studies was of  $g = 0.167$ ,  $p < .001$ , demonstrating a small-sized effect. This effect size was more modest in magnitude; however, it demonstrated a relationship between sexual victimization and risk perception. All the moderators with the exception of alcohol and design quality were significant contributors to the variance in the effect sizes. In addition to examining the omnibus mean effect size and potential moderators, limitations and implications for practice and future research were discussed.

## **DEDICATION**

I dedicate my dissertation work to God who has helped me throughout my life and has given me the strength to finish with my studies. To my loving husband who provides me with unconditional support and love. I never thought I could find someone that would make me this happy. To my wonderful parents for always believing I can do anything I set my mind to. Their hard work and love have shaped me into the person I am today. And to my sister for always being there for me.

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## CHAPTER I

### INTRODUCTION

Over the past few years researchers have documented the increasingly high number of women experiencing sexual victimization (Yeater, McFall, & Viken, 2011). In 2007 a national survey showed there were 248,300 victims of rape, attempted rape, or sexual assault against those 12 years and younger (Statistics, 2007). Epidemiological research studies have suggested that about 50% of college women have experienced some type of sexual victimization. Furthermore, approximately 27% of these individuals have experienced attempted or completed rape (Fisher, Cullen, & Turner, 2000; Koss, Gidycz, & Wisniewski, 1987). Other recent studies have shown that women with a previous history of sexual victimization are at an increased risk for further sexual victimization (sexual revictimization) (Soller-Baillo, Marx, & Sloan, 2005). These risks have been shown in a variety of retrospective and prospective studies using a variety of population samples; including college, clinical, and community samples (Cloitre, Scarvalone, & Difede, 1997; Cloitre, Tardiff, Marzuk, Leon, & Portera, 2001; Gidycz, Coble, Latham, & Layman, 1993; Messman-Moore & Long, 2003; Gidycz, Hanson, & Layman, 1995; Koss & Dinero, 1989; Marx, Calhoun, Wilson, & Meyerson, 2001; Wyatt, Guthrie, & Notgrass, 1992). Research studies conducted with college samples have found similar numbers of sexual victimization as those seen in community samples. This is significant since most of the research in sexual victimization is performed on college samples (Gidycz, McNamara, & Edwards, 2006a). Despite these staggering

numbers, many researchers have had difficulty understanding the etiology of sexual assault, as well as, creating effective prevention programs for sexual victimization and revictimization (Yeater & O'Donohue, 1999).

In the past few years, there has been an overwhelming amount of evidence detailing the effects of these unwanted sexual experiences on women (Yeater et al., 2011). Victims have reported a variety of psychological and physical problems, such as depression (Calhoun, Atkenson, & Resick, 1982; Kilpatrick, Resick, & Veronen, 1981), anxiety and intense fear (Calhoun et al., 1982; Kilpatrick et al., 1981), Post-Traumatic Stress Disorder (PTSD) (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992; Ullman & Brecklin, 2003), alcohol dependence (Ullman & Brecklin, 2003), sexual dysfunction (Becker, Skinner, Abel, & Treacy, 1982; Orlando & Koss, 1983), and sexual revictimization (Gidycz et al., 1993; Koss & Dinero, 1989; Messman-Moore & Long, 2003). Studies suggest that these effects are potentially serious and long lasting (Yeater et al., 2011).

As a result of the unsettling evidence, many scholars have devoted themselves to developing prevention programs for sexual victimization. Nevertheless, the programs have not been very effective (Yeater & O'Donohue, 2002). It is safe to assume this may be the case due to the lack of understanding etiology of sexual victimization.

Additionally, research concerning male sexual aggression and related prevention programs is lacking (Yeater & O'Donohue, 2002). Ultimately, recognition of the need for more sexual victimization and sexual aggression prevention programs has led to an increase in the research concerning the etiology of sexual victimization.

The main focus of this dissertation will be that of sexual victimization. Sexual victimization can be defined as “an unwanted sexual experience by which a woman would feel hurt by, regret, or feel bad about later” (Yeater, Viken, McFall, & Wagner, 2006). An unwanted sexual experience can be defined as “an experience including fondling, vaginal, oral, or anal intercourse” (Yeater et al., 2006). For this meta-analysis, all types of sexual victimization were included, since all forms of sexual victimization, not just those prohibited by or prosecuted by the law, can have detrimental effects not only those that can be legally sanctioned (Yeater et al., 2011). Thus, the following domains of sexual victimization were included: sexual coercion (verbal), unwanted sexual contact, attempted rape, and completed rape before the age of fourteen (child sexual victimization) and after the age of 14 (adolescent/adult sexual victimization).

In 1994 increasing sexual violence against women led to the establishment of the Office on Violence Against Women within the U.S. Department of Justice (Bachar & Koss, 2001). The same year congress passed the Violence Against Women Act (VAWA). As a result of this law, the National Research Council established a panel concerned with researching violence against women. This panel recommended an increase in research aimed at understanding the context, scope, causes, and consequences of violence against women (Bachar & Koss, 2001). VAWA had as its primary goal the reduction of violence against women by focusing on prevention (Crowell & Burgess, 1996). As a result of this policy change, a number of behavioral, situational, and cognitive factors have since been investigated (Gidycz et al., 2006a; Yeater et al., 2011). Many of these factors are believed to have the potential to increase

women's risk for sexual victimization (Rich, Combs-Lane, Resnick, & Kilpatrick, 2004). The following factors have received increased attention: psychopathology (Gidycz et al., 1993; Sandberg, Matorin, & Lynn, 1999), the number of consensual sexual partners (Corbin, Bernat, Calhoun, McNair, & Seals, 2001; Koss & Dinero, 1989), low sexual assertiveness (Abbey, Zawacki, & McAuslan, 2000; Testa & Livingston, 2000; Yeater, Lenberg, Avina, Rinehart, & O'Donohue, 2008), alcohol use by perpetrator and/or victim, and risk perception or risk recognition ability (Gidycz et al., 2006a).

Risk perception is a variable that has received significant attention within the sexual victimization area (Gidycz et al., 2006a). In order to continue explaining this concept we must note that while perpetrators are responsible for all acts of sexual aggression and prevention efforts targeting sexual aggression of men ultimately should be the priority (Gidycz et al., 2006a; O'Donohue, Yeater, & Fanetti, 2003), research on prevention programs for sexual aggression in men are only in their initial stages, due to a dearth of studies targeting the efficacy of these programs (O'Donohue et al., 2003). It is then an ethical priority to provide women with the necessary skills to reduce the risk for a potential sexual victimization experience (Gidycz et al., 2006a; Yeater et al., 2006). Risk recognition research has begun clarifying some of the questions scholars have about the etiology of sexual victimization (Gidycz, Rich, King, Orchowski, & Miller, 2006b). Furthermore, the information provided by risk perception studies offers the potential to increase empirical knowledge about sexual victimization, thus increasing the likelihood of developing effective prevention programs (Gidycz et al., 2006b).

A few theories have tried to explain how the ability to perceive risk may be different in women who have experienced sexual victimization than women who have not. Theories such as the Information-Processing Model of Social Competence and the Cognitive-Ecological Model propose that individuals may have risk recognition deficits and these might put certain women at a higher risk for sexual victimization and/or revictimization (McFall, 1982; Nurius, 2000; Nurius & Norris, 1996). Despite the growing body of literature, there seems to be inconsistent evidence in the studies. Some studies suggest that individuals may have a delayed risk recognition (Marx et al., 2001; Soler-Baillo et al., 2005; Wilson, Calhoun, & Bernat, 1999), while other studies propose that there is no relationship between risk perception and sexual victimization (Breitenbecher, 1999; Gidycz et al., 2006a; Naugle, 1999). Furthermore, studies looking at risk recognition when alcohol is present have also been inconsistent in their findings (Gidycz et al., 2006a). Such discrepancies have been a difficulty for the development of etiological theory within this area of study and underscore the value the current dissertation.

Currently, only one study exists which seeks to integrate results concerning the relationship between sexual victimization and risk perception. This study by Gidycz, McNamara, and Edwards (2006) highlighted some of the discrepancies in the literature. This review, however, utilized a narrative review of the research integration without acknowledging the limitations of utilizing this type of technique (Gidycz et al., 2006a).

Several researchers have noted the numerous problems often associated with narrative reviews (Cooper, 2010; Hyde & Linn, 1986). First, traditional narrative

reviews usually do not utilize a systematic technique that ensures that (1) all the relevant studies have been located and included in the synthesis and (2) the information in the study was collected accurately (Cooper, 2010). Many narrative reviews only gather those studies the authors are aware of or only search for articles in a single database, thus failing to gather all of the necessary data that could support or refute their ideas (Cooper, 2010). Second, many traditional narrative reviews also tend to use post hoc criteria in their decision process for studies that meet criteria for methodological quality, making it easier for authors to attach more importance to some studies due to personal biases (Cooper, 2010; Hyde & Linn, 1986). Third, authors may have difficulty processing the significant quantity of information from a large number of articles (over 100) (Hyde & Linn, 1986). Fourth, narrative reviews fail to report the overall magnitude of the relationship being investigated; in other words, their results are not quantitative (Cooper, 2010; Hyde & Linn, 1986). Fifth, many times the readers of the traditional narrative reviews often cannot gather the type of standard evidence that is used to decide whether a set of studies supports a conclusion, since the rules used for a traditional narrative review are frequently only clear to the authors themselves (Cooper, 2010). Finally, some narrative reviews use vote counting methods, which have also been highly criticized by researchers (Hyde & Linn, 1986). Hyde and Linn (1986) have argued that vote counting has a number of problems associated with it. One of the major criticisms is that this method can lead to faulty conclusions when some of the studies have low statistical power (Hyde & Linn, 1986). Therefore, in a group of studies with an average power of

less than 0.50, as the number of studies becomes larger, so does the probability of reaching a false conclusion (Hyde & Linn, 1986).

As a result of the limitations inherent with traditional narrative reviews and vote counting methods, there have been advancements in the statistical analysis of research that consists of a synthesis of studies. These methods utilize more sound methodological and statistical techniques (Cooper, 2010). Glass (1976) proposed the use of meta-analysis as a method of soundly integrating research. Meta-analysis is a statistical procedure used to search for trends in the magnitude of effects that can be observed in a group of quantitative studies investigating the same research problems (Glass, 1976).

Currently, there are no meta-analytic research syntheses concerning sexual victimization and risk perception despite the significant number of studies trying to understand this relationship and the often inconsistent results of these studies. There is, therefore, a need to conduct a meta-analysis study to try to understand this relationship from a quantitative perspective, as well as to detect the types of moderator variables that may influence this relationship. Understanding more about this relationship could have some major implications, since the knowledge about the etiology of sexual victimization could help with the formation of empirically supported prevention programs.

### **Purpose of Study**

Previous research is the foundation to subsequent research. The failure to use modern quantitative statistical methods such as meta-analysis to synthesize findings regarding the relationship between sexual victimization and risk perception indicates that scholars in this area have not utilized the full knowledge available to them from previous



research studies. To maximize the available knowledge from prior studies, reliable and valid procedures that can help to synthesize the empirical findings must be used.

Consequently, the first purpose of this study is to analyze and synthesize the empirical findings of the relationship between sexual victimization and risk perception from 1990 through March 2013. The second and perhaps most important purpose of this dissertation is to better understand the relationship between sexual victimization and risk perception. To accomplish this end, meta-analysis will be utilized. The third purpose of this study is to understand the moderating influence of a number of factors on the relationship between sexual victimization and risk perception. Some of the factors that will be examined are publication year, types of abuse reported, type of perceived risk measure utilized, and relationship differences when alcohol is present.

### **Objectives of Study and Research Questions**

The study has five primary objectives. The following objectives and the corresponding research questions associated with them were used to guide the study in each of the five domains of interest.

#### **Study objective one**

The first objective is to describe a theoretical background that can guide the integration of prior research studies in the meta-analysis. The following questions will be used to develop this theoretical framework.

1. What characterizes risk perception?
2. What are the major theories explaining risk recognition?
3. Which theories have been previously used for risk recognition within the sexual

victimization area?

4. What are the characteristics of each of these theories?
5. How can these theories be used as explanations for risk perception and sexual victimization?
6. Have these theories been used as background knowledge for articles in this area?

### **Study objective two**

The second objective of the study is to select and code the studies that address the relationship between sexual victimization and risk perception. The following nine questions will be utilized to lead the analysis in this part of the study.

1. What were the methods used to search the studies addressing the relationship between sexual victimization and risk perception?
2. What were the selection criteria for the studies that will be included in this meta-analysis?
3. How many studies met the selection criterion for inclusion in meta-analysis?
4. How many studies did not meet the selection criterion for inclusion in the meta-analysis?
5. What were the factors that accounted for the studies that failed to meet the selection criteria?
6. What variables were included into the coding system?
7. Was the coding system a valid and reliable instrument?

8. What are the major characteristics of the data analysis?
9. What variables were defined as potential moderator variables affecting the relationship between risk perception and sexual victimization?

### **Study objective three**

The third objective is to specify and describe the characteristics of the selected studies that address the relationship between sexual victimization and risk perception and to study the demographic variables of those studies that provided enough information for the quantitative synthesis. The following questions will be addressed during this phase of the study.

1. What type of study was selected (i.e. published or unpublished)?
2. When were the studies published or when was the data gathered?
3. What were the characteristics of the ethnicity of the sample?
4. Where did each sample originate?
5. What type of risk perception measure was used?
6. What type of sexual victimization measure was used?
7. Was alcohol reported in the study?
8. What type of perceived risk was reported (global risk, individual risk)?
9. Were levels of intimacy reported in the study?
10. What were the most important characteristics in each study's sample size?

#### **Study objective four**

The fourth objective is threefold: to integrate the quantitative evidence for each set of outcomes in the selected studies, to provide adequate and reliable information for quantitative synthesis of selected studies addressing the relationship between sexual victimization and risk perception, and to present the data of the conducted analyses. The following research questions will be utilized to guide the analysis in this part of the study.

1. What dependent variables are measured in each study?
2. How are the dependent variables measured (i.e. means, standard deviations, *t*-tests, Beta weights, etc.)?
3. What are the results of the analysis for publication bias using Rosenthal's *fail-safe* and *N Orwin fail-safe*?
4. What are the weighted effect sizes and corresponding confidence intervals of each dependent variable of each study?
5. What are the weighted average effect sizes and corresponding confidence intervals of the dependent variables in all of the studies?
6. What is the result of a homogeneity test for the weighted average effect sizes for all studies?
7. What is the result of an analogue to ANOVA for the weighted average effect size of each comparison group (effect size grouping)?
8. What moderator variables were utilized in the meta-analysis?
9. What are the results of the moderator analyses?

### **Study objective five**

The fifth objective is to discuss the findings of the meta-analysis, specify recommendations for future research in the domain of sexual victimization, and examine potential implications for prevention programs. There are five main questions that will be utilized to guide the analysis in this step of the study.

1. How do the meta-analysis findings follow the theoretical formulations in the area of sexual victimization and risk perception?
2. What are the most important findings that need to be considered for future research in this area?
3. What characteristics should be included to improve the future research that addresses the relationship between sexual victimization and risk perception?
4. What characteristics should be considered in order to increase risk recognition ability in prevention programs?
5. What are potential limitations to this meta-analysis?

### **Design of the Study**

The research design has five major phases. The first phase creates a theoretical framework that guides the study and provides an understanding for the different phases of the study. The next four phases focus on the empirical aspects of the study. Each phase was created to account for the study objectives. Furthermore, each phase of the study builds upon the previous phase making the whole study easily understood.

## **Significance of the Study**

In the past few years many researchers have highlighted the large number of women experiencing sexual victimization (Yeater et al., 2011). Some studies have suggest that approximately 50% of college women have experienced some type of sexual victimization and about 27% of these individuals have experienced an attempted or completed rape (Fisher et al., 2000; Koss et al., 1987). Despite these alarming numbers, researchers have been unable to fully understand the etiology of sexual violence (Yeater & O'Donohue, 1999). This knowledge has stemmed a great amount of research focusing on risk factors that may place a woman at a higher risk for sexual victimization. One important variable that has emerged from the research is risk perception.

One major subjective literature review has attempted to investigate the overall relationship between sexual victimization and risk perception. This review attempted to determine factors that play a role in risk perception. There were a number of problems with the study, however: the authors did not include a significant number of studies in the review, the selection methods for chosen articles were unclear, and the study failed to estimate the magnitude of the relationships (Gidycz et al., 2006). Therefore, a meta-analysis approach is needed to integrate the results of the relationship between sexual victimization and risk perception. This type of approach can provide a systematic way to gather a large number of studies, as well as provide a more accurate and objective conclusion concerning the victimization/risk perception relationship.

This study provides a quantitative analysis and synthesis of studies that examining the relationship between sexual victimization and risk perception. Consistent with the purpose of meta-analysis research (Cooper, 2010), this study attempts to determine whether there is a relationship between sexual victimization and risk perception, as well as differences in the relationship when moderators are taken into account. Some of the most important moderators examined are alcohol, risk perception measurements (i.e. response effectiveness, likelihood of risky situation, refusal, threat appraisal), how sexual victimization is measured (e.g. retrospectively or prospectively), and publication status.

This study offers four primary benefits to this area of research. First, the findings from Study Objective Three describe the characteristics of the studies examining the relationship between sexual victimization and risk perception. Second, the findings from Study Objective Three presents all of relevant studies related to this construct, utilizing a systematic technique that makes it more likely to obtain accurate information in this area of research. Third, the findings from Study Objective Four, using meta-analysis procedures, estimates the overall magnitude of the relationship between sexual victimization and risk perception, as well as information on differences of the relationship due to various moderators. Fourth, the procedures created and used in this study are valid and reliable. Therefore the results provide much needed information to create a better understanding of the etiology of sexual victimization. Fifth, the Study Objective Five offers recommendations for future research in the sexual victimization area and specify potential implications for prevention programs.

## **CHAPTER II**

### **THEORETICAL FRAMEWORK**

Presented in this chapter are the findings of the first objective of the study, the theoretical framework. Answers for the five research questions mentioned in the introduction are answered, as well. The theoretical framework that is presented here explores the major theories underlying risk perception in sexual situations and is based on a review of the literature in the area of risk perception related to sexual victimization.

This chapter will focus on the literature relevant to risk perception in terms of sexual victimization. There are many areas of research, such as politics, economy, nuclear waste, and health that have examined risk perception. Many of these areas, however, conceptualize risk perception based on different models (such as the Cultural Theory of Risk Perception, the Psychometric model) (Sjoberg, 2000). This dissertation uses a model that conceptualizes risk perception as a partially social construct and a partially objective property of an event. Therefore, the event or situation under consideration can vary significantly in terms of risk perception (Classen, Palesh, & Aggarwal, 2005; Sjoberg, 2000). Consequently, it was important to focus solely on the sexual victimization area. Furthermore, the overall purpose of a meta-analysis is to search for trends in the magnitude of effects that can be observed in a group of quantitative studies investigating the same research problem (Glass, 1976). Thus, a meta-analysis examines research problems in a closely related area in order to further understand the effects of a relationship—in this case sexual victimization and risk



perception. As a result, the author decided to only examine risk perception within the context of sexual victimization.

### **Risk Perception**

Risk perception can be defined as the estimate of the magnitude of a particular risk (Langford, Day, Gergiou, & Bateman, 2000). Researchers have pointed out that one must consider a very important factors when understanding risk perception, the impact of human cognition on how individuals interpret, experience, and react to personal risk (Nurius, 2000). Thus, this construct is embedded in the way individuals perceive, interpret, and act in their everyday lives (Nurius, 2000). Therefore, risk perception is not only directly related to how individuals perceive potential risk, but also to how likely they are to interpret a situation as risky and their response based on the amount of risk in a situation. Risk perception can be divided into two major categories. First, risk recognition is when individuals evaluate the potential threat in future and present activities (Gidycz et al, 2006a). Risk recognition has two major components, the general estimate of perceived vulnerability (Nurius, 2000) and the recognition of a situational risk (Marx et al., 2001; Soler-Baillo et al., 2005; Wilson et al., 1999). The general estimate of perceived vulnerability pertains to the discrepancies women tend to experience when they recognize that other women may be at risk to be sexually victimized, but they do not see the same amount of risk, if they were in the situation (Nurius, 2000). These estimates are called population and individual-based risk perceptions (Nurius, 2000). The second component of risk recognition, the recognition of a situational risk, deals with the amount of threat an individual recognizes in a

particular situation or a particular context (Nurius, 2000). This level can be exemplified in the way women recognize risk while running through a park in comparison to going on a date with an acquaintance.

The second category of risk perception is response effectiveness. This level can also be divided into two components. The first component is how a woman thinks she should respond when she perceives a situation as risky and the second is how efficacious the person feels when trying to fulfill a particular response to a risky situation (Breitenbecher, 1999; Messman-Moore & Brown, 2006; Naugle, 2000; Yeater et al., 2011). Some researchers have suggested that response effectiveness may be influenced by risk perception deficits . As a result sexually victimized women may not have assertive behavioral responses (Yeater et al., 2011). It is important to note that based on the information presented above as well as much of the research within the sexual victimization literature, risk perception is often conceived of as including both perception and response (Breitenbecher, 1999; Messman-Moore & Brown, 2006; Naugle, 2000; Nurius, 2000; Yeater et al., 2011). In the following sections, the major theoretical perspectives concerning risk perception and sexual victimization are presented.

### **Information-Processing Model of Social Competence**

McFall (1976, 1982) proposed a model of social skills that can be utilized to understand how deficits in risk perception can influence sexual victimization. In this model social skills are abilities that allow an individual to act proficiently in specific social tasks (McFall, 1982). This proposed definition of social skills has a number of

implications that must be discussed and explored in order for the construct to be fully understood. First, behaviors that characterize social skills should be separate from the competent or incompetent performance of these actions (McFall, 1982). Second, if the requirement skills (skills required to perform a particular skill) are not present when performing a behavior, there should not be a competent performance (McFall, 1982). Third, social skills should be predictable and somewhat stable (McFall, 1982). Fourth, a person's requirement or essential skills should predict the competence of their task performance (McFall, 1982). Fifth, if an individual's performance is inept, due to their lack of requisite skills, they should be able to perform competently after they acquire all the essential skills (McFall, 1982). Lastly, some individuals may never be able to acquire the essential skills to complete tasks efficiently (McFall, 1982).

Individuals perform social skills through three different systems: physiological, cognitive, and overt motor (McFall, 1982). In sexual victimization and risk perception, one of the most important systems is the cognitive system, since this system allows individuals to assess whether a situation is risky and decide what action they need to perform in response. Social skills can be described as steps through which situational tasks can be transformed into responses. These responses can then be categorized as proficient or incompetent (McFall, 1982).

This model hypothesizes that an effective response to a social task involves three related steps/phases. The first step is decoding skills, a process where incoming information/stimuli is received, perceived, and interpreted stimuli accurately (McFall, 1982). In this first step, a person can receive information that they decode wrongly, thus

affecting the rest of the steps. Even if a person decodes the stimuli correctly their final performance could be impaired if they have problems in either one of the next two steps. During the decoding skills step, women with a sexual victimization history may have a difficulty decoding and identifying risky behaviors and situations (Yeater, Naugle, O'Donohue, & Bradley, 2004).

The second phase, decision skills involve generating and selecting a response for the social task with which one is faced (McFall, 1982). The decision skills phase involves six sub-stages: (a) searching for responses to the social task, (b) thinking about alternative responses to the task, (c) selecting the best response for the task at hand, (d) searching for past examples where they have used the selected response, (e) evaluating the effectiveness of the selected response (McFall, 1982). During this phase, a woman with a sexual assault history may think of a non-assertive response due to negative past experiences.

The third phase, encoding skills or enactment, involves the performance of the chosen response (McFall, 1982). This section of social skill processing is divided into two sub-stages that occur almost simultaneously: (a) the execution skill, when a person transforms the selected response into an action and (b) the self-monitoring step, when an individual evaluates the intended and actual effects of the response (McFall, 1982). In this third phase/step, a woman with past sexual victimization history may respond in a non-assertive way due to a negative past experience or may not be able to execute the chosen response as intended.

According to this model and some researchers have proposed that sexually victimized women may have a deficit in one or more of these stages of social skills that might place them at risk to be sexually victimized (Yeater et al., 2011). Scholars have tried to test each one of these stages through different measures, but no clear conclusions have emerged regarding the area of potential deficit that women may have.

### **Cognitive-Ecological Model**

The cognitive-ecological model is a framework that was delineated specifically for women's experiences and responses when faced with sexual coercion (Nurius & Norris, 1996). This theoretical model combines the ways in which background, environmental, and intrapersonal variables are related to women's experiences with sexual victimization, as well as how women form responses to sexually risky situations (Nurius & Norris, 1996). By incorporating these factors, the theory posits that individuals have a reciprocal relationship with their environment. According to the cognitive-ecological model, there are different levels of influence that affect women's experience of sexual coercion (Nurius & Norris, 1996). First, there is the macrosystem, the cultural values and belief systems one has (Nurius & Norris, 1996). The macrosystem can influence a woman's recognition and her subsequent responses to a sexually risky situation. Some of the levels mentioned hereafter, however, tend to exert more influence. The second level is ontogeny, which is composed of an individual's developmental factors, such as assertiveness, prior dating experiences, and sex roles (Nurius & Norris, 1996). The ontogenic components are the interactions that allow individuals to develop personal theories about what is normative and what they should

expect. These developmental factors help develop an individual's attitudes and our personality. The third level, the exosystem, is the social units (i.e. relationship variables, interaction with peers) and personal goals of an individual (Nurius & Norris, 1996). Exosystem variables consist of environmental factors and personal factors that set the stage for the cognitive processes that occur for a woman. Furthermore, exosystem variables also encompass the interpersonal goals an individual may hold when participating in a social situation or relationship. These are set before a cognitive mechanism or a decision making mechanism and may be used in response to a sexually coercive experience (Nurius & Norris, 1996). The fourth level is the microsystem, the situational variables a woman encounters and the cognitive appraisal of the situational variables (Nurius & Norris, 1996). The variables in the microsystem are considered to have the strongest influence over the emotional and behavioral responses a woman has. This part of the theory is explained in depth in the following section and is based on social-cognitive theory.

### **Social Cognitive Model**

There are two major cognitive processes that have been identified when examining the thought processes of individuals responding to threat: primary appraisals and secondary appraisals (Lazarus & Folkman, 1984; Smith & Lazarus, 1990). First, primary appraisals can be described by the way risks are judged by individuals (Nurius, 2000). In primary appraisals individuals judge whether a situation poses personal threat and what the nature of the threat is (Lazarus & Folkman, 1984; Smith & Lazarus, 1990). Some scholars in the sexual victimization field have suggested that women may have

difficulty identifying early signs of risk due to certain less significant, but positive elements associated with the situation (Gidycz et al., 2006a). For example, if a woman is at a party with friends and a very popular handsome man starts talking to her and asks her to go to his room, she may have a difficult time identifying the risks associated with saying no to going to his room due to his popularity status and his looks (positive elements). Secondary appraisals, on the other hand, are an individual's beliefs that they can respond to a risky situation (Lazarus & Folkman, 1984; Smith & Lazarus, 1990). In this cognitive process an individual must understand their capability and capacity to respond to the potential threat (Nurius, 2000). Some scholars have suggested that individuals who have experienced sexual victimization may have a difficulty responding effectively or may feel like they are not capable of completing an effective response even if the situation is deemed risky (Nurius, 2000). One of the most important contributions of this model is its acknowledgement of the differences in risk appraisal depending on the context (Nurius, 2000). In other words, the model posits that women who have been sexually assaulted may see risk in certain situations such as a dark parking garage or running at night, but may have a difficulty assessing risk in situations such as a date with an acquaintance or being at a party. This theory illustrates that primary and secondary appraisals partly stem from an individual's goals and beliefs, which result in interpretations and emotional conditions that allow an individual to cope and act in ways consistent with fulfilling these goals and beliefs (Smith & Lazarus, 1993).

### ***Risk perception and context***

As mentioned prior, one of the most important contributions of this model is its acknowledgement of differences in risk perception depending on the context (Nurius, 2000). Numerous articles have stated that women tend to be more alert to potential risk in situations dealing with strangers (i.e. a parking garage, walking alone through a college campus, etc.) in comparison to situations dealing with acquaintances (Riger, Gordon, & LeBailly, 1982). It is a known fact, however, that risky situations are more likely to arise in common places with known individuals (Muehlenhard & Linton, 1987). While the majority of dating events do not end in sexual victimization, women still have a relatively high risk of experiencing sexual victimization in their lifetime (Nurius, 2000). These common situations in which women experience sexual victimization are often characterized by friendship, entertainment, group membership, intimate relationships, and other normal daily events. According to Norris, Nurius, and Dimeff (1996), these familiar situations may lower the expectancies, mood, or readiness to be prepared for a risky situation, thus making a familiar situation seem less risky to a woman, since she is not expecting to be faced with any potential threats.

### ***Optimistic bias and illusion of control as factors of risk perception***

Another important aspect influencing risk perception in this theory is the optimistic bias (Perloff, 1986). According to this theory, people tend to believe negative things happen, however, they tend to have an egocentric optimism belief that these negative events will not happen to them (Nurius, 2000). This common belief, seen in many aspects of a person's life, tends to affect how much risk a person appraises in a



situation. Therefore, individuals tend to form perceptions and cognitive biases that support unrealistic optimism and increased perceptions of personal control, which ultimately affects how they assess risk (Nurius, 2000). Some scholars have highlighted that this optimism can be positive for mental health and functioning. In terms of sexual victimization, however, this lowers the risk appraisal in potentially dangerous situations (Weinstein, 1993). Having an optimistic bias may impede or reduce precautionary practices and make women more likely to underestimate the likelihood of encountering a risky situation. Furthermore, women tend to regard their personal situations as more controllable than situations in which other women find themselves, overestimating their skills and capacity to control personal situations and their outcomes (Nurius, 2000). Thus, women may understand and effectively appraise the risk of experience sexual victimization for others, but inaccurately appraise their own risk as lower than that of other women due to the optimistic bias (Nurius, 2000). Consequently, women may have a decreased ability to respond effectively and control the outcome of a potentially dangerous situation (Nurius, 2000).

#### ***Personal goals as a factor in risk perception***

Another important factor affecting risk perception under Nurius' theory (2000) is a woman's personal goals. In risky situations, women may be faced with having to react and respond. Certain responses, however, might be associated with negative outcomes, such as decreased popularity, having less fun, not experiencing pleasure from drinking, etc. A study by Beuth-Marom, Austin, Fischhoff, Palmgren, & Jacobs-Quadrel (1993) noted that adolescents reported having more negative consequences from taking risks

than from avoiding risks. This points to fact that it may be easier for a woman to not respond assertively to a risky situation than to be negatively labeled or rejected by her peers. Therefore, a woman's personal goals could have a great impact on the way threat is assessed.

### ***Risk perception and alcohol***

Many sources have highlighted a relationship between alcohol use/abuse and sexual assault (e.g., Abbey, 1996; Abbey, Ross, & McDuffie, 1994; Benson, Charlton, & Goodhart, 1992; Seto & Barbaree, 1995). It has been shown that alcohol contributes to about a third of all cases of sexual victimization with both perpetrator and/or victims consuming alcohol (Monks, 2001). This relationship has prompted many researchers to study the potential effect of alcohol in social situations in depth (Monks, 2001). Studies have shown physiologically alcohol can alter perception and judgment, decrease reaction time, and impair decision-making capabilities (Monks, 2001). These cognitive impairments are vital factors in the way individuals perceive risk during social situations and can lead to misinterpretation of sexual advances, potentially ineffective refusal strategies, and increased inability to protect oneself (Abbey et al., 2000; Davis, George, and Norris, 2004; Larimer, Lydum, Anderson, & Turner, 1999; Pope & Shouldice, 2001; Rickert & Wiemann, 1998; Sochting, Fairbrother, & Koch, 2004; Testa, Livingston & Collins, 2000; Testa & Parks, 1996). A common theoretical framework that has been used to explain the relationship between alcohol and sexual victimization is the alcohol myopia theory. This theory posits that as individuals consume alcohol, they become more likely to miss or ignore peripheral cues in the social environment, thus potentially

failing to identify cues that might suggest the situation may be dangerous (Steele & Josephs, 1990). Consequently, when examining the relationship between risk perception and sexual victimization, it is important that individuals understand the role alcohol may play.

### **Summary**

As mentioned previously risk perception encompasses a variety of skills and cognitive processes. Several theories have hypothesized how a woman may think and respond to a potentially dangerous situation. The two major theories used to explain this process have been the information-processing model of social competence (McFall, 1982) and the cognitive-ecological model (Nurius, 2000). Both of these theories have shaped much of the research and theoretical background in this field. The cognitive-ecological model, however, explains in depth many important aspects related to women's cognitions and responses during various potentially dangerous situations (Nurius, 2000; Nurius & Norris, 1996). Two major areas of research have emerged from these theoretical frameworks. One of these areas of study focuses on examining women's recognition and responses to risky situations and while the other concentrates solely on estimates of perceived vulnerability (Orchowski, Creech, Reddy, Catezza, & Ratcliff, 2012). Although the theories mentioned above try to explain the process of risk perception and sexual victimization, studies have been inconclusive in their findings. Some of the studies only focus on one aspect of the cognitive process or skill set, while others have focused on more than one aspect of the risk perception construct. Additionally, there continues to be a need to analyze and synthesize the empirical

findings in an effective way. In the next chapter, we will begin the process of a meta-analysis, to select and code the studies that can be utilized to address the relationship between sexual victimization and risk perception.

## **CHAPTER III**

### **METHODS**

This chapter provides the findings for phase two of the study: procedures for locating and selecting studies included in the meta-analysis, as well as, the coding process and procedures. It provides answers to the nine questions guiding the implementation of Study Objective Two.

#### **Designing the Selection Criteria**

The selection criteria were created in order to create an organized system for selecting studies to include in the meta-analysis. Additionally, inclusion and exclusion criteria were determined by the success or failure in meeting selection criteria for conducting the meta-analysis. Some of the articles that failed to meet the selection criteria were still included in the dissertation, either in the introduction or in the theoretical framework. No excluded studies were included in the analysis itself, however. The selection criteria for studies in this meta-analysis were:

1. The study must be a quantitative analysis of empirical data.
2. The study must be in English.
3. The study must be conducted between the years 1990 to March 2013.
4. The study must have a risk perception measure that assesses likelihood of risk, assertiveness in a risky situation, response effectiveness, risk appraisal, refusal ability, etc.
5. The sample must include only women, or if it is a sample with both males and

females, the statistical analysis must be performed on each sex separately in order to extract only the data on women.

6. The sample must include women with a sexual victimization history, as well as, women with no sexual victimization histories.
7. The sample must include the percentage or number of individuals in the victimized category and the non-victimized category.
8. Statistical data such as correlations, *t*-values, *F*-values, chi-square values, percentages, means, standard deviations, and other independent variables needed to estimate weighted effect sizes must be reported or available.

The articles that were excluded from the study failed to be included for four major reasons. The exclusion criteria were as follows:

1. Studies reporting completion of a measure for risk perception after the sample has attended a sexual assault prevention program study (control group can be utilized as long as it meets inclusion criteria).
2. The study is in a foreign language.
3. The study reported child sexual victimization as the only measure for sexual victimization.
4. The study utilizes interpersonal violence victimization.

### **Study Retrieval**

The goal of the current meta-analysis is to provide a quantitative analysis and synthesis of the studies examining the relationship between sexual victimization and risk perception between 1990 and March 2013. These dates were chosen due to the increase

in research studying violence against women in the 1990's. This increase in studies took place following the establishment of Office on Violence Against Women, the Violence Against Women Act (VAWA), and a subsequent recommendation by the National Research Council to increase research in this area in 1994 (Bachar & Koss, 2001). In order to achieve the goals mentioned above, the current meta-analysis followed the majority of Lipsey and Wilson's (2001) suggested techniques. These techniques included: (a) using a computerized bibliographical search, (b) hand-searching several psychology journals, and (c) reviewing studies which appear in the references of the obtained articles (e.g., ancestral searches).

### **Bibliographical search**

To locate published or unpublished studies utilizing a computerized bibliographical search four major computer indices were utilized. One of the indices, however, had 19 different databases included within it. The four major indices searched were: Google Scholar, ProQuest Databases, Web of Science, and Academic Search Complete. Proquest Databases included the following databases: Sociological Abstracts, Social Services Abstracts, PsychInfo, Proquest Sociology, Psych Articles, Psych Books, Proquest Dissertations and Theses, Proquest Social Sciences Journals, Proquest Psychology Journals, Proquest Education Journals, Proquest Criminal Justice, Publicaciones y Revistas Sociales y Humanísticas (PRISMA), Applied Social Sciences Index and Abstracts, Dissertations and Theses at Texas A&M System, PILOTS, Education Periodical, ERIC, International Bibliography of Social Sciences, and Linguistics and Language Behavior Abstracts (LLBA). Web of Science was used to

search for unpublished conference papers. The search terms “rape,” “sexual assault,” and “sexual victimization” were used interchangeably. In order to capture any relevant articles these terms were combined with the following phrases using the word “and” in the Boolean search operator: “risk perception,” “threat perception,” “risk recognition.” After the extensive search procedures in the databases mentioned above a total of 2,861 abstracts were located that addressed all of the keywords. These were divided as follows: Google Scholar located 2,780; Proquest Databases located 31; Academic Search Complete located 19; and Web of Science located 31. This computerized bibliographical search was helpful in finding unpublished and published studies, since some of the databases searched for theses, dissertations, and papers presented in conferences.

### **Psychology journals**

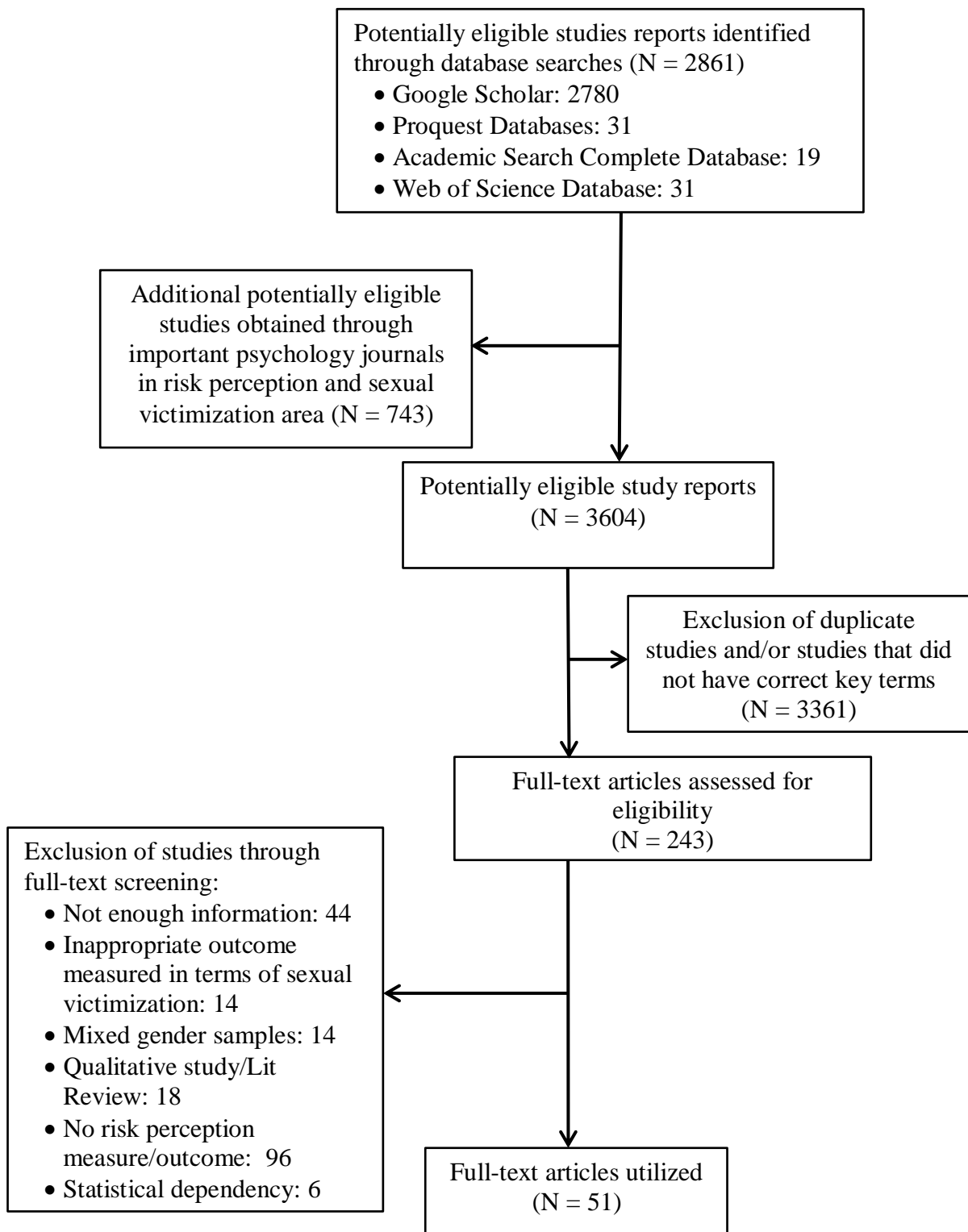
In addition to the computer searches mentioned above, a hand search of certain journals was conducted. The current journals were reviewed: (a) *Journal of Interpersonal Violence*, (b) *Psychology of Women Quarterly*, (c) *Journal of Consulting and Clinical Psychology*, (d) *Violence Against Women*, (e) *Sex Roles*, and (f) *Violence and Victims*. The following were the number of articles obtained from each journal search (the number in parenthesis identifies the number of abstracts obtained in the search): (a) *Journal of Interpersonal Violence* (229), (b) *Psychology of Women Quarterly* (87), (c) *Journal of Consulting and Clinical Psychology* (34), (d) *Violence Against Women* (196), (e) *Sex Roles* (82), (f) *Violence and Victims* (115).



### **Ancestral search**

Finally, an ancestral search of the reference section of the articles was completed. The purpose of this search was to locate any relevant articles not identified by the previous methods. There were no new studies found using this study retrieval technique.

After all of the duplicate articles as well as those that did not match the correct key words were removed, the above methods yielded a total number of 243 studies. Of the 243 articles collected for full review, 51 of the studies met all of the inclusion criteria. Of the 192 studies excluded, the primary reasons for exclusion were insufficient information (23%, n = 44), measurement of interpersonal violence, child sexual abuse or other type of victimization only (7%, n = 14), mixed gender samples (7%, n = 14), qualitative or literature review report (9%, n = 18), no risk perception measure (50%, n = 96), and statistical dependency (3%, n = 6) (Cooper & Hedges, 1994). Figure 1 illustrates the procedures used for study selection.



**Figure 1.** Selection of Studies Flow Chart

## **Study Coding**

After retrieving the studies which met the inclusion criteria, the risk perception and sexual victimization coding protocol (Appendix A) and the risk perception and sexual victimization manual definitions (Appendix B) were developed. In order to eliminate potential subjective bias, the study and program characteristics and findings of selected studies were coded using a numerical coding system; this numerical system was used during the information gathering and the article analysis. Decisions concerning which studies, program characteristics, and findings to code were based on general characteristics possessed by most studies in this area, as well as characteristics utilized in a literature review by Gidycz, McNamara, and Edwards (2006). The coding protocol contained the coding dimensions and categories that were coded for each study (e.g., sample size or N). In total there were 21 dimensions. These 21 dimensions included (a) study year, (b) journal name, (c) type of publication, (d) publication status, (e) total N, (f) total  $N_{\text{experimental}}$  (victimized sample), (g) total  $N_{\text{control}}$  (non-victimized sample), (h) sample ethnicity, (i) type of sample, (j) type of sexual victimization measure, (k) type of risk perception measure, (l) reliability of risk perception measure, (m) outcome measured, (n) types of risk measured in article, (o) type of abuse reported, (p) level of intimacy reported, (q) alcohol, (r) data type, and (s) page where effect size data was found, (t) data for effect size and (u) design quality.

### **Validity and reliability of the coding instrument**

The coding sheets and guidelines were developed after careful research by the investigator. After surveying numerous articles and determining the most important

characteristics mentioned in the literature the validity of the coding sheets and guidelines was established by determining whether the coding sheets and guidelines accurately represented the most common characteristics found in the literature.

The reliability of the study characteristics was assessed by determining intra-rater reliability coefficients. The intra-rater coefficient was determined by utilizing the coded articles (N = 51) and then re-coding approximately 30% of the articles after two months had passed. This was followed by calculating a reliability coefficient between these two coding times. The articles that comprised the 30% to be re-coded were randomly chosen.

The intra-rater reliabilities of the two sessions were 93.84% and 95.32% respectively. In addition to calculating intra-rater reliability for all questions Cohen's kappa was calculated for the 12 categorical dimensions. Cohen's kappa was calculated because it accounts chance agreement (Cohen, 1960). Cohen's kappa was 73.62%. This demonstrated agreement beyond what would be expected by chance (Watkins & Pacheco, 2000).

### **Data Analysis**

The Comprehensive Meta-Analysis (CMA) program was used (Borenstein, Hedges, Higgins, & Rothstein, 2005) to examine publication bias and calculate all effect sizes. An online effect size (PESC) calculator was also utilized for a few special data formats (Wilson, 2010). Publication bias was examined using Rosenthal's *fail-safe* and *N* Orwin *fail-safe N* in order to determine the number of missing studies necessary to be incorporated into the analysis to nullify the *p*-value (Rosenthal's *fail-safe N*) and the number of missing studies needed to lower the effect size to a level below substantive

importance (Orwin *fail-safe N*) (Borestein, Hedges, Higgins, & Rothstein, 2005). Both of these approaches were utilized because Rosenthal's *fail-safe N* relies on the *p*-value to examine publication bias, while the Orwin *fail-safe N* relies on Hedges's *g* (Borestein, et al., 2005; Orwin, 1983). The CMA program was utilized in this meta-analysis because it has the capacity to convert 100 different data formats such as (a) mean and standard deviation using unmatched groups, (b) mean and *t*-scores, (c) correlations and sample size, (d) *t* or *F* statistic data, or (e) Cohen's *d*. Furthermore, the PESC was also utilized in order to convert (a) correlations with two different group sample sizes and (b) means and standard deviations of subgroups within in the experimental and control groups. Both of these programs allowed more studies to be included in the meta-analysis, since the selected studies did not have to rely on the standard effect size computation of using means and standard deviations. The researcher calculated the effect sizes from the following formats: (a) Cohen's *d* and variance, (b) correlation and total sample size, (c) correlation and unequal sample sizes, (d) means and standard deviations, (e) means and *t*-values, (f) sample size and *t*-values, (g) odds ratio, (h) correlations and standard error, and (i) means and standard errors. The majority of formats from which the calculations were made, however, were means and standard deviations. It is important to note that the direction of the effect sizes was coded so that a positive effect size represented decreased perceived risk in individuals with a history of sexual victimization (i.e. decreased perceived risk, less perceived likelihood of sexual victimization, less response assertiveness in a risky situation, decreased effective responses to a risky situation, less efficacy in response to a risky situation, and increased response latency). Also, the

control groups were composed of women with no sexual victimization, while the experimental groups were composed of women sexual victimization.

The CMA program also permitted effect sizes to be calculated from each outcome measure within a study. Thus, if separate samples were present in the study outcomes were treated as independent of each other (Borestein et al., 2005). The studies chosen for this meta-analysis had different outcomes. These studies did not utilize independent samples, however. Consequently a mean effect size for the study was calculated to resolve the issue. Once the mean effect size for each study was calculated, an omnibus mean effect size for the meta-analysis was computed from the 51 individual mean study effect sizes.

After effect size information was entered in the CMA program, all effect sizes were converted to Cohen's  $d$  and then converted to Hedges's  $g$ . Hedges'  $g$  was used because it represents a more conservative estimate of Cohen's  $d$  and corrects for sample size bias (Hedges, 1981). Hedges's  $g$  was calculated from Cohen's  $d$  by multiplying Cohen's  $d$  by a correction factor ( $J$ ), where  $J = 1 - (3 / (4 \times df - 1))$ , and  $df = N_{total} - 2$  (Borestein, et al., 2005; Hedges, 1981). The current study used a fixed-effects model with 95% confidence intervals to analyze the data instead of the random-effects model. This model was utilized because the author examined the systematic effects of study-level influences. As a result, empirically supported moderators were utilized to understand the potential differences in the effect sizes (Cooper, 2010). While random effects could potentially be useful, it was not utilized in this study since it can overestimate error variance if the assumptions are violated (Cooper, 2010).

A homogeneity analysis of the composite effect size was conducted by analyzing the  $Q$ -statistic and its  $p$ -value. This test determined if the observed variance in effect sizes was statistically different from that expected by sampling error alone (i.e. null hypothesis that all studies share a common effect size distribution (Cooper, 2010)). A tau-squared ( $\tau^2$ ) parameter was utilized following the  $Q$ -statistic to determine the variance of the true effect sizes (i.e. the between studies variance in the analysis), as well as the  $T^2$  estimate, which establishes the standard deviation of the true effect sizes (Borenstein, Hedges, Higgins, & Rothstein, 2009). Lastly, the  $I^2$  was analyzed to determine the proportion of observed dispersion. This allowed the author to speculate about reasons for the variance and if further moderator analysis was required (Borenstein et al., 2009). It is important to note that  $\tau^2$ ,  $T^2$ ,  $I^2$  were all analyzed because they provide important information about the characteristics of the meta-analysis, support the need for moderator analyses, and are sensitive to the metric of the effect size (and not the total number of studies, unlike the  $Q$ -statistic) (Borenstein et al., 2009).

Additionally, an analogue to ANOVA was conducted in order to further understand the variations in effect sizes between sexual victimization and risk perception. In this analysis the effect sizes were divided into four groups: effect sizes less  $\leq 0.00$ , effect sizes between 0.01 and 0.299, effect sizes between 0.3 and 0.699, and effect sizes between 0.7 and 1.0.

### **Moderator analyses**

Moderator analyses were conducted to examine potential statistical differences between categories underlying the dimensions that were coded (e.g. effect size statistical

differences between grade levels). Not all analyses were possible because categories underlying several of the coded dimensions had to be combined so that each category contained a minimum of two studies (Borenstein et al., 2009). The new categories, however, were not a random combination of the categories with the lowest number of studies. Instead, a category with fewer studies was combined with another category only if it made theoretical or conceptual sense.

To determine whether there was a statistically significant difference between or among categories underlying dimensions, the  $Q_{\text{between}}$  ( $Q_b$ ) and its  $p$ -value were used. If the  $p$ -value was less or equal to .05, then the null hypothesis (the groups were homogenous) was rejected. Furthermore, the  $Q_{\text{within}}$  ( $Q_w$ ) was utilized to determine the homogeneity of the effect sizes within each level of the moderator. In order to determine which categories within a coded dimension were statistically different from one another, two categories within each moderator were compared at a time using a  $p$ -value less than or equal to .05 (Borenstein et al., 2009).

The dimensions (i.e., possible moderators of effect size magnitude) and underlying categories used in the current study included the (a) type of sample, (b) type of risk perception measure, (c) alcohol, (d) outcome measured, (e) type of abuse reported, (f) type of publication, (g) study year, (h) publication status, and (i) design quality. These 9 dimensions were chosen for further moderator analysis for two primary reasons. First, these were categorical variables or variables that could be turned into categorical values after examining other research. Second, these variables had been mentioned in other research as being important for understanding the etiology of sexual



victimization (Yeater et al., 2011; Gidycz et al., 2006a). The rest of the dimensions were concerned with characteristics about the articles (sample size, reliability of risk perception measure), sample demographics (ethnicity), and location of the data used to calculate the effect size(s). Due to the nature and function of the remaining dimensions, they could not be analyzed using a moderator analysis (Borenstein et al., 2009).

### *Type of sample*

In the present analyses the potential moderator, type of sample, refers to the origin of the participants utilized in the study. The “community sample” category was the used to classify studies that contained a majority of individuals from community settings (i.e. data was obtained by phone, mail, or flyers within the community). The “college student sample” category was used for studies whose sample contained a majority of individuals from a college campus, student counseling center, or psychology classes. The “sexual assault crisis center sample” label was utilized for studies that reported samples from sexual assault crisis centers or individuals currently obtaining treatment for sexual victimization. The “mixed sample” category was used for studies that reported samples from a combination of origins such as community, college, or sexual assault crisis center. The “other/not specified” label was applied to studies whose sample origin was not provided. After reviewing all of the studies the “sexual assault crisis center sample” and the “other/not specified” categories had no studies falling within their criteria, therefore the author only used the other three categories (“community sample,” “college student sample,” and “mixed sample”) in the moderator analysis.

### *Type of risk perception measure*

The potential moderating variable, type of risk perception measure, refers to the type of measure utilized in the study to determine the risk perceived by the participants. The “videotape” category was used for studies that had a risky situation presented by videotape, followed by the participant’s response to specific questions related to the video. The “audio recording” label was used for studies that had a risky situation presented to the participants by audio tape followed by questions relevant to the audio recording. The “written vignettes” category was used for studies with a risky situation presented to the participants in written format followed by questions. The “questionnaire” label was utilized for studies that only presented the participants a questionnaire about their perceptions of risk. The “other” category was used to classify studies that utilized single questions to measure the perceived risk of the participants. Only four of the five original categories (“audio recording,” “written vignettes,” “questionnaire,” and “other”) were analyzed as moderators because the author combined the “audio recording” and the “videotape” categories due to being only 1 study with “videotape” category.

### *Alcohol*

The potential moderator, alcohol, refers to whether alcohol was part of the study (i.e. did participants think about risk in situations where alcohol was involved). The “given alcohol” category was used to classify those studies that physically gave their participants alcohol before responding to perceived risk measures. The “think alcohol” category was used for those studies where the participants were told to think about

situations involving alcohol (i.e. think about risk perception in a situation involving alcohol). The “other/not specified” category was utilized for studies that did not measure risk perception in situations involving alcohol, did not measure alcohol in a way that could be used in the analysis, or did not specify whether this was something measured. All three original categories (“given alcohol,” “think alcohol,” and “other/ not specified”) were analyzed as moderating factors.

### ***Type of outcome measured***

Outcome measured refers to the way risk was measured in the study. The “perception of risk” category was used to classify studies that measured the likelihood of a risky situation happening, the perceived risk of sexual victimization, the recognition of risk, or the appraisal of threat. The “interpretation of risk” category was utilized for studies that measured risk in terms of the way participants understood, read, deduced, or inferred risk (i.e., risk latency, risk control). The “reaction to risk” category was used for studies that measured the risk in terms of how the women would respond to a risky situation (i.e. assertiveness, effective responses, acquiescent responses, refusal responses, or diplomatic responses). The “perception and reaction to risk” category was used to classify those studies that reported both perception to risk and the reaction to a risky situation. Therefore, these studies reported the likelihood of a risky situation happening, the perceived risk of sexual victimization, or the recognition of risk, as well as how women would respond to a risky situation. Lastly, the “perception and interpretation of risk” category was utilized for those studies that reported both perception to risk and interpretation of risk. Thus, these studies reported the likelihood of

a risky situation happening or the perceived risk of sexual victimization, as well as the way participants understood, read, deduced, or inferred risk (i.e. risk latency, risk control). All five original categories (“perception of risk,” “interpretation of risk,” “reaction to risk,” “perception and reaction to risk,” and “perception and interpretation of risk”) were analyzed as potential moderators. It is important to note that these categories were based on previous research in this area (see Chapter II for more information).

### ***Type of abuse reported***

The potential moderator, type of abuse reported, refers to the type of sexual abuse the participants were asked to respond to which was subsequently utilized in the study. The “child and adult/adolescent victimization” category was used to classify those studies that reported and analyzed data on child victimization as well as the adult victimization history of the sample. The “adult/adolescent victimization” category was used for studies that reported and analyzed data only on the adult victimization history of the sample. The “revictimization” category was used to label those studies that reported and analyzed the revictimization history of the sample. The “combined” category was utilized for studies reporting all levels of victimization history in the sample (child, adult/adolescence, and revictimization). Past research has suggested that childhood victimization may have slightly different theoretical underpinnings than adolescent and adult victimization. One might hypothesize that this is the result of the developmental stage at which the victim finds themselves (Classen et al., 2005). This research, as well as other research, which posits greater risk for revictimization in women having

experienced adolescent and adult victimization, prompted the author to utilize only those studies that fit into the categories specified above (Classen et al., 2005; Gidycz, et al., 1993). Therefore, child sexual victimization was only included if the article included adolescent or adult sexual victimization as well. Initially, this classification consisted of four categories “child and adult/adolescent victimization”, “adult/adolescent victimization”, “revictimization”, and “combined.” Only one study, however, utilized “revictimization” as an independent type of abuse. As a result the author merged the “revictimization” category and the “combined” category and renamed the classification label “combined/revictimization.” Only the “child and adult/adolescent victimization,” “adult/adolescent victimization,” and “combined/revictimization” categories were analyzed for as potential moderators.

### ***Type of publication***

Type of publication, another potential moderator, refers to articles that adopt either retrospective or prospective views. The “prospective articles” category was utilized for studies originating from academic journals that collected data prospectively. The “prospective dissertations/theses” category was used for studies that were solely dissertations or theses and had data collected in a prospective nature. The “retrospective articles” category was used for studies originating from academic journals that had data collected in a retrospective manner. The “retrospective dissertations/theses” category was utilized to classify studies that were solely dissertations or theses and had data collected through retrospective methods. It is important to note that some of the selected studies had both retrospective and prospective data. For this study, however, only

articles which took either a retrospective or prospective view were used for the meta-analysis because the combined retrospective/prospective data often failed to supply all necessary data and frequently used the same sample for retrospective and prospective data collection (i.e. not independent samples). All four original categories (“prospective articles,” “prospective dissertations/theses,” “retrospective articles,” and “retrospective dissertations/theses”) were analyzed for as potential moderators.

### ***Study year***

Study year refers to the year the study was published or presented. Since this meta-analysis focuses on articles from 1990 to March 2013, ranges were used in the moderator analysis in order to create categorical values. The “1990 - 1994 range” was utilized for studies published/presented from the beginning of 1990 to the end of 1994. The “1995 – 1999 range” was used for studies published/ presented from the beginning of 1995 to the end of 1999. The “2000 – 2004 range” was used for studies published/presented from the beginning of 2000 to end of 2004. The “2005 – 2009 range” was used for studies published/presented from the beginning of 2005 to the end of 2009. Lastly, the “2010 – 2013 range” was used for studies published/ presented from the beginning of 2010 to the end March of 2013. Only four of the original categories (“1995 – 1999 range,” “2000 – 2004 range,” “2005 – 2009 range,” and “2010 – March 2013 range”) were analyzed for as potential moderators.

### ***Publication status***

Publication status refers to the published or unpublished status of each article. The “published status” category was utilized for those studies that had been published in

an academic journal or a book. The “unpublished status” was used for studies that had not been published (namely theses or dissertations). Both of these categories (“published status” and “unpublished status”) were analyzed as potential moderators.

### ***Design quality***

Design quality refers to the quality of each study using some of the quality based on specific indicators outlined in National Center for Dissemination of Disability Research Technical Brief (NCDDR, 2005). The “low quality” category was defined as meeting less than 5 quality indicators on the sexual victimization and risk perception quality indicators protocol. The “medium quality” category was defined as meeting five to 9 indicators. The “high quality” category was defined as meeting more than nine indicators. For purposes of the moderator analysis only two categories examined (“medium quality,” and “high quality”). The “low quality” category had very few studies (less than 3), and therefore was combined with the “medium quality” categories.

### **Summary**

As mentioned previously, the purpose of this chapter was to outline the selection process for the articles used in the meta-analysis and explain the design for the coding manual, as well as a quality indicator protocol. The selection of articles and creation of the coding manual and quality indicator allowed the author to isolate and codify information and factors that contributed to the exclusion and inclusion of articles. Furthermore, the author was also able to provide a detailed explanation of the data analysis utilized as part of the meta-analysis and the potential moderating variables examined. The next chapter will provide characteristics of the selected studies, as well as

provide the rationale behind some of the most important inclusion and exclusion criteria.

Answers to the questions guiding the implementation of Study Objective Three are discussed.



## CHAPTER IV

### META-ANALYSIS POPULATION

This chapter provides the findings for phase three of the study: the specification and description of the characteristics of the selected studies that address the relationship between sexual victimization and risk perception. It provides the answers to the nine questions guiding the implementation of Study Objective Three.

#### **Study Information**

The current meta-analysis analyzed 51 studies producing 116 effect sizes between 1990 and March 2013. While the studies came from several sources (Table 1) most were retrieved from the *Journal of Interpersonal Violence*. There were a total of 41 (79%) published studies and 11 (21%) unpublished studies. The latter consisted mainly of dissertations and theses. Twenty-six of the chosen articles were either published or had their data presented sometime between the beginning of 2005 and the end of 2009 (51%). Fifteen studies were published or presented between the beginning of 2010 and the end of March of 2013 (29%). Seven studies were had their data presented or published between the years of 2000 and 2004 (14%). Three studies were published or had their data presented between the years of 1995 and 1999 (6%). No selected studies were published or presented between the years of 1990 and 1994.

Table 1

*Journals Used in the Meta-Analysis*

| Journal Name                                                | Number of Studies Used from each Journal |
|-------------------------------------------------------------|------------------------------------------|
| <i>Addictive Behavior</i>                                   | 1                                        |
| <i>Behaviour Research and Therapy</i>                       | 1                                        |
| <i>Child Maltreatment</i>                                   | 1                                        |
| <i>College Student Journal</i>                              | 1                                        |
| Dissertations and Theses*                                   | 10                                       |
| <i>Experimental Psychology</i>                              | 1                                        |
| <i>International Journal*</i>                               | 1                                        |
| <i>Journal of American College Health</i>                   | 2                                        |
| <i>Journal of Consulting and Clinical Psychology</i>        | 6                                        |
| <i>Journal of Criminal Justice</i>                          | 1                                        |
| <i>Journal of Family Violence</i>                           | 1                                        |
| <i>Journal of Interpersonal Violence</i>                    | 8                                        |
| <i>Journal of Language and Social Psychology</i>            | 1                                        |
| <i>Journal of Psychopathology and Behavioral Assessment</i> | 1                                        |
| <i>Journal of Social and Clinical Psychology</i>            | 1                                        |
| <i>Personality and Social Psychology Bulletin</i>           | 1                                        |
| <i>Psychology Of Women Quarterly</i>                        | 3                                        |
| <i>Sex Roles</i>                                            | 3                                        |
| <i>Violence Against Women</i>                               | 3                                        |
| <i>Violence and Victims</i>                                 | 4                                        |

NOTE: \* represents unpublished articles

In total the sample consisted of 14,261 women 5,892 women had a history of sexual victimization and 8,369 women reported no history of sexual victimization (Table 2). The main types of sexual victimization reported in the articles were child and adolescent/adult victimization (45%), adolescent/adult only (21%), and a combination of child, adolescent/adult and revictimization (34%). As previously noted the definition of sexual victimization utilized for this meta-analysis is “an unwanted sexual experience by which a woman would feel hurt by, regret, or feel bad about later” (Yeater, Viken, McFall, & Wagner, 2006). Only 9 of the studies reported sexual victimization based on the intimacy level of the relationship. The levels reported were friend, date (acquaintance), stranger, boyfriend (intimate), and just met. Since this was a very small percentage of studies (less than 20%), the author did not report the subsequent percentages. Table 2 highlights some of the most important participant demographics.

Table 2

*Participant Demographics*

| Characteristics                                             | Number               |
|-------------------------------------------------------------|----------------------|
| Total Participants in Selected Articles                     | 14,261 women         |
| Ethnicity of Participants                                   |                      |
| Caucasian                                                   | 10,788 women (75.6%) |
| African American                                            | 707 women (5%)       |
| Latina                                                      | 439 women (3%)       |
| Asian/Pacific Islander                                      | 424 women (3%)       |
| Native American                                             | 78 women (0.5%)      |
| Mixed/Other                                                 | 190 women (1.3%)     |
| Did not specify                                             | 1,635 women (11.5%)  |
| Participant Victimization History                           |                      |
| Participants reporting victimization                        | 5,892 women (41%)    |
| Participants not reporting victimization                    | 8,369 women (59%)    |
| Types of Victimization Reported                             |                      |
| Child and adolescent/adult sexual victimization             | 23 studies (45%)     |
| Adult/adolescent only                                       | 10 studies (20%)     |
| Combination of child, adult/adolescent, and revictimization | 18 studies (35%)     |

NOTE: Under the number column, numbers in parentheses represent the percentages.

Risk perception was measured utilizing the following measures: videotape followed by questions about the situation presented, audio recording followed by questions about the situation presented, written vignettes of risky situations followed by questions, single questionnaires (for example Sexual Response Assertiveness, Risk Perception Questionnaire, etc.), and questions about a woman's reactions or likelihood of encountering risky situations. It is important to highlight, risk perception in this area

is composed of how individuals perceive, recognize, or interpret risk and how they respond to a risky situation (Breitenbecher, 1999; Messman-Moore & Brown, 2006; Naugle, 2000; Nurius, 2000; Yeater et al., 2011). Thus measures mentioned above were utilized in this meta-analysis following the sexual victimization literature. Table 3 presents percentages showing the degree to which each measure of risk perception was used. Sexual victimization was measured through numerous methods. The majority of the studies (N = 24), however, administered the Sexual Experiences Survey by Koss and Gidycz (1985).

Table 3

*Type of Risk Perception Measure*

| Types of Measure     | Number of Studies |
|----------------------|-------------------|
| Videotape            | 1 study (2%)      |
| Audio recording      | 7 studies (14%)   |
| Written vignettes    | 15 studies (29%)  |
| Single Questionnaire | 19 studies (37%)  |
| Questions            | 9 studies (18%)   |

NOTE: Under the number column, numbers in parentheses represent the percentages.

Thirty-three of the selected studies gathered information and presented different scenarios of risk for participants to consider. The scenarios presented for consideration were as follows: risk of victimization in a situation with a stranger, risk of victimization in a situation with an acquaintance (friend), risk of victimization in a dating situation, risk of victimization in a situation with a boyfriend (intimate), risk of victimization in a high risk situation, risk of victimization in a low risk situation, individual risk of victimization versus global risk victimization (i.e. risk for self in comparison with risk for others), risk of victimization in a situation where perpetrator utilizes hostility, risk of victimization in a situation where perpetrator utilizes isolation, risk of victimization in a situation where perpetrator utilizes manipulation, and risk of victimization in a general situation. Only a small percentage (less than 18%) of articles reported these levels of risk in a way that could be utilized in the analysis of effect sizes. Therefore, a mean effect size was obtained for each study.

Of the studies selected, 17 reported statistics concerning alcohol involvement. The degree and measure of alcohol involvement varied within the studies. Some studies only provided an alcohol history, while others asked participants how they thought they would act or perceive risk when consuming alcohol. Finally, some studies even, or giving provided participants alcohol and as them to report of perceived risk. Table 4 illustrates information on alcohol reporting in the selected studies.

Table 4

*Alcohol Reported in Selected Studies*

| Type of Alcohol Measurement                                      | Number of Studies |
|------------------------------------------------------------------|-------------------|
| Participants given alcohol                                       | 2 study (4%)      |
| Participants asked to think alcohol was present in the situation | 3 studies (6%)    |
| Alcohol history measured                                         | 13 studies (25%)  |
| Alcohol not measured                                             | 33 studies (65%)  |

NOTE: Under the number column, numbers in parentheses represent the percentages.

The majority of the effect sizes from the selected studies were gathered from reported means and standard deviations (N = 24, 47%). This number was followed by 15 effect sizes obtained using point-biserial correlations (29 %), 5 effect sizes using *t*-values or *f*-values (10%), 4 effect sizes using beta-weights (8%), 1 effect size using chi-squares (2%), 1 effect size using odds ratio (2%), and 1 effect size utilizing means and standard errors (2%).

Lastly, a few exceptions were made to the inclusion or exclusion criteria for a few of the articles, within the total number of articles chosen, 2 of the studies reported data from a prevention program. In these studies only the control group data were used in the meta-analysis. Additionally, studies utilizing child sexual victimization were included only if adolescent or adult sexual victimization were included. This allowed the author to obtain a mean effect size for the overall study. Finally, some of the studies had

different goals/purposes (i.e. examining alcohol relationship to sexual victimization, predicting future sexual victimization, examination of sexual boundaries, cognitions about sexual victimization, etc.). All of these studies, despite the diversity in intention, had to meet inclusion and exclusion criteria, which included having enough information in the study to obtain an effect size of the relationship between risk perception and sexual victimization.

### **Summary**

This chapter described in detail some of the most important characteristics of the selected studies. It provided information such as the publication status of the studies, the journals from which the published studies were obtained, the major characteristics of the samples, the origin of the sample, the type of risk perception measured, the type of sexual victimization measure, the type of risk reported by the selected studies, intimacy of the sexual victimization, and the type of data used to compute the effect sizes. The characteristics specified above were necessary to perform the meta-analysis, as well as to further understand factors that may moderate the relationship between sexual victimization and risk perception. The next chapter will provide the results of the meta-analysis analysis, and thereby answer the questions guiding the implementation of Study Objective Four.



## CHAPTER V

### ANALYSES AND RESULTS

This chapter provides the findings for Phase Four of the study, which sought to integrate the quantitative evidence for each set of outcomes in selected studies, to provide adequate information for quantitative synthesis of studies which addressed the relationship between sexual victimization and risk perception, and to present the data of the conducted analyses. This chapter provides the answers to the nine questions guiding the implementation of Study Objective Four.

#### **Publication Bias**

The current meta-analysis incorporated data from 51 studies with a 2-tailed  $p < .001$ . For the current study, the Classic fail-safe  $N$  was 770. In order to exceed a  $p$ -value  $> .05$ , 770 null studies, or 14.5 null studies for every observed study would need to be located. In addition, the Orwin *fail-safe*  $N$  was 35. This means that 35 studies would need to be located with a mean Hedges'  $g$  of 0.00 to bring the combined Hedges'  $g$  under 0.10 (Borenstein et al., 2005). The following funnel plot (Figure 2) serves as a visual aid to detect publication bias. The funnel plot is symmetrical and supports our Orwin *fail-safe* statistic.

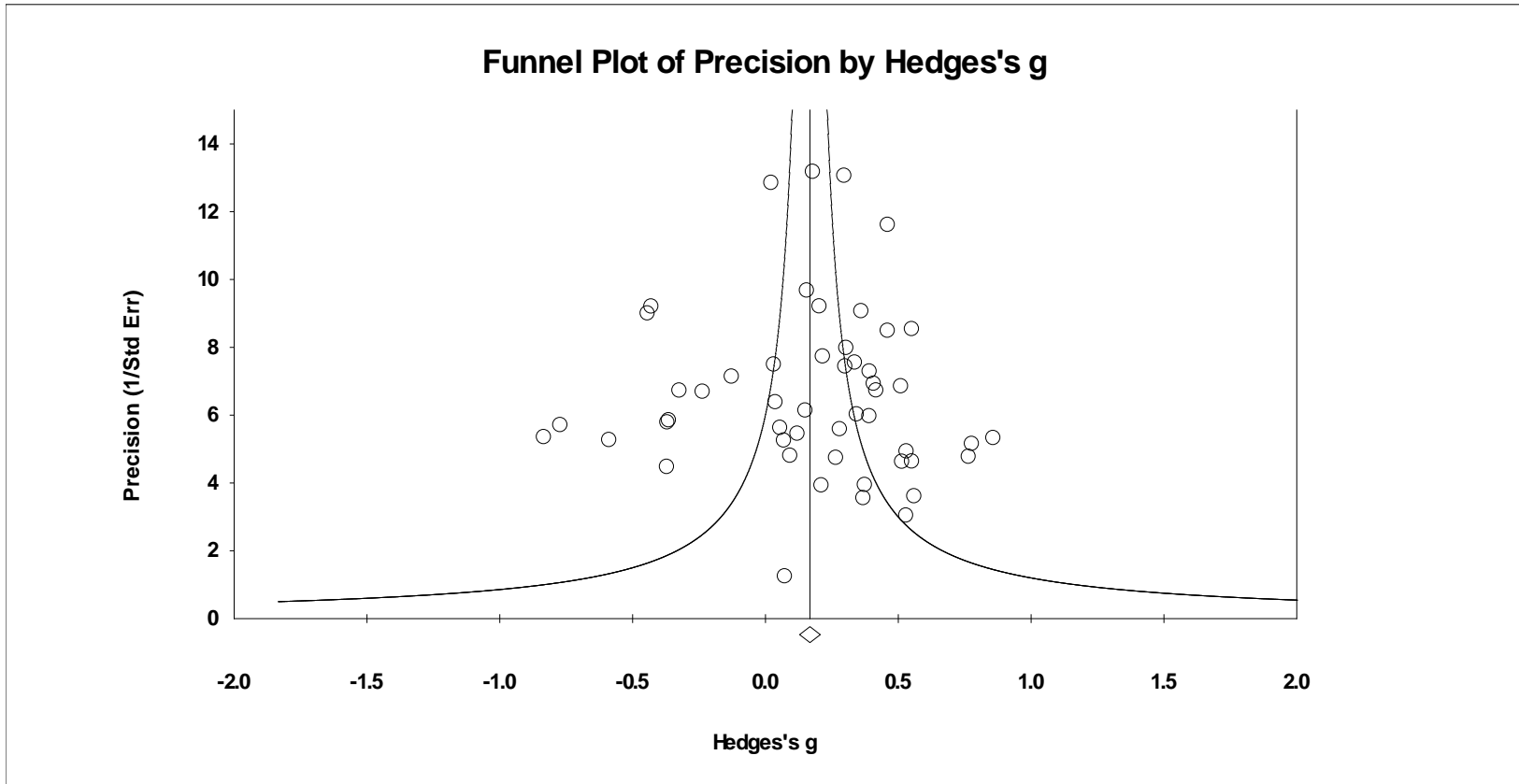


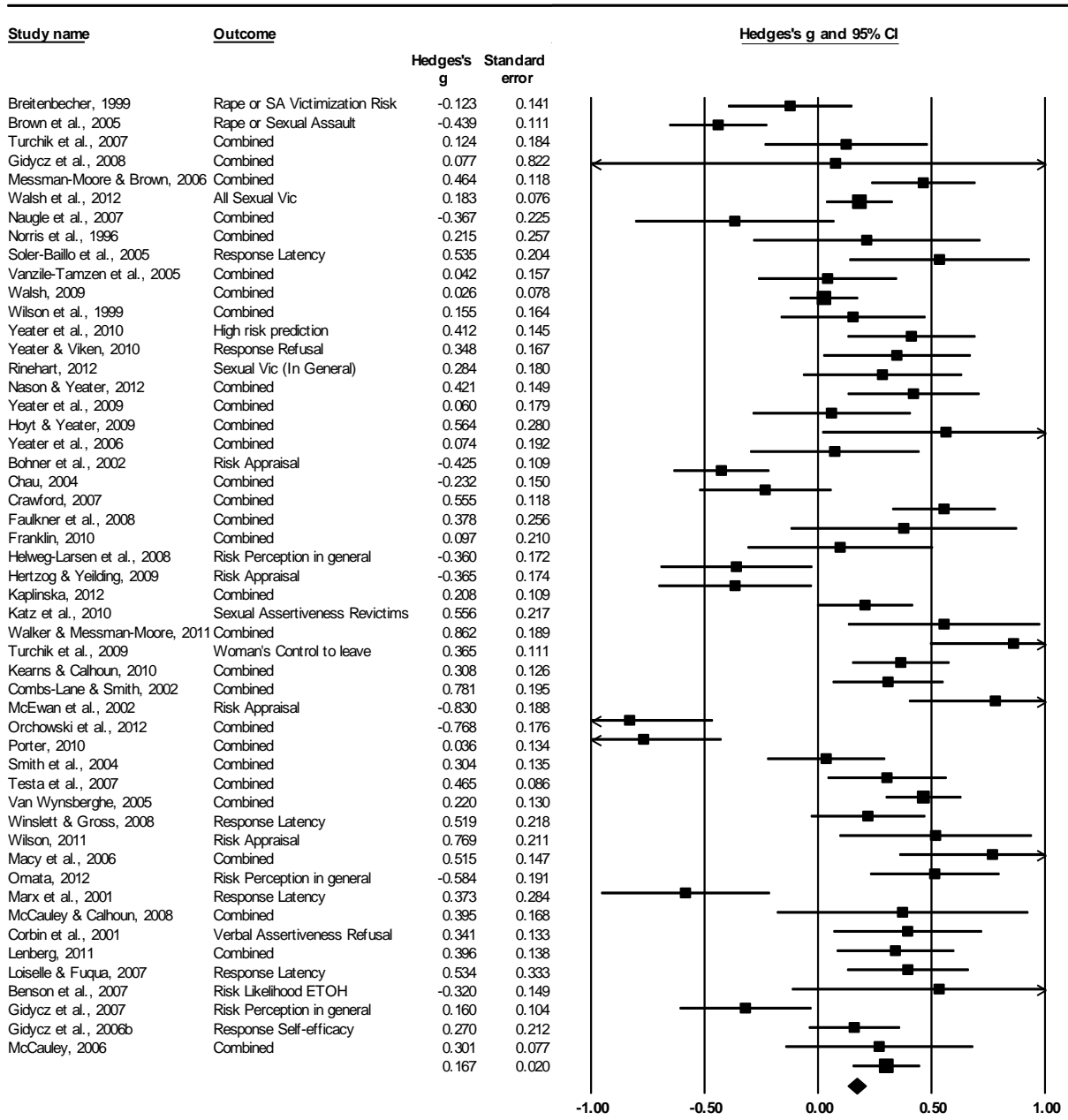
Figure 2. Funnel Plot of Precision

### **Omnibus Mean Effect Size**

To examine the relationship between sexual victimization and risk perception, the omnibus mean effect size (overall mean effect size) was calculated. The results indicate an overall mean effect size of  $g = 0.167$ ,  $SE = 0.020$ ,  $CI_{95} = 0.128, 0.206$ ,  $p < .001$ . This overall mean effect size is significantly different than 0.00 based on the 95% confidence interval mentioned previously. For the effect size, confidence intervals, and important statistics of each included study, see Figure 3 and Figure 4.

| Study name                   | Outcome                        | Statistics for each study |                   |          |                |                |         |           |
|------------------------------|--------------------------------|---------------------------|-------------------|----------|----------------|----------------|---------|-----------|
|                              |                                | Hedges's<br>g             | Standard<br>error | Variance | Lower<br>limit | Upper<br>limit | Z-Value | p-Value   |
| Breitenbecher, 1999          | Rape or SA Victimization Risk  | -0.123                    | 0.141             | 0.020    | -0.398         | 0.153          | -0.871  | 0.3838509 |
| Brown et al., 2005           | Rape or Sexual Assault         | -0.439                    | 0.111             | 0.012    | -0.658         | -0.221         | -3.941  | 0.0000811 |
| Turchik et al., 2007         | Combined                       | 0.124                     | 0.184             | 0.034    | -0.237         | 0.486          | 0.674   | 0.5004567 |
| Gidycz et al., 2008          | Combined                       | 0.077                     | 0.822             | 0.675    | -1.533         | 1.688          | 0.094   | 0.9250317 |
| Messman-Moore & Brown, 2006  | Combined                       | 0.464                     | 0.118             | 0.014    | 0.232          | 0.696          | 3.925   | 0.0000866 |
| Walsh et al., 2012           | All Sexual Vic                 | 0.183                     | 0.076             | 0.006    | 0.034          | 0.332          | 2.402   | 0.0163238 |
| Naugle et al., 2007          | Combined                       | -0.367                    | 0.225             | 0.051    | -0.808         | 0.075          | -1.629  | 0.1033625 |
| Norris et al., 1996          | Combined                       | 0.215                     | 0.257             | 0.066    | -0.288         | 0.718          | 0.838   | 0.4022059 |
| Soler-Baillo et al., 2005    | Response Latency               | 0.535                     | 0.204             | 0.042    | 0.135          | 0.935          | 2.623   | 0.0087072 |
| Vanzile-Tamzen et al., 2005  | Combined                       | 0.042                     | 0.157             | 0.025    | -0.267         | 0.351          | 0.267   | 0.7891265 |
| Walsh, 2009                  | Combined                       | 0.026                     | 0.078             | 0.006    | -0.127         | 0.179          | 0.337   | 0.7359934 |
| Wilson et al., 1999          | Combined                       | 0.155                     | 0.164             | 0.027    | -0.166         | 0.476          | 0.944   | 0.3451795 |
| Yeater et al., 2010          | High risk prediction           | 0.412                     | 0.145             | 0.021    | 0.128          | 0.696          | 2.840   | 0.0045123 |
| Yeater & Viken, 2010         | Response Refusal               | 0.348                     | 0.167             | 0.028    | 0.021          | 0.675          | 2.085   | 0.0370745 |
| Rinehart, 2012               | Sexual Vic (In General)        | 0.284                     | 0.180             | 0.032    | -0.069         | 0.637          | 1.579   | 0.1142940 |
| Nason & Yeater, 2012         | Combined                       | 0.421                     | 0.149             | 0.022    | 0.129          | 0.714          | 2.821   | 0.0047854 |
| Yeater et al., 2009          | Combined                       | 0.060                     | 0.179             | 0.032    | -0.291         | 0.410          | 0.334   | 0.7382688 |
| Hoyt & Yeater, 2009          | Combined                       | 0.564                     | 0.280             | 0.078    | 0.017          | 1.112          | 2.019   | 0.0434815 |
| Yeater et al., 2006          | Combined                       | 0.074                     | 0.192             | 0.037    | -0.302         | 0.449          | 0.385   | 0.7000688 |
| Bohner et al., 2002          | Risk Appraisal                 | -0.425                    | 0.109             | 0.012    | -0.639         | -0.212         | -3.902  | 0.0000953 |
| Chau, 2004                   | Combined                       | -0.232                    | 0.150             | 0.023    | -0.527         | 0.062          | -1.547  | 0.1218254 |
| Crawford, 2007               | Combined                       | 0.555                     | 0.118             | 0.014    | 0.325          | 0.786          | 4.726   | 0.0000023 |
| Faulkner et al., 2008        | Combined                       | 0.378                     | 0.256             | 0.065    | -0.123         | 0.880          | 1.478   | 0.1393129 |
| Franklin, 2010               | Combined                       | 0.097                     | 0.210             | 0.044    | -0.313         | 0.508          | 0.465   | 0.6419400 |
| Helweg-Larsen et al., 2008   | Risk Perception in general     | -0.360                    | 0.172             | 0.030    | -0.697         | -0.023         | -2.091  | 0.0365086 |
| Hertzog & Yeilding, 2009     | Risk Appraisal                 | -0.365                    | 0.174             | 0.030    | -0.706         | -0.025         | -2.103  | 0.0355005 |
| Kaplinska, 2012              | Combined                       | 0.208                     | 0.109             | 0.012    | -0.006         | 0.421          | 1.906   | 0.0566450 |
| Katz et al., 2010            | Sexual Assertiveness Revictims | 0.556                     | 0.217             | 0.047    | 0.130          | 0.982          | 2.557   | 0.0105666 |
| Walker & Messman-Moore, 2011 | Combined                       | 0.862                     | 0.189             | 0.036    | 0.492          | 1.232          | 4.563   | 0.0000050 |
| Turchik et al., 2009         | Woman's Control to leave       | 0.365                     | 0.111             | 0.012    | 0.148          | 0.582          | 3.299   | 0.0009687 |
| Kearns & Calhoun, 2010       | Combined                       | 0.308                     | 0.126             | 0.016    | 0.062          | 0.555          | 2.452   | 0.0141999 |
| Combs-Lane & Smith, 2002     | Combined                       | 0.781                     | 0.195             | 0.038    | 0.398          | 1.164          | 4.000   | 0.0000635 |
| McEwan et al., 2002          | Risk Appraisal                 | -0.830                    | 0.188             | 0.035    | -1.198         | -0.461         | -4.414  | 0.0000102 |
| Orchowski et al., 2012       | Combined                       | -0.768                    | 0.176             | 0.031    | -1.113         | -0.423         | -4.360  | 0.0000130 |
| Porter, 2010                 | Combined                       | 0.036                     | 0.134             | 0.018    | -0.227         | 0.299          | 0.268   | 0.7884436 |
| Smith et al., 2004           | Combined                       | 0.304                     | 0.135             | 0.018    | 0.040          | 0.569          | 2.255   | 0.0241161 |
| Testa et al., 2007           | Combined                       | 0.465                     | 0.086             | 0.007    | 0.296          | 0.634          | 5.383   | 0.0000001 |
| Van Wynsberghe, 2005         | Combined                       | 0.220                     | 0.130             | 0.017    | -0.034         | 0.475          | 1.696   | 0.0898425 |
| Winslett & Gross, 2008       | Response Latency               | 0.519                     | 0.218             | 0.047    | 0.092          | 0.945          | 2.383   | 0.0171883 |
| Wilson, 2011                 | Risk Appraisal                 | 0.769                     | 0.211             | 0.044    | 0.356          | 1.183          | 3.646   | 0.0002659 |
| Macy et al., 2006            | Combined                       | 0.515                     | 0.147             | 0.022    | 0.227          | 0.802          | 3.509   | 0.0004496 |
| Omata, 2012                  | Risk Perception in general     | -0.584                    | 0.191             | 0.036    | -0.958         | -0.209         | -3.056  | 0.0022446 |
| Marx et al., 2001            | Response Latency               | 0.373                     | 0.284             | 0.081    | -0.184         | 0.929          | 1.313   | 0.1891682 |
| McCauley & Calhoun, 2008     | Combined                       | 0.395                     | 0.168             | 0.028    | 0.065          | 0.725          | 2.347   | 0.0189324 |
| Corbin et al., 2001          | Verbal Assertiveness Refusal   | 0.341                     | 0.133             | 0.018    | 0.080          | 0.602          | 2.565   | 0.0103206 |
| Lenberg, 2011                | Combined                       | 0.396                     | 0.138             | 0.019    | 0.126          | 0.666          | 2.876   | 0.0040242 |
| Loiselle & Fuqua, 2007       | Response Latency               | 0.534                     | 0.333             | 0.111    | -0.118         | 1.186          | 1.605   | 0.1083934 |
| Benson et al., 2007          | Risk Likelihood ETOH           | -0.320                    | 0.149             | 0.022    | -0.612         | -0.027         | -2.139  | 0.0324485 |
| Gidycz et al., 2007          | Risk Perception in general     | 0.160                     | 0.104             | 0.011    | -0.043         | 0.364          | 1.545   | 0.1222558 |
| Gidycz et al., 2006b         | Response Self-efficacy         | 0.270                     | 0.212             | 0.045    | -0.146         | 0.686          | 1.270   | 0.2039486 |
| McCauley, 2006               | Combined                       | 0.301                     | 0.077             | 0.006    | 0.151          | 0.452          | 3.923   | 0.0000874 |
|                              |                                | 0.167                     | 0.020             | 0.000    | 0.128          | 0.206          | 8.414   | 0.0000000 |

Figure 3. Major Statistics of the Included Studies.



**Figure 4.** Forest Plot of Included Studies (k=51). The horizontal lines on the right illustrate the confidence interval for each effect size. The figure in each confidence interval represents each individual study and weight in comparison to the overall effect. The diamond at the bottom represents the omnibus mean effect size.

### **Test of Homogeneity**

The homogeneity statistic,  $Q_t$ , has a chi-square distribution with  $k-1$  degrees of freedom (Cooper, 2010). After referring the  $Q_t$  ( $Q_t(50) = 285.446, p < .001$ ) to a table of (upper tail) chi squares, the author rejected the hypothesis that variance in the effect sizes could be due to sampling error alone. Furthermore, the overall test of homogeneity and its significance for the whole meta-analysis indicated there was variability or inconsistency among the effect sizes. In other words one or more of the effect sizes did not come from the same distribution. This finding further supported the utilization of moderator analysis as a means of understanding the variability among the effect sizes. In addition to the  $Q$  statistic  $I^2$  ( $I^2 = 82.484$ ) was examined. This statistic indicated that 82.48% of the variance was true and could be explained by further moderator analyses (Borenstein et al., 2005). The  $\tau^2$  parameter was also obtained. This parameter determined that the variance of the true effect sizes was 0.096. Lastly,  $T^2$  estimated that the standard deviation of the true effect sizes to be 0.310.

### **Analogue to ANOVA for Comparison Groups**

An analogue to ANOVA was conducted to further understand the variation in effect sizes in the studies. In this analysis the effect sizes were divided into four groups. The first group was comprised of those effect sizes that were  $\leq 0.00$ . The second group was comprised of effect sizes falling between 0.01 and 2.99. The third group included effect sizes between 0.3 and 0.699. The fourth group contained effect sizes between 0.7 and 1.0. The within group statistic (Table 5) was not statistically significant ( $Q_w(47) =$

60.465,  $p < ns$ ), therefore the homogeneity of the weighted effect size within groups was not rejected. On the other hand the between group statistic indicated a statistically significant difference between the four categories ( $Q_b(3) = 222.981, p < .001$ ). The  $Q_w$  statistic for group 1 (effect sizes under 0.00) was significant ( $p < .001$ ) suggesting that there was variability among the studies in this group.

Table 5

*Analogue to ANOVA for Effect Size Groups*

|                                         | Effect size and 95% CI |          |       |                | Heterogeneity  |                 |
|-----------------------------------------|------------------------|----------|-------|----------------|----------------|-----------------|
|                                         | <i>k</i>               | <i>g</i> | SE    | 95% CI         | $Q_{within}^a$ | $Q_{between}^b$ |
|                                         |                        |          |       |                | 60.465         | 222.981*        |
| Group 1-ES < 0.00                       | 22                     | -0.259   | 0.031 | -0.320, -0.198 | 54.748*        |                 |
| Group 2-ES $\geq 0.01$ and $\leq 0.299$ | 14                     | 0.218    | 0.031 | 0.157, 0.279   | 3.754          |                 |
| Group 3- ES $\geq 0.3$ and $\leq 0.699$ | 12                     | 0.407    | 0.049 | 0.311, 0.502   | 1.829          |                 |
| Group 4-ES $\geq 0.7$ and $\leq 1.0$    | 3                      | 0.807    | 0.114 | 0.583, 1.031   | 0.134          |                 |

*Note:* \* $p < .001$ . <sup>a</sup> $Q_{within}$  refers to homogeneity of each subgroup (df = k-1). <sup>b</sup> $Q_{between}$  refers to homogeneity between each group (df = number of subgroups – 1).

## **Moderator Results**

Moderator analyses were conducted to test between-class effects ( $Q_b$ ) and the homogeneity of the effect sizes within each level of the moderator variable ( $Q_w$ ). For purposes of this meta-analysis, all analyses including those that were not significant are presented. For more information explaining the variables used in this study refer to the *Moderator Analyses* sub-section in Chapter III.

### **Type of sample**

The  $Q_b$  statistic (Table 6) indicated a statistically significant difference between the four categories ( $Q_b(2) = 67.693, p < .001$ ). The  $Q_w$  statistic for “community sample” was significant ( $p = .053$ ) and as was the  $Q_w$  statistic for “college student sample” ( $p < .001$ ). This suggests that both the “community sample” and the “college student sample” had variability among the studies within each of their respective levels. In other words, variability in one these groups was inconsistent with the variability in the other, suggesting that the samples did not come from the same distribution. Of the three categories “mixed sample” produced the largest absolute effect size.



Table 6

*Mean Effect Sizes for Type of Sample*

|                        | Effect size and 95% CI |          |       |                | Heterogeneity         |                        |
|------------------------|------------------------|----------|-------|----------------|-----------------------|------------------------|
|                        | <i>k</i>               | <i>g</i> | SE    | 95% CI         | $Q_{\text{within}}^a$ | $Q_{\text{between}}^b$ |
|                        |                        |          |       |                |                       | 67.693**               |
| Community sample       | 3                      | 0.355    | 0.073 | 0.213, 0.497   | 5.863*                |                        |
| College student sample | 46                     | 0.197    | 0.021 | 0.154, 0.239   | 211.882**             |                        |
| Mixed sample           | 2                      | -0.432   | 0.078 | -0.585, -0.279 | 0.008                 |                        |

Note: \* $p = .05$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{\text{within}}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{\text{between}}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

**Type of risk perception measure**

The  $Q_b$  statistic (Table 7) indicated a statistically significant difference between the four categories ( $Q_b(2) = 31.610, p < .001$ ). Three of the  $Q_w$  statistics were significant at different levels. The  $Q_w$  for “questionnaire” and “single questions/other” were both significant at the  $p < .001$  level. The  $Q_w$  statistic for “written vignettes” was significant at the  $p < .05$  level. This suggests that all three moderators showed significant variability. Of the four categories, “written vignettes” produced the largest absolute effect size. Therefore, the written vignettes had the least variability and had the strongest effect size.

Table 7

*Mean Effect Sizes for Type of Risk Perception Measure*

|                        | Effect size and 95% CI |          |       |               | Heterogeneity                  |                                 |
|------------------------|------------------------|----------|-------|---------------|--------------------------------|---------------------------------|
|                        | <i>k</i>               | <i>g</i> | SE    | 95% CI        | $Q_{\text{within}}^{\text{a}}$ | $Q_{\text{between}}^{\text{b}}$ |
|                        |                        |          |       |               |                                | 31.610**                        |
| Audio recording        | 8                      | 0.154    | 0.051 | 0.055, 0.254  | 12.087                         |                                 |
| Written vignettes      | 15                     | 0.281    | 0.037 | 0.208, 0.355  | 25.669*                        |                                 |
| Questionnaire          | 19                     | 0.186    | 0.031 | 0.125, 0.248  | 170.347**                      |                                 |
| Single questions/other | 9                      | -0.064   | 0.049 | -0.161, 0.033 | 45.734**                       |                                 |

Note: \* $p = .05$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{\text{within}}$  refers to homogeneity of each subgroup (df =  $k-1$ ). <sup>b</sup> $Q_{\text{between}}$  refers to moderator contrasts (df = number of subgroups – 1).

**Alcohol**

The  $Q_{\text{b}}$  statistic (Table 8) indicated that when looking at the effects of alcohol as a factor no significant differences emerged between the three categories; specifically  $Q_{\text{b}}$  was not statistically significant. Therefore, the groups came from consistent distributions. Both the “other/ not specified” and the “think alcohol” categories provided  $Q_{\text{w}}$  statistics that were significant at the  $p < .001$  level. This suggests both the “other/ not specified” and the “think alcohol” categories had variability among the studies within

each of their specific levels. Of the three categories, the “given alcohol” group produced the largest absolute effect size.

Table 8

*Mean Effect Sizes for Alcohol*

|                     | Effect size and 95% CI |          |       |              | Heterogeneity         |                        |
|---------------------|------------------------|----------|-------|--------------|-----------------------|------------------------|
|                     | <i>k</i>               | <i>g</i> | SE    | 95% CI       | $Q_{\text{within}}^a$ | $Q_{\text{between}}^b$ |
|                     |                        |          |       |              |                       | 3.955                  |
| Given alcohol       | 2                      | 0.416    | 0.127 | 0.167, 0.666 | 0.146                 |                        |
| Think alcohol       | 7                      | 0.169    | 0.051 | 0.070, 0.269 | 54.706**              |                        |
| Other/not specified | 42                     | 0.160    | 0.022 | 0.117, 0.203 | 226.640**             |                        |

*Note:* \* $p = .05$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{\text{within}}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{\text{between}}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

**Type of outcome measured**

The  $Q_b$  statistic (Table 9) indicated a statistically significant difference between the five categories within this domain ( $Q_b(4) = 90.743, p < .001$ ). Therefore, the categories varied significantly or were inconsistent. Two of the  $Q_w$  statistics were significant at different levels. The  $Q_w$  for “perception of risk” was significant at the  $p <$

.001 level and the  $Q_w$  statistic for “interpretation of risk” was significant at the  $p < .05$  level. This suggests that both the “perception of risk” and the “interpretation of risk” categories had variability among the studies within their respective levels. Of the five categories, “reaction to risk” produced the largest absolute effect size. Therefore, the strongest effect size was evidenced in the articles that measured risk perception in terms of a participant’s reaction to a risky situation.

Table 9

*Mean Effect Sizes for Type of Outcome Measured*

|                                       | Effect size and 95% CI |          |       |               | Heterogeneity  |                 |
|---------------------------------------|------------------------|----------|-------|---------------|----------------|-----------------|
|                                       | <i>k</i>               | <i>g</i> | SE    | 95% CI        | $Q_{within}^a$ | $Q_{between}^b$ |
|                                       |                        |          |       |               |                | 90.743**        |
| Perception of risk                    | 23                     | -0.022   | 0.030 | -0.082, 0.037 | 157.752**      |                 |
| Interpretation of risk                | 10                     | 0.263    | 0.045 | 0.176, 0.351  | 17.697*        |                 |
| Reaction to risk                      | 11                     | 0.422    | 0.040 | 0.345, 0.500  | 11.185         |                 |
| Perception and reaction to risk       | 5                      | 0.038    | 0.076 | -0.111, 0.187 | 5.249          |                 |
| Perception and interpretation of risk | 2                      | 0.317    | 0.087 | 0.145, 0.488  | 2.820          |                 |

*Note:* \* $p = .05$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{within}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{between}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

### Type of abuse reported

The  $Q_b$  statistic (Table 10) indicated a statistically significant difference between the three categories within this domain,  $Q_b(2) = 7.780, p < .05$ . Therefore, these categories showed significant variability when compared to each other. Both the  $Q_w$  for “child and adult/adolescent victimization” and for “combined/revictimization” were significant at the  $p < .001$  level. Suggesting that both categories had variability among the studies within their respective levels. Of the three categories the “adult/adolescent victimization” category produced the largest absolute effect size and came from a consistent or similar distribution.

Table 10

#### Mean Effect Sizes for Type of Abuse Reported

|                                          | Effect size and 95% CI |          |       |              | Heterogeneity  |                 |
|------------------------------------------|------------------------|----------|-------|--------------|----------------|-----------------|
|                                          | <i>k</i>               | <i>g</i> | SE    | 95% CI       | $Q_{within}^a$ | $Q_{between}^b$ |
|                                          |                        |          |       |              |                | 7.780*          |
| Child and adult/adolescent Victimization | 23                     | 0.155    | 0.029 | 0.098, 0.212 | 179.413**      |                 |
| Adult/adolescent victimization           | 10                     | 0.303    | 0.053 | 0.199, 0.407 | 9.363          |                 |
| Revictimization                          | 18                     | 0.134    | 0.032 | 0.072, 0.196 | 88.890**       |                 |

Note: \* $p = .05$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{within}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{between}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

### **Type of publication**

The  $Q_b$  statistic (Table 11) indicated a statistically significant difference between the four categories within this domain,  $Q_b(3) = 26.976, p < .001$ . Therefore, these categories showed significant variability when compared to one another. Three of the  $Q_w$  statistics were significant at different levels. The  $Q_w$  statistic for both “retrospective articles” and “retrospective dissertations/theses” were significant at the  $p < .001$  level. The  $Q_w$  statistic for “prospective dissertations/theses” was significant at the  $p < .05$  level. This suggests that all moderators had variability among the studies within each of their respective levels. Of the four categories the “prospective articles” category produced the largest absolute effect size.

Table 11

*Mean Effect Sizes for Type of Publication*

|                                    | Effect size and 95% CI |          |       |              | Heterogeneity                  |                                 |
|------------------------------------|------------------------|----------|-------|--------------|--------------------------------|---------------------------------|
|                                    | <i>k</i>               | <i>g</i> | SE    | 95% CI       | $Q_{\text{within}}^{\text{a}}$ | $Q_{\text{between}}^{\text{b}}$ |
|                                    |                        |          |       |              |                                | 26.976**                        |
| Prospective articles               | 2                      | 0.517    | 0.079 | 0.362, 0.671 | 2.194                          |                                 |
| Prospective dissertations/theses   | 2                      | 0.371    | 0.111 | 0.154, 0.588 | 4.911*                         |                                 |
| Retrospective articles             | 39                     | 0.118    | 0.025 | 0.069, 0.167 | 217.670**                      |                                 |
| Retrospective dissertations/theses | 8                      | 0.179    | 0.039 | 0.103, 0.255 | 33.694**                       |                                 |

Note: \* $p = .05$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{\text{within}}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{\text{between}}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

**Study year**

The  $Q_{\text{b}}$  statistic (Table 12) indicated a statistically significant difference between the four categories in this domain,  $Q_{\text{b}}(3) = 16.800, p = .001$ . Therefore, these categories demonstrated significant variability when compared to each other. Three of the  $Q_{\text{w}}$  statistics were significant at the  $p < .001$  level: the  $Q_{\text{w}}$  statistics for the “2000 – 2004 range,” the “2005 – 2009 range,” and the “2010 – March 2013 range.” This suggests that all three of these categories had variability among the studies within each of their

respective levels. Of the four categories the “2010 – March 2013 range” produced the largest absolute effect size.

Table 12

*Mean Effect Sizes for Study Year*

|                         | Effect size and 95% CI |          |       |               | Heterogeneity  |                 |
|-------------------------|------------------------|----------|-------|---------------|----------------|-----------------|
|                         | <i>k</i>               | <i>g</i> | SE    | 95% CI        | $Q_{within}^a$ | $Q_{between}^b$ |
|                         |                        |          |       |               |                | 16.800*         |
| 1995 – 1999 range       | 3                      | 0.028    | 0.099 | -0.166, 0.221 | 2.273          |                 |
| 2000 – 2004 range       | 7                      | -0.028   | 0.057 | -0.140, 0.084 | 66.251**       |                 |
| 2005 – 2009 range       | 26                     | 0.191    | 0.027 | 0.138, 0.244  | 121.361**      |                 |
| 2010 – March 2013 range | 15                     | 0.224    | 0.037 | 0.152, 0.296  | 78.762**       |                 |

*Note:* \* $p = .01$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{within}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{between}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

**Publication status**

The  $Q_b$  statistic (Table 13) indicated a statistically significant difference between the two categories in this domain,  $Q_b(1) = 7.147, p = .008$ . Therefore, these categories showed significant variability when compared to each other. Both of the  $Q_w$  statistics for “published status” and “unpublished status” were significant at the  $p < .001$  level. This



suggests that both the “published status” and “unpublished status” had variability among the studies within each of their respective levels. Of the two categories the “published status” category produced the largest absolute effect size.

Table 13

*Mean Effect Sizes for Publication Status*

|                    | Effect size and 95% CI |          |       |              | Heterogeneity         |                        |
|--------------------|------------------------|----------|-------|--------------|-----------------------|------------------------|
|                    | <i>k</i>               | <i>g</i> | SE    | 95% CI       | $Q_{\text{within}}^a$ | $Q_{\text{between}}^b$ |
|                    |                        |          |       |              |                       | 7.147*                 |
| Published status   | 11                     | 0.240    | 0.034 | 0.174, 0.306 | 49.284**              |                        |
| Unpublished status | 40                     | 0.129    | 0.025 | 0.080, 0.177 | 229.016**             |                        |

*Note:* \* $p = .008$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{\text{within}}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{\text{between}}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

**Design quality**

The  $Q_b$  statistic (Table 14) indicated a statistically significant difference between the two categories in this domain,  $Q_b(1) = 3.745, p = .053$ . Therefore, these categories evidenced significant variability when compared to each other. The  $Q_w$  statistics for both the “low/medium quality” and “high quality” were significant at the  $p < .001$  level. This

suggests that both the “low/medium quality” and “high quality” had variability among the studies within each of their respective levels. Of the two categories the “Low/medium quality” category produced the largest absolute effect size.

Table 14

*Mean Effect Sizes for Design Quality*

|                    | Effect size and 95% CI |          |       |              | Heterogeneity         |                        |
|--------------------|------------------------|----------|-------|--------------|-----------------------|------------------------|
|                    | <i>k</i>               | <i>g</i> | SE    | 95% CI       | $Q_{\text{within}}^a$ | $Q_{\text{between}}^b$ |
|                    |                        |          |       |              |                       | 3.745*                 |
| Low/medium quality | 16                     | 0.229    | 0.038 | 0.155, 0.303 | 50.209**              |                        |
| High quality       | 35                     | 0.143    | 0.023 | 0.097, 0.189 | 231.492**             |                        |

*Note:* \* $p = .053$ ; \*\* $p < .001$ . <sup>a</sup> $Q_{\text{within}}$  refers to homogeneity of each subgroup ( $df = k-1$ ). <sup>b</sup> $Q_{\text{between}}$  refers to moderator contrasts ( $df = \text{number of subgroups} - 1$ ).

**Summary**

This chapter provides the findings for Phase Four of the study: to integrate the quantitative evidence for each set of outcomes in selected studies, to provide adequate information for quantitative synthesis of selected studies, and to present the from data of the conducted analyses. The results indicate an overall mean effect size of  $g = 0.167$ , SE

= 0.020,  $CI_{95} = 0.128, 0.206, p < .001$ . This overall mean effect size is significantly different than 0.00 based on the 95% confidence interval mentioned previously. The hypothesis that variance in the effect sizes could be due to sampling error alone was rejected because of the test of homogeneity. Furthermore, there was statistically significant variability or inconsistency among the effect sizes. That is one or more of the effects did not come from the same distribution. Moderator analyses were conducted to test between-class effects ( $Q_b$ ) and the homogeneity of the effect sizes within each level of the moderator variable ( $Q_w$ ). All the between-class effects were significant in the moderator analysis, except for the alcohol moderator variable.

## **CHAPTER VI**

### **CONCLUSIONS**

This chapter provides the findings of phase five of the study. The objectives of this chapter are to discuss the findings of the meta-analysis, to specify the recommendations for future research in the sexual victimization area, and specify potential implications for prevention programs. It provides answers to the nine questions guiding the implementation of Study Objective Five.

The study at hand examined the relationship between sexual victimization and risk perception using meta-analysis as an analytic strategy covering the years 1990 to March of 2013. The first goal of the current study was to assess the overall relationship between sexual victimization and risk perception. . The second goal and one of the most important ones was to understand the relationship between sexual victimization and risk perception utilizing a meta-analysis. The third goal was to understand the influence of moderating factors on the relationship between sexual victimization and risk perception. To understand the influence of these factors, moderator analyses were conducted using: included (a) type of sample, (b) type of risk perception measure, (c) alcohol, (d) outcome measured, (e) type of abuse reported, (f) type of publication, (g) study year, (h) publication status, and (i) design quality.

## **Sexual Victimization and Risk Perception's Effects**

The omnibus mean effect size (overall mean effect size) for all 51 studies was  $g = 0.167$  ( $p < .001$ ). This effect size had a range of  $g = 0.128$  to  $0.206$ . This demonstrated a small sized effect (Cohen, 1988). It is important to note that the terms given to an effect size are relative and have different meaning based on the field of research and the research method being utilized (Cohen, 1988). For this area of research the direction and the significance of the omnibus mean effect size support the prediction that there is a relationship between sexual victimization and perceived risk. Furthermore, the confidence interval does not contain a value equal to  $0.00$ , so the null hypothesis can be rejected. Specifically the hypothesis that there is no relationship between sexual victimization and risk perception can be rejected. Of the 51 independent effect sizes (study effect sizes), 39 effect sizes were positive in one direction and 12 effect sizes were negative in one direction. Furthermore, the author utilized the homogeneity statistic,  $Q$  statistic, to test whether all the effect sizes came from the same or a similar distribution. The homogeneity statistic for this meta-analysis was significant, meaning the effect sizes of the selected studies likely came from different distributions. This statistic along with the  $I^2$  supported the moderator analyses, since the moderators could account for the variability and further illustrate the picture in terms the subsequent needed analyses.

The homogeneity statistic,  $Q_t$ , has a chi-square distribution with  $k-1$  degrees of freedom (Cooper, 2010). After referring the  $Q_t$  ( $Q_t(50) = 285.446$ ,  $p < .001$ ) to a chi-

square distribution, the author rejected the hypothesis that variance in the effect sizes could be due to sampling error alone at the  $p < .05$ . Furthermore, the  $Q_t$  also measures the degree of consistency among the findings of the selected studies (Hedges & Olkin, 1985). For this meta-analysis the overall test of homogeneity indicated there was variability or inconsistency among the effect sizes indicating, that one or more of the effect sizes did not come from the same distribution. In addition to the  $Q$  statistic  $I^2$  ( $I^2 = 82.484$ ) was examined. This statistic indicated that 82.48% of the variance was true and could be explained by further moderator analyses (Borenstein et al., 2005). These findings supported the utilization of moderator analysis to potentially understand the variability among the effect sizes.

Due to the variability among all of the effect sizes, an analogue to ANOVA with the purpose of understanding of understanding the variations seen in the effect sizes. This analysis proved to be important, since the between group statistic ( $Q_b$ ) indicated a statistically significant difference between the four categories. After comparing the  $Q_b$  with a chi-square distribution, this statistic exceed the critical value of 11.43 at the  $p < .01$  level. Therefore the between group statistic is a significant contributor to the variance in the effect sizes. Additionally, the within group statistic ( $Q_w$ ) was not statistically significant. There was homogeneity of the weighted effect size within groups. Thus it could be assumed that each of the groups come from the same distribution. The funnel plot represented in figure 2, contains a visual representation of the studies. It is important to highlight that this figure contains the small number of

studies that fall outside the funnel plot on the negative side and supports our use of an analogue to ANOVA to understand the different groups of effect sizes.

The  $Q_w$  for the group with “effect sizes < 0.00” was the only one that was inconsistent. Therefore, this group had variability. On the other hand the  $Q_w$  for the other effect size groups (effect sizes falling between 0.01 and .299, effect sizes between 0.3 and 0.699, and effect sizes between 0.7 and 1.0) were consistent. As mentioned in Chapter II, most theories in this field have posited that as sexual victimization increases risk perception decreases, however this was not supported by the group with effect sizes lower than 0 (McFall, 1982; Nurius, 2000; Nurius & Norris, 1996). Therefore, the inconsistencies and theoretical background support the need for further examination for the group with “effect sizes < 0.00.”

### **Moderator Summary**

#### **Type of sample**

The effect sizes for the moderating factor, type of sample, ranged from  $g = -0.432$  to  $0.355$ . This moderator indicated a statistically significant ( $p < .001$ ) difference between the three categories (“community sample,” “college student sample,” and “mixed sample”). Additionally, the  $Q_b$  exceeded the critical value at  $p = .001$  ( $df = 2$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the three categories indicated the greatest effect (in the absolute sense) in the relationship between sexual victimization and risk perception was in the “mixed sample” category. Therefore,

the effect of risk perception and sexual victimization seems to be the opposite in this group, so that more sexual victimization increases risk perception, or as individuals experience sexual victimization they will be more likely to perceive risk. Although, this information is purely speculative, it is important to understand it in further through research since most theories state as sexual victimization increases risk perception decreases (McFall, 1982; Nurius, 2000; Nurius & Norris, 1996). Future research examining the theories mentioned previously should study the differences in samples, i.e. differences in risk perception among college samples, community samples, and sexual assault center examples.

#### **Type of risk perception measure**

The effect sizes for the moderating factor, type of risk perception measure, ranged from  $g = -0.064$  to  $0.281$ . This moderator indicated a statistically significant ( $p < .001$ ) difference between the four categories (“audio recording,” “written vignettes,” “questionnaire,” and “single questions/other”). Additionally, the  $Q_b$  exceeded the critical value at  $p = .001$  ( $df = 3$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the three categories indicated the greatest effect (in the absolute sense) in the relationship between sexual victimization and risk perception was in the “written vignettes” categories. The correlation effect of risk perception and sexual victimization is positive in this group, so we can speculate that more sexual victimization is related to a decrease in risk perception when written vignettes are



utilized. Although, this information is purely speculative, it would be important to understand in further research since it supports the theoretical formulation of the relationship at hand (McFall, 1982; Nurius, 2000; Nurius & Norris, 1996). Additionally,  $Q_w$  for “questionnaire” and “single questions/other” were both significant at the  $p < .001$  level. This suggests that these studies utilized measures that were different from each other. It can be speculated that the measures may evaluate different aspects of sexual victimization; for example the studies in the “questionnaire” category developed their own measures where individuals would make judgments about their perceptions of risk. Although these questionnaires had a goal of measuring sexual victimization their questions were different and may have measured different aspects of risk perception.

Furthermore, the difference in the results of the analysis based on the type of measure used for risk perception also shines some light on the way an individual is asked to attend to and evaluate risk, as well as, priming effects (Yeater et al., 2006). This further supported the need for research with measures that have been tested for reliability and validity.

### **Alcohol**

The effect sizes for the moderating factor, alcohol, ranged from  $g = 0.416$  to  $0.160$ . This moderator suggested no significant difference between the four categories (“given alcohol,” “think alcohol,” and “other/not specified”). That is to say, the moderating alcohol effect sizes did not differ between categories. An examination of the differences between the three categories indicated the greatest effect (in the absolute

sense) in the relationship between sexual victimization and risk perception was in the “given alcohol” category. Therefore, the effect size of the relationship between risk perception and sexual victimization seems to be the greatest in this group. When alcohol is present, this group may have decreased risk perception in the face of sexual victimization. Although, this information is purely speculative and there were only two articles in this category, research has previously supported this relationship in the past (Lenberg, 2011). Although, alcohol was not a significant moderator, it should be noted that there were few articles included alcohol in a way that could be utilized for the meta-analysis. It would be prudent for future research to continue examining the role alcohol plays in risk perception.

#### **Type of outcome measured**

The effect sizes for the moderating factor, type of outcome measured, varied from  $g = -0.022$  to  $0.422$ . This moderator indicated a statistically significant ( $p < .001$ ) difference between the five categories (“perception of risk,” “interpretation of risk,” “reaction to risk,” “perception and reaction to risk,” and “perception and interpretation of risk”). Additionally, the  $Q_b$  exceeded the critical value at  $p = .001$  ( $df = 4$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the five categories indicated the greatest effect (in the absolute sense) in the relationship between sexual victimization and risk perception was in the “reaction to risk” category. Therefore, the effect of risk perception and sexual victimization seems to be the greatest

in this group indicating that increased sexual victimization decreases risk perception when the reaction to risk is being measured. Although, this is a hypothesis, this assertion would be consistent with previous theoretical notions (McFall, 1982; Nurius, 2000; Nurius & Norris, 1996). Furthermore, the effect size for the “perception to risk” category was a negative one, which may shed some light on conflicting evidence in where the deficit in risk perception lies; past research has hypothesized that decreased risk perception in sexually victimized samples falls in the decision phase (interpretation) or the encoding phase (reaction) not the decoding phase (perception) (Gidycz et al., 2006a). Thus, one can deduct that individuals may be able to perceive risk, but may have difficulty deciding how they should act in a risky situation and engaging an efficient response during the risky situation. This moderator is particularly important since one can deduct the theoretical area that will be important to focus on for future research dealing with risk perception and sexual victimization. Under McFall’s Information-Processing Model of Social Competence (1976, 1982), the decision skills and the encoding or enactment skills and under the Social Cognitive Model the secondary appraisals (Lazarus & Folkman, 1984; Smith & Lazarus, 1990).

### **Type of abuse reported**

The effect sizes for the moderating factor, type of abuse reported, ranged from  $g = 0.134$  to  $0.303$ . This moderator indicated a statistically significant ( $p < .05$ ) difference between the three categories (“child and adult/adolescent victimization,” “adult/adolescent victimization,” and combined/revictimization”). Additionally, the  $Q_b$

exceeded the critical value at  $p = .05$  ( $df = 2$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the three categories indicated the greatest effect (in the absolute sense) of the relationship between sexual victimization and risk perception was in the “adult/adolescent” category. Therefore, the effect of risk perception and sexual victimization seems to be the greatest in this group indicating that sexual victimization decreases risk perception when adult/adolescent sexual victimization is being measured. Although this information is purely speculative, it is important to seek further understanding through research in order to determine whether there is a difference between risk perception in women victimized as children and those victimized after the age of 14. Future research should also seek to determine whether a difference exists between women sexually victimized one and those sexually victimized numerous times. This latter research could shed light on the process of risk perception.

### **Type of publication**

The effect sizes for the moderating factor, type of publication, ranged from  $g = 0.118$  to  $0.517$ . This moderator indicated a statistically significant ( $p < .001$ ) difference between the four categories (“prospective articles,” “prospective dissertations/theses,” “retrospective articles,” and “retrospective dissertations/theses”). Additionally, the  $Q_b$  exceeded the critical value at  $p = .001$  ( $df = 2$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the three categories indicated the greatest effect

(in the absolute sense) of the relationship between sexual victimization and risk perception was in the “prospective articles” category. Thus, the effect of risk perception and sexual victimization seems to be the greatest in this group indicating that more sexual victimization decreases risk perception when utilizing a prospective analysis. Although, this information is purely speculative, this highlights the importance of prospective research within the sexual victimization and risk perception area. Some articles have highlighted the limitation of retrospective studies since women may not be able to accurately recall or remember their reactions in past risky situations (Turchik, Probst, Chau, Nigoff, & Gidycz, 2007). Furthermore, a woman’s response to risk may be skewed if she has experienced sexual victimization recently (Turchik et al., 2007). Consequently, additional research utilizing prospective views is warranted.

### **Study year**

The effect sizes for the moderating factor, type of study year, ranged from  $g = -0.028$  to  $0.224$ . This moderator indicated a statistically significant ( $p < .001$ ) difference between the four categories (“1995 – 1999 range,” “2000 – 2004 range,” “2005 – 2009 range,” and “2010 – March 2013 range”). Additionally, the  $Q_b$  exceeded the critical value at  $p < .001$  ( $df = 3$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the four categories indicated the greatest effect (in the absolute sense) of the relationship between sexual victimization and risk perception was in the “2010 – March 2013 range” category. Therefore, the effect of risk perception and sexual

victimization seems to be the greatest in this group indicating that sexual victimization decreased risk perception. One could speculate that “2010 – March 2013 range” has articles with greater effect sizes due to better conceptualization and increased knowledge of risk perception following more than 20 years of research.

### **Publication status**

The effect sizes for the moderating factor, publication status, ranged from  $g = 0.129$  to  $0.240$ . This particular moderator analysis was conducted since researchers often do not report non-significant findings (Wilson & Scarpa, 2011). Furthermore, very few studies are published if they contain non-significant findings. These findings, however, can offer understanding and knowledge about a particular area of research (Begg, 1994; Wilson & Scarpa, 2011). This moderator indicated a statistically significant ( $p = .008$ ) difference between the two categories (“published status” and “unpublished status”). Additionally, the  $Q_b$  exceeded the critical value at  $p < .01$  ( $df = 1$ ) in a chi-square distribution. Therefore this moderator was a significant contributor to the variance in the effect sizes. An examination of the differences between the four categories indicated the greatest effect (in the absolute sense) in the relationship between sexual victimization and risk perception was in the “unpublished status” category. Thus, the effect of risk perception and sexual victimization seems to be higher in studies that are unpublished. This speculation would contradict the popular belief that unpublished studies tend to have lower effect sizes or nonsignificant results.

### **Design quality**

The effect size for the moderating factor, design quality, ranged from  $g = 0.143$  to 0.229. This moderator indicated a statistically significant ( $p = .053$ ) difference between the two categories (“low/medium quality” and “high quality”). Additionally, the  $Q_b$  did not exceed the critical value at  $p < .01$  ( $df = 1$ ) in a chi-square distribution. Therefore this moderator was not a significant contributor to the variance in the effect sizes. An examination of the differences between the four categories indicated that both of the effect sizes were similar, however the greatest effect (in the absolute sense) of the relationship between sexual victimization and risk perception was in the “low/medium quality” category. Therefore, it is speculated that the effect of risk perception and sexual victimization is greater in this group indicating that more sexual victimization decreases risk perception in studies with low to medium design quality. On the other hand, it is important to note that the  $Q_w$  statistics suggested that there was significant variability within each of the groups. This indicated that the design quality measure could have been inadequate and the field would benefit from future meta-analyses of this category.

In conclusion all the moderators with the exception of alcohol and design quality were significant contributors to the variance in the effect sizes. The examination of the absolute mean differences between and among these categories provided much needed information to further understand the relationship between sexual victimization and risk perception. Additionally, this examination allowed important hypotheses to be formed

which could be potentially examined in future research and subsequently increase the overall knowledge and understanding in this area.

### **Limitations**

There were several limitations to this study. First, the primary limitation applies to all meta-analyses; only information retrieved and examined could be discussed. Therefore a number of studies may not have been taken into account. Due to this limitation, the current meta-analysis only described the relationship between sexual victimization and risk perception for studies that had enough information published. Consequently, this meta-analysis may not have included some studies with nonsignificant findings. Second, the current meta-analysis only had the ability to explore those results presented within each study. Therefore, only the measures presented in each study could be analyzed, despite potentially being different from article to article. These differences in measurement in the studies made it difficult to create a coding sheet that captured categories for each potential moderator. Furthermore, for some of the moderators it was necessary to collapse categories to form more omnibus categories for analysis. Future research should focus on obtaining all of the necessary information from authors where it is missing in order to have a larger sample of eligible articles for the meta-analysis. The third limitation was that type of risk perception depending on the design of the study (i.e. experimental, correlational) was not utilized as a moderator category in the meta-analysis. Although, type of risk perception was used as a moderator, the type of risk perception depending on the design of the study (i.e. lab



based study and field based studies) could change the effect size substantially. This would be important to analyze in future meta-analyses. The fourth limitation was that the alcohol moderator had low power due to the amount of studies in this category. Future meta-analysis should investigate this moderator further in order to examine the effects of alcohol in the relationship between sexual victimization and risk perception. The fifth limitation that the sample in the meta-analysis was highly homogeneous, while 75% of the individuals were Caucasian only 12.8% of the individuals identified themselves as part of an ethnic minority. This highlights the increased need for studies that are more representative of the different ethnicities in the United States.

### **Implications for Practice and Future Research**

This meta-analysis illustrated the existence of a relationship between risk perception and sexual victimization. Before making conclusions about practice and future research in this research area it is necessary to remember that sexual victimization has been an increasingly serious problem in the past few years (Yeater et al., 2011). Furthermore, as has been highlighted previously, all perpetrators are responsible for all sexual aggression experiences and the research priority in this field should be on prevention efforts aimed at potential perpetrators (Gidycz et al., 2006; O'Donohue et al., 2003). Less research exists in this area, however, and prevention efforts targeting male perpetrators are only in initial stages (O'Donohue et al., 2003). It is then an ethical priority to provide women with the necessary skills to reduce the risk for a potential sexual victimization experience (Yeater et al., 2006; Gidycz et al., 2006).

In the present study, a relationship was found between sexual victimization and risk perception. Therefore, prevention programs that focus on skills to potentially improve the way risk is perceived by women are highly valuable. Furthermore, with the significant moderators in this meta-analysis, we can make a few speculations about what these programs may need to include to improve women's interpretation of events (decision phase) and their reactions to risky situations (encoding phase), instead of focusing on their perception (decoding phase) (McFall 1978; 1982). Based on the results examining the moderator, type of outcome, one can deduce that individuals may be able to perceive risk, but may have difficulty deciding how they should act in a risky situation and may have problems engaging in an efficient response during the risky situation. This moderator is particularly important since it shows a need for further improvement in the theories utilized in this area, specifically future research should mainly focus on the decision skills and the encoding or enactment skills under McFall's Information-Processing Model of Social Competence (1976, 1982) or the secondary appraisals under the Social Cognitive model (Lazarus & Folkman, 1984; Smith & Lazarus, 1990).

In terms of future research, it would be highly important to give attention to the types of samples utilized in this area, since the current study found a difference between college samples and community samples. Research is needed to determine if these samples of women from different environments (i.e. college samples, community samples, sexual assault centers, etc.) are exposed to different situations or may have different ways of interacting with others. Research should also continue to examine the

differences in the types of risk perception measures utilized and the differences in the methods for gathering data (i.e. retrospectively and prospectively); since the current study also found differences in these groups. Additionally, future studies should seek to refine their methodological sections by clearly operationalizing outcomes, describing characteristics of the sample group and sexual victimization samples, and explaining in detail the reasoning behind their methods of analysis. From this study and previous theories, one can reasonably conclude that further work is needed to measure and further understand the process by which risk perception and sexual victimization are related.

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## APPENDIX A

### CODING MANUAL DEFINITIONS

Publication Reference: Write a complete citation in APA format

\_\_\_\_\_ Study ID Number: All articles included in the meta-analysis have been given a study ID number; however, if a report presents two independent studies (i.e., two independent outcome studies with **different participants**), then add a decimal to the study ID number to distinguish each study within a report and code each independent study separately.

1. **Study Year:** Provide the year of the study
2. **Journal Name:** Provide the name of the journal
3. **Type of Publication:** Provide the type of publication (i.e. article, dissertation, report, book chapter, thesis, etc.)
4. **Total N:** Provide the total number of individuals in the sample
5. **Total Ne (Victimized sample):** Specify number or percentage of total sample size (for example some articles will write 37% of the sample reported being sexually assaulted) (Describe if sample is separated- for example stranger rape vs. acquaintance rape) . Sexual Victimization is defined as “An unwanted sexual experience (touching, Kissing, oral sex, and sexual intercourse) by which a woman would feel hurt by, regret, or feel bad about later”
6. **Total Nc (Non-victimized sample):** Specify number or percentage of total sample size (for example some articles will write 37% of the sample reported being sexually assaulted)

**7. Student Sample Ethnicity:** Specify the exact percentage (2 decimal places) reported for each ethnicity listed. Percentage for an ethnicity that is not listed should be entered under “Mixed/Other.” Use “Does Not Say” only when no ethnicities are reported. If the exact numbers of subjects are reported by ethnicity, convert the numbers into percentages.

- % Caucasian
- % African American
- % Hispanic
- % Asian
- % Native American
- % Mixed/Other
- % Does Not Say

**8. Type of Sample:** Specify the type of sample reported (If provided).

- Community sample
- College students (psychology pools, student counseling center, or other study using college students)
- Sexual Assault Crisis Center
- Other

**9. Type of Risk Perception Measure:** Specify the type of measure utilized in the study. If more than one then specify multiple. If sample contains written vignettes and some type of following question do not code as written vignettes and questions about risk perceived. The questions about risk perceived should only be coded when the questions are independent.

- Videotape
- Audio recording
- Written vignettes and questions following it/ Written vignettes and questionnaire
- Questions about risk perceived (i.e. Do you ever feel risk?)
- Single questionnaire-**Name of questionnaire-**  
\_\_\_\_\_
- Other

**10. Reliability of the Risk Perception Measure:** Specify the exact number if reported.

- Yes-\_\_\_\_\_
- Does Not Say

**11. How was risk measured:** (Response effectiveness, likelihood of encountering in future, risk appraisal, refusal, etc.)

**12. Was risk in the article divided into different categories:** Select the code that best describes the type of risk measured by the instruments. Global risk is when the author asks the individual to think, “if the following situation were to happen to somebody else than themselves”, individual risk is when the author tells the individual to think, “if they were to be in this situation”. This can be found when the instrument is described, if unknown then check does not say.

- Global risk
- Individual risk
- Risk for all danger (not only risk for sexual victimization)
- Risk for sexual victimization only
- Risk for acquaintance rape
- Risk for stranger rape
- High risk
- Low risk
- Other \_\_\_\_\_

Additional Information: \_\_\_\_\_

**13. Type of Abuse Reported:** Specify if the document reports type of sexual or specify if it is only a number by marking an X.

- % Child sexual abuse
- % Adult sexual abuse
- % Revictimization
- % All sexual victimization
- % Single victimization

**14. Level of Intimacy Reported:** Specify the level of intimacy specified by the sample or asked in the risk perception measure.

- Just met
- Friend
- Acquaintance
- Date
- Boyfriend
- Stranger
- Does not say

**15. Was Alcohol Reported:** Specify if alcohol was part of the study or if the researchers asked the participants to think, how they would react if alcohol was present (if provided).

- Participants given alcohol

- \_\_\_\_\_ Participants asked to think alcohol was present
- \_\_\_\_\_ Alcohol history
- \_\_\_\_\_ Does Not Say
- \_\_\_\_\_ This was not measured in study

**15b. Students Given Alcohol:** Answer this only in the articles alcohol was given, specify the percentage of students that were given the alcohol.

- \_\_\_\_\_ Percentage of participants given alcohol
- \_\_\_\_\_ Percentage of participants not given alcohol

**Effect Size Data**

(i.e. Risk Perception, Alcohol)

**16. Data used to calculate the effect size:** Select the code that best describes the data that was used to calculate effect sizes.

1. Frequencies or proportions
2. t-value/F-value
3. Point Biserial r (correlations)
4. Chi square
5. Beta weights
6. Means and SD's

**18. Page where effect size data found?** \_\_\_\_\_

**17. Write the data (if there are more than one then write what each number is):**

\_\_\_\_\_

**18. Mean of victimized sample (experimental group):**

**19. Mean of non-victimized sample (control group):**

**20. Standard Deviation of victimized sample (experimental group):**

**21. Standard Deviation of non-victimized sample (control group):**

## Design Quality

Will determine this index as articles are coded by the first person and the design quality is measured according to the design quality questions.

**22. Design Quality:** Select the code that best describes the level of design quality. Use the Quality Index Sheet to determine the level of design quality.

1. Low Quality
2. Medium Quality
3. High Quality