# Psychological Distress, Sexual Risk Behavior, and Attachment Insecurity among Young Adult Black Men who Have Sex with Men (YBMSM)

by

Stephanie H. Cook

Dissertation Committee:
Dr. Ana Abraido-Lanza, Committee Chair
Dr. Patrick Wilson, Sponsor
Dr. Mark Hatzenbuehler
Dr. Peter Messeri
Dr. Jose Nanin

Submitted in partial fulfillment of the requirements
for the Degree of Doctor of Public Health in
Mailman School of Public Health,
Department of Sociomedical Sciences,
Columbia University

August 29th, 2013

# ABSTRACT

Psychological Distress, Sexual Risk Behavior, and Adult Attachment Insecurity among Young Adult Black Men who Have Sex with Men (YBMSM)

Stephanie H. Cook

## Background

Though there continues to be a significant amount of research aimed at understanding factors associated with participating in sexual risk behavior in populations of YBMSM, there has been far less research concerned with understanding how psychological distress may influence sexual risk behaviors and how emotional bond formation may affect the relationship between psychological distress and sexual risk behavior. This study aims to better understand the relationship between psychological distress and sexual risk behavior as well as the moderating effect of adult attachment insecurity on this relationship.

## Methods

Three data collection strategies were utilized to address the study aims: 1) cross-sectional ($n$ = 228), 2) eight-week structured diary ($n$ = 153), and 3) semi-structured interview ($n$ = 30). The cross-sectional survey provided measurement information on adult attachment style using a modified version of the Experiences in Close Relationships Scale (ECR) that consists of the attachment avoidance and anxiety subscales, the Brief Symptoms Inventory (BSI) and the Kessler-10 (K10). Sexual risk was measured by assessing unprotected anal intercourse (UAI)

and serodiscordant UAI in the last two months. The eight-week structured diary utilized weekly reports of UAI encounter vs. no UAI encounter, and serodiscordant UAI encounter vs. no serodiscordant UAI encounter. The K10 and the Profile of Moods (POMS) anxiety and depression subscales measured psychological distress. The semi-structured interview assessed childhood attachment. Regression analyses were used to analyze the cross-sectional data. Random effects and population average regression models were used to analyze the structured diary data. A thematic inductive analysis technique was utilized to analyze the qualitative data.

## Results

Overall, participants reported slightly elevated mean scores on the attachment anxiety subscale while scores on the attachment avoidance subscale remained low. Participants reported an average of two UAI partners in the last month and an average of 1.3 UAI encounters over the eight-week diary period. Psychological distress scores were slightly elevated in the cross-sectional survey and depression scores were elevated in the diary component. For Aim 1, men higher on attachment insecurity (anxiety and avoidance) had higher levels of general psychological distress, depression, and anxiety in comparison to men who were more secure. The qualitative data supported the quantitative findings and showed that subjective appraisal of traumatic events and sexual orientation disclosure may mediate the relationship between childhood attachment and adult mental health. For Aim 2, the quantitative findings suggested that attachment insecurity was not related to sexual risk behavior. However, the qualitative component suggested that participants who were anxious used sex as a means to try to create an emotional bond, while participants who were avoidant used sex as a means to feel good without wanting to create an emotional bond. Both anxious and avoidant men seemed to participate in more concurrent sexual relationships which could increase their likelihood of HIV/STI

transmission. For Aim 3, men who were more depressed and had higher levels of general psychological distress were more likely to report a serodiscordant UAI encounter in a given week. The qualitative data supported the quantitative findings and suggested that men might use sex as a means of escape their negative mood. This model of "escapism" could have lead to participation in sexual practices that increased men's risk of HIV/STI transmission. For Aim 4, adult attachment insecurity did not moderate the relationship between psychological distress and sexual risk. The qualitative data suggested that secure attachment in childhood was important to adequately coping with stressful situations, which in turn promoted overall well-being.

## Conclusion

Study findings suggest that understanding adult attachment may lead to a better understanding of psychological distress and sexual risk behavior among YBMSM. The results highlight the importance of considering childhood and young adult emotional bond formation in the development of HIV/STI prevention intervention activities aimed at addressing the heightened rates of sexual risk behavior among YBMSM. This research could have valuable implications for the development of HIV/STI and mental health prevention interventions aimed at reducing sexual risk behaviors and promoting well-being in populations of YBMSM.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

I would like to thank all the individuals who participated in this project (mainly Dr. Patrick Wilson's research staff). Funding for this project was provided by the Ruth L. Kirschstein National Research Service Award (NRSA) from the National Institute of Mental Health (F31 MH087125-01A1). This research was also supported by the U.S. Centers for Disease Control and Prevention (U01 PS000700—Minority HIV/AIDS Research Initiative; PI: Patrick A. Wilson). This project would not have been possible without the constant support and guidance provided by my mentor Dr. Patrick Wilson and for this reason I own him a limitless amount of gratitude for helping me complete my dissertation and doctoral studies. I would also like to extend a special thanks to Dr. Ana Abraido-Lanza who always provided me with social support and great advice, and Dr. Peter Messeri who never stopped believing in me and provided continual support during the writing of this dissertation. I would also like to thank my other dissertation committee members for their feedback and support: Dr. Mark Hatzenbuehler, and Dr. Jose Nanin. I cannot thank Anthony Slover, Abby DiCarlo and Brennan Rhodes enough for reading and providing valuable comments on dissertation chapters—sometimes on extremely short notice. Finally, I dedicate this project to my parents, Mrs. Oretha Johnson and Mr. Bernard Cook and my sisters and brothers, Amber Cook, Stacey Thurman, Bernard Cook, Jr., Rebekah Johnson, and Samuel Johnson. They have never ceased to love and support me throughout my extended academic career.

## DEFINITIONS OF TERMS

AAI Adult Attachment Interview

BCS Brothers Connect Study, parent study to this dissertation work

BSI the Brief Symptoms Inventory

BMSM Black Men who Have Sex with Men

CDC Centers for Disease Control and Prevention

ECR Experiences in Close Relationships

GEE General Estimating Equation

HIV Human Immunodeficiency Virus

IUAI Insertive Unprotected Anal Intercourse

K10 Kessler-10 Depression Scale

LGB Lesbian, Gay, and Bisexual

MSM Men who Have Sex with Men

OLS Ordinal Least Squares

POMS Profile of Moods Scale

RUAI Receptive Unprotected Anal Intercourse

STI Sexually Transmitted Infection

UAI Unprotected Anal Intercourse

YBMSM Young Black Men who Have Sex with Men

YMSM Young Men who Have Sex with Men

# CHAPTER I

# INTRODUCTION

HIV incidence among young men who have sex with men (YMSM) has increased substantially in the last ten years (CDC, 2010). In 2009, 63% of YMSM diagnosed with HIV were Black, and the majority acquired HIV through sexual transmission (CDC, 2010). In addition, researchers have shown that psychological distress is more common among young Black men who have sex with men (YBMSM) compared to other racial/ethnic MSM (Cochran, Sullivan, Mays, 2003). Due to high rates of HIV among YBMSM, researchers have examined various factors that may help explain these high incidence rates (Millett, Jeffries, et al., 2012). Further, researchers have examined how social support and social networks may influence the relationship between psychological distress and sexual risk. However, few researchers have examined the way in which emotional bond formation may influence the relationship between psychological distress and sexual risk behaviors. This line of research is important considering that that ability to form secure emotional bonds throughout the life course contributes to better mental health, healthier peer and intimate relationships, and the development of positive coping strategies.

Adult attachment theory proposes that individuals can form either secure or insecure (i.e., avoidance and anxiety) emotional bonds with peers and intimate partners. There are generally three adult attachment categories: security, avoidance, and anxiety. Researchers have found that attachment insecurity is associated with a myriad of negative physical health (Feeney, 2000) and psychological health outcomes (Fevens, Spinner, & Ditommaso, 1994). Researchers have also

suggested that adult attachment insecurity may be related to sexual risk behaviors (e.g., lack of condom use and multiple concurrent partners; Feeney & Raphael, 1992; Stefanou & McCabe, 2012). However, research literature examining the relationship between mental health, sexual risk behavior and adult attachment among sexual and ethnic minority populations is limited. Research in this area could lead to a better understanding of not only the attachment system in diverse populations; but also the ways in which social and emotional bond formation are related to behaviors that could increase YBMSM likelihood of acquiring HIV.

This dissertation seeks to explore the relationship between psychological distress and sexual risk behavior, focusing on the examination of adult attachment as a moderator of this relationship. The three aims for the project are: Aim 1) to describe the relationship between adult attachment style and psychological distress among YBMSM; Aim 2) to describe the relationship between attachment insecurity and sexual risk behavior; Aim 3) to examine if changes in psychological distress are related to changes in sexual risk behavior among YBMSM; and Aim 4) to describe the potential moderating effects of adult attachment on the relationship between psychological distress and sexual risk behavior among YBMSM.

Chapter 2 of this dissertation reviews the literature on the relationships among adult attachment, mental health, and sexual risk behavior. The chapter starts by discussing the development of attachment theory and its contribution to the understanding of adult attachment in intimate relationships. The chapter then explores the relationship between adult attachment and mental health, as well as adult attachment and sexual behavior. The second part of the literature review focuses on describing the relationship between mental health and sexual risk behavior among sexual minority populations. This section ends with a specific discussion of the relationship between mental health and sexual risk behavior among YBMSM. Chapter 2

concludes with a presentation of the conceptual model guiding this dissertation and a discussion of the dissertation hypotheses.

Chapter 3 presents information on the methods used to complete the dissertation. Because this study employs a multi-method approach, the methods section is comprised of several components and separated into two sections: the quantitative methods and the qualitative methods. The first part of the chapter presents information pertaining to the sample characteristics. The next part of the chapter presents information on measures and the analytical technique. The third part of this chapter presents information on the interview questions and analysis technique.

The next four chapters present the quantitative and qualitative results related to the study aims. Chapter 4 discusses the findings pertaining to Aim 1, which examine the relationship between attachment insecurity and psychological distress. Chapter 5 presents findings pertaining to Aim 2, which examines the relationship between attachment insecurity and sexual risk. Chapter 6 reports the findings pertaining to Aim 3, which examines how changes in psychological distress related to changes in sexual risk behavior over an eight-week period. Chapter 7 reports the results associated with Aim 4, which examines adult attachment insecurity as a moderator of the relationship between psychological distress and sexual risk behaviors.

Chapter 8 summarizes the dissertation findings and presents recommendations for future research. First, a summary of findings is presented. Second, limitations are discussed. Third, key emerging themes are discussed. Finally, implications of the findings and summative conclusions are discussed.

# CHAPTER II

# LITERATURE REVIEW

## Overview of Adult Attachment Theory

The majority of theoretical and empirical research on adult romantic attachment style has been based on the lives of heterosexual individuals (Mikulincer & Shaver, 2007). There is a very small body of literature that explores attachment-related phenomena in sexual minority populations (Mohr, 1999). Thus, much of this review will focus on studies of heterosexual individuals; nonetheless, these studies have implications for understanding the relationship between attachment style, mental health, and sexual behavior among YBMSM.

In this review of attachment theory I will first discuss the background of attachment, which is important for understanding the ways that adult romantic attachment are related to mental health and sexual behavior. I will then transition to a review of the literature pertaining to adult romantic attachment mental health and sexual risk behavior. The last component of the literature review will discuss critical gaps in our understanding of adult attachment.

Attachment theory is a complex theory of personality development, stabilization, and functioning. The theory is also one that explores interpersonal behaviors and relationships with family, peers, and intimate partners. Attachment theory is based on the work of Bowlby (1969) and, later, Ainsworth (1989) who were interested in understanding the *Attachment Behavioral System*, which has two major components: the normative and the individual difference components. Figure 1 shows the pathways for the normative component and individual difference component.

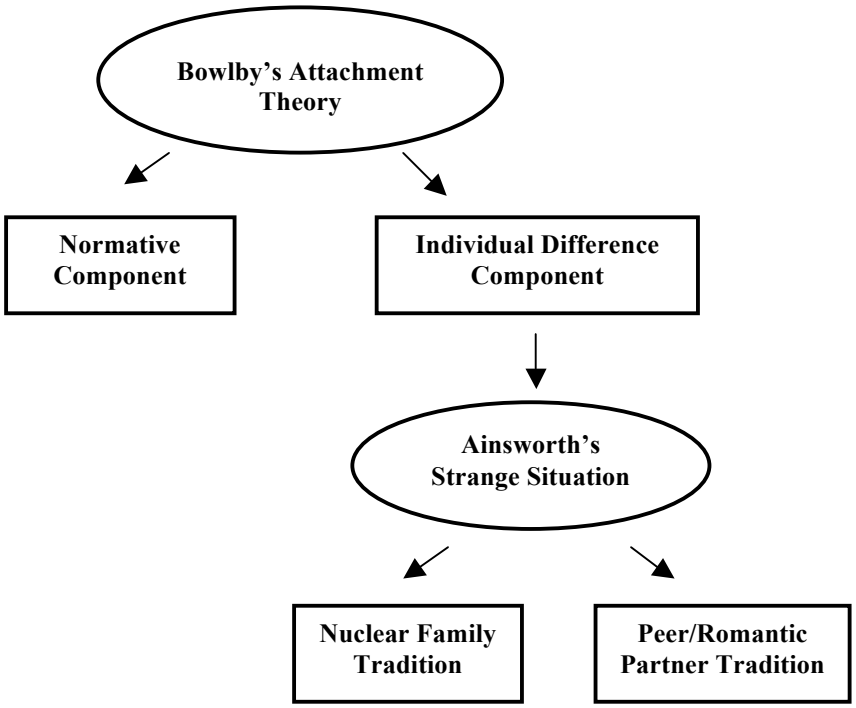


*Figure 1.* Origins of the research on adult attachment recreated from Simpson and Rholes (1998).

The normative model of attachment pertains to functions of the attachment behavioral systems that can be observed in all people while the individual difference component focuses on variability in the attachment system across individuals. Attachment scholars have mainly focused on the individual difference component of attachment in an attempt to explain how individuals with different attachment styles operate in different environments (Mikulincer & Shaver, 2007). The focus of this dissertation is on the individual difference model of attachment; thus, the majority of this review of attachment will focus on this component of the attachment behavioral system.

## The Individual Difference Component of Attachment Theory

Bowlby (1969, 1973) posited that each individual's attachment behavioral system is comprised of learned components influenced by person-environment interactions. An understanding of the behavioral system is critical to comprehension of the individual difference component of attachment. The behavioral system is a cyclical activation and deactivation system that operates on a subconscious level and in a primarily reflexive manner. When there is a perceived threat to feeling safe and secure the attachment system is activated and the individual is motivated to seek out an attachment figure. Once feelings of security are restored, the individual can return to other activities. For instance, if a baby feels scared s/he will cry (i.e., demonstrate proximity seeking behavior) and this will trigger the attachment figure to comfort the crying baby. The baby is then comforted thereby causing the attachment system to deactivate. What Bowlby calls the "set goals" of the attachment behavioral system is to be in a state of security or protection (1969, 1973). In Bowlby's model, individuals' set-goals are modified and adjusted based on external influences to the system. Thus, depending on a multitude of contextual factors (e.g., household environment, parental engagement), individuals adjust their behaviors in order to meet their set-goals. After repeated activation, these adjustments are incorporated into the behavioral system. Therefore, an individual's behavioral system can become tailored to specific familial, peer or intimate partner relationships. For instance, a child may learn that if he whimpers when he wants to be close to his attachment figure the figure emerges and comforts the child, thereby restoring the child to a place of security and deactivating the attachment behavioral system. However, a child may learn if s/he are in a different environment, such as a school, they must scream (instead of whimpering) for the attachment figure to appear. The slight adjustment (i.e., screaming vs. whimpering) is eventually

incorporated into the functioning of the behavioral system. Thus, the individual difference model of attachment theory can help explain how emotional bond formation, or lack thereof, contributes to relationship formation.

## Working Models

In Bowlby's assessment, the way in which a caregiver responds to a child when s/he requires security not only has implication for short-term changes to the attachment system, but also has enduring and long-term consequences for attachment system functioning. These long terms consequences are stored in a person's associative memory network of mental representations concerning interactions with attachment figures (Mikulincer & Shaver, 2007). Bowlby (1969, 1973, 1980) calls these mental representations *working models* or *representational models*. Working models guide behaviors, emotions, and cognitions based on the perceived past cognitive encoding and interpretation of stored memories concerning the interaction with attachment figures (Mikulincer & Shaver, 2007). In addition, working models allow for the automatic retrieval of information regarding proximity seeking behavior that can be used with future attachment figures (e.g., peers and intimate partners) with little thought. Over time working models of self, partner and relationships become part of one's procedural knowledge with repeated attachment-related interactions (Mikulincer & Shaver, 2007). Most importantly, these working models become resistant to change (Bowlby, 1969, 1973). Thus, mental representations with primary caregivers during childhood become personality characteristics that influence how one will behave in relationships and other social situations. In essence, working models help shape the attachment system in adulthood (Mikulincer & Shaver, 2007). Mikulincer and Shaver (2007) summarize how Bowlby thought attachment-related working models influence individual experiences:

> This tendency to project one's dominant or currently most active working models onto a new relationship partner affects the way a person anticipates, attends to, interprets, and recalls the partner's behavior, thereby confirming well-established expectations and models, and making them more resistant to change. (p. 25)

Overall, attachment theory posits that accessible working models are the most important factor contributing to personality and functioning in attachment-related interactions across the life course (Bowlby, 1973; Crowell et al., 2002; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000).

## Attachment Styles

### Infant-caregiver Attachment (Ainsworth's "Strange Situations Experiment")

As stated previously, there has been a substantial amount of research in the area of individual differences in attachment functioning. Many of these studies have focused on attachment styles, which are the "pattern of expectations, needs, emotions, and social behavior that result from a particular history of attachment experiences, usually beginning in relationships with parents" (Mikulincer & Shaver, 2007, p. 25). Individual attachment styles are reflections of working models and a product of a person's normal attachment system functioning in a specific relationship (i.e., relationship specific attachment style) or across relationships (i.e., global attachment style).

Ainsworth (1967), a student of Bowlby, first proposed the concept of attachment styles to describe the reactions of infants separated and then reunited with their mother in her *Strange Situation* experiment. The experiment consisted of observing interactions between infants and their mothers. In the main experiment a mother was placed in a room with her infant child. Different scenarios were performed to assess infant attachment style. One scenario required the mother to leave the room while, the infants' behavior was observed, and then the mother returned to the room, and again the infants' behavior was observed. Based upon infants'

responses to their mothers leaving and returning to the room, three attachment styles were identified: secure, avoidant, and anxious.

Secure attachment style was characterized by healthy proximity seeking and successful security attainment behaviors by the infant (e.g., the infant cried when mother left the room but was comforted when the mother returned). Infants with a secure attachment style would express signs of distress when their mother left the room, but were easily comforted upon their mothers return. Infants with a secure attachment style were also able to explore the room and play with toys while their mothers were present. Ainsworth, Blehar, Waters, and Wall (1978) analyzed home videos of mother-infant interactions and found that infants with a secure attachment style had mothers who generally attended to the infant's needs and comforted the infant when s/he was in distress.

The avoidant attachment style was characterized by an assumed deactivation of the attachment system. In Ainsworth's experiment, infants with an avoidant style showed little to no distress when their mothers left the room and tended to avoid her when she returned. Ainsworth's home video analysis showed that these mothers did not often openly emote and tended to ignore their infants' proximity seeking behaviors.

In contrast, the anxious attachment style was characterized by an assumed hyperactivation of the attachment system. In Ainsworth's strange situation experiment, infants were very distressed when their mothers left the room and reacted confrontationally or ambivalently to their mother's return. For example, some infants with an anxious attachment style would want to be cuddled upon a mothers return one moment then become agitated and want separation in the next moment. In addition, some infants would continue in their present activity with no regard to whether the mother was present or not. Due to these infant's erratic

behavior, Ainsworth (1967) sometimes referred to the first example as, *anxious-resistant* attachment and the second example as *anxious-ambivalent* attachment. Analysis of mother-infant interactions recorded on video showed that mothers' responsiveness to infant's proximity seeking behaviors were not consistent.

## The Link between Childhood and Adult Attachment

Bowlby believed that attachment-related working models were stable (i.e., do not change much over time) and should inform behavior across the life course. Building on this notion, Hazan and Shaver (1987) proposed a developmental model of attachment that explained the variation in attachment behaviors during different developmental stages. Figure 2 displays Hazan and Shaver's (1994) model of attachment style transition through the life course. The model starts in infancy, the developmental stage where parents provide a safe haven and secure base. Attachment proximity maintenance (i.e., feeling secure when the attachment figure is near and being comforted by attachment figure when distressed) behaviors are prominent in this developmental stage.

ATTACHMENT AND CLOSE RELATIONSHIPS

| | Target of Attachment Behaviors | |
|---|---|---|
| **Developmental Phase** | **Parents** | **Peers** |
| Infancy | proximity maintenance<br>safe haven<br>secure base | |
| Early Childhood | safe haven<br>secure base | proximity maintenance |
| Late Childhood/<br>Early Adolescence | secure base | proximity maintenance<br>safe haven |
| Adulthood | | proximity maintenance<br>safe haven<br>secure base |

*Figure 2. Developmental Stages of Attachment (Hazan & Shaver, 1994)*

From early childhood to early adolescence peers tend to become more prominent attachment figures (i.e., confiding in friends and relying on peer relationships as sources of comfort and support become important). Though parents are never completely eliminated as attachment figures, their roles gradually decrease as their child transitions into adulthood, where peer and intimate partner relationships become important sources of social support and attachment.

Though there are many basic similarities between infant attachment and adult attachment, Hazan and Shaver (1994) outline three important differences. First, adult attachment relationships are more reciprocal than childhood and infant attachment relationships. Infants require security and protection from their primary caregiver but cannot fulfill these same needs for their caregivers. In addition, during infancy and childhood children can seek a safe haven (e.g., mother), but cannot be a safe haven (e.g., a mother would generally not seek out an infant to feel safe). It is important to note here that Bowlby (1973) theorized that *parentification*, the reversal of the parent as caregiver and child as care seeker roles, is related to insecure attachment in children and can extend into adulthood because in many cases the child is not yet ready to be a caregiver. In adult relationships, both adults can be a recipient and provider of care and support. Second, infants require physical contact to feel secure, while adults internalize beliefs and expectations about security and safety in a way that infants and children cannot (Main, Kaplan, & Cassidy, 1985). For older children and adults the possibility of being able to contact a source of security if need be can be comforting. Third, the primary attachment figure in childhood is the parent or primary caregiver, while the primary caregiver in adulthood is a peer or intimate partner (Hazan & Shaver, 1994).

There have been very few empirical studies concerning attachment stability (Fraley, Vicary, Brumbaugh, & Roisman, 2011; Waters, Merrick, et al., 2000). Researchers who have

examined the continuity of attachment style from infancy to adulthood have reported mixed findings. For example, Waters, Merrick, et al. (2000), Hamilton (2000), and Fraley and colleagues (2011) found that attachment was relatively stable from childhood to young adulthood, while Weinfield, Sroufe, and Egeland (2000) found that attachment style changed over time. In addition to these findings, studies have shown that when there was a change in attachment style from infancy to adulthood it was usually do to a dramatic change in the social or family environment such as divorce of parents, death of a parent, or an extensive traumatic experience (Waters, Weinfield, & Hamilton, 2000). Taken together, these studies suggest that, barring a significant change in the social or family environment along the developmental trajectory from infancy to adulthood, attachment styles are rather.

**Adult Attachment Styles in Close Relationships (Adult Romantic Attachment)**

As shown in Figure 1, the individual difference component of adult attachment style encompasses both peer and intimate relationships. Based on Ainsworth's (1978) research on attachment style in the infant-caregiver relationship, Hazen and Shaver (1987) constructed a model of adult attachment that applied the basic constructs of the infant-caregiver model of attachment to intimate relationships. In this model, Hazan and Shaver posited that the three attachments types proposed by Ainsworth—secure, avoidant, and anxious—could be applied to factors associated with adult intimate relationships, such as love and trust. According to Hazan and Shaver (1994) there are four factors that define adult romantic attachment: 1) the emotional and behavioral regulation of the infant-caregiver and adult intimate relationships are governed by the same biological system, 2) the types of behaviors profiled in infant-caregiver relationships are similar to those observed in intimate relationships (e.g., cuddling, touching), 3) working models continue to guide attachment behaviors in intimate relationships throughout the life

course, and 4) romantic love involves the interplay of the attachment, caregiving, and sex systems. Thus, the continuity of attachment from infancy to adulthood is consistent for both peer and intimate relationship attachment-related processes.

As the body of research in adult romantic attachment grew it became clear that there were two distinct insecure attachment dimensions as measured by a variety of indices—anxiety and avoidance. People who are low on both of these indices of attachment are considered to have a secure attachment style (Brennan, Clark, & Shaver, 1998; Fraley & Shaver, 2000; Mikulincer & Shaver, 2007). Individuals with a secure attachment style are able to create and sustain healthy emotional bonds with others. In intimate relationships, these individuals tend to trust and be caring towards their primary partner. In stressful situations, securely attached individuals rely on intimate partners for support (Hazan & Shaver, 1987).

During adulthood, individuals with an avoidant attachment style find it difficult to form deep social and emotional bonds with others. Research suggests that these individuals generally evade intimacy and are uncomfortable with interdependence (Feeney & Kirkpatrick, 1996; Feeney & Noller, 1991; Hazan & Shaver, 1987). In adult intimate relationships, these individuals tend to be withdrawn from their partner due to their fear of rejection (Shaver & Mikulincer, 2002). In addition, individuals with an avoidant attachment style may have many concurrent sexual partners without forming an emotional connection. Research suggests that attachment anxiety is related to difficulties in forming emotional bonds with others. At the same time, individuals exhibiting this attachment style feel an overwhelming need for emotional connections to others. In intimate relationships, these individuals constantly worry that their partners will leave them and experience bouts of jealousy (Feeney & Raphael, 1992; Hazan & Shaver, 1987).

Overall, adult romantic attachment (or what researchers now simply refer to as adult attachment) is concerned with understanding how individual differences in attachment style contribute to social and emotional bond formation with intimate partners (Mikulincer & Shaver, 2007). Mental representations or working models of relationships with an attachment figure in early childhood guide the ways in which adults form and maintain emotional bonds with intimate partners in adulthood. In addition, in stressful situations attachment figures are sought out as a secure base or safe haven.

**Adult Attachment Typologies and Scales**

Integral to the formation and understanding of adult attachment is the measurement of this construct. Hazan and Shaver's (1987) first measure of adult attachment was adapted from Ainsworth's threefold typology model of infant-caregiver attachment to evaluate the way in which adults think, feel, and behave in intimate relationships. This categorical, single-item, measure consisted of three paragraphs that exemplified secure, anxious, and avoidant attachment. Participants were asked to pick which paragraph best described them. Though many original studies examining adult attachment style employed Hazan and Shaver's (1987) single-item measurement of attachment, subsequent studies employed multi-item measures of adult attachment due to some of the limitations associated with the original instrument (Simpson & Rholes, 1998). Researchers have suggested that because the measure is categorical it has several limitations. These include: 1) the instrument assumes an independence between attachment styles, 2) limits researchers ability to examine the degree to which attachment style is characteristic of a person, and 3) does not allow researchers to estimate measurement error (Collins & Read, 1990; Hazan & Shaver, 1987; Simpson, 1990; Simpson & Rholes, 1998). Given these limitations, attachment researchers began to develop and use multi-item scales that

address the concerns listed above (Collins & Read, 1990; Levy & Davis, 1988). These scales typically assessed the degree to which each attachment style is characteristic of a person's thoughts and feelings in close relationships. Over time, several researchers developed multi- item scale measures of adult attachment to specifically address the attachment domains of anxiety and avoidance (Brennan & Shaver, 1995; Feeney, Noller, & Hanrahan, 1994; Griffin & Bartholomew, 1994). Scale-based measurements of attachment address limitations associated with categorical measures and thus have become widely used by attachment researchers. However, assessing distinct categories of attachment styles continue to be valuable in certain ways. For instance, many attachment researchers continue to use scale-based measurements of attachment to assign an attachment type to an individual—secure, anxious, or avoidant (Brennan & Shaver, 1995; Collins & Read, 1990; Feeney & Kirkpatrick, 1996; Hazan & Shaver, 1987; Mikulincer, Florian, & Weller, 1993; Mikulincer & Orbach, 1995; Simpson, 1990).

Researchers have agreed that attachment dimensions converge on two types of attachment insecurity—anxiety and avoidance (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). The most prominent dimensional model is Bartholomew and Horowitz's (1991) four-category model of adult attachment style displayed in Figure 3.

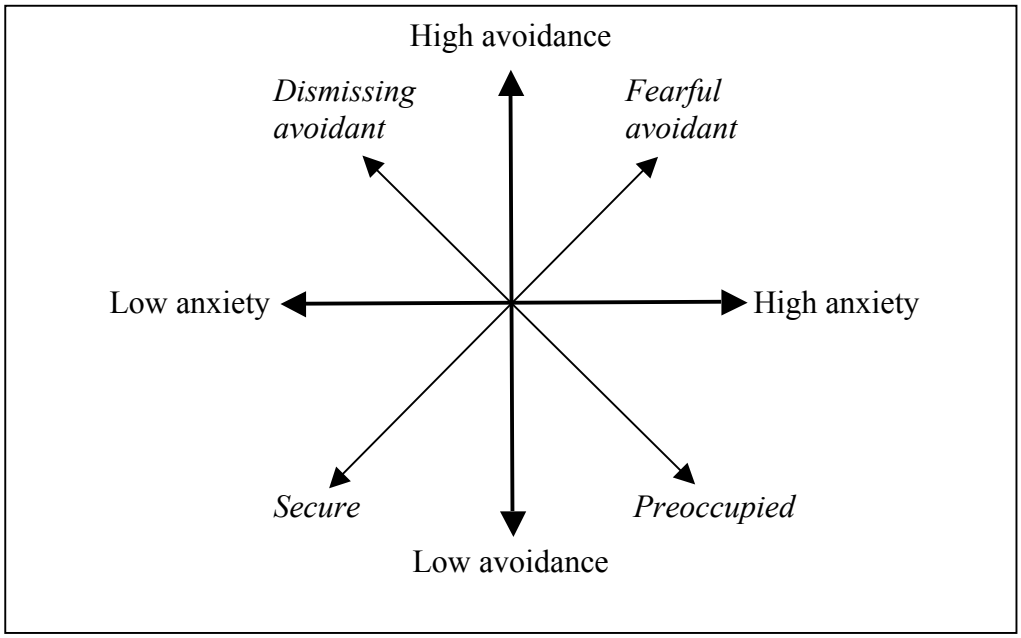


*Figure 3. Two-dimensional space defined by attachment anxiety and avoidance. Based on Bartholomew and Horowitz (1991) and Mikulincer and Shaver (2007).*

In addition to the authors' original model, several other attachment constructs were added by contemporary attachment researchers. Mikulincer and Shaver (2007) noted three new components of attachment: preoccupied, dismissing, and fearful styles. Preoccupied attachment is characterized by high scores on attachment anxiety and low scores on attachment avoidance. Dismissing attachment characterizes individuals who are high on attachment avoidance and low on anxiety. Finally, fearful attachment is characteristic of individuals high on both avoidance and attachment anxiety.

**Adult Attachment and Mental Health**

The link between attachment insecurity and mental health was first discussed by Bowlby (1973, 1980), who proposed that the loss of attachment security during infancy through adolescence was related to depression and anxiety later in life. Bowlby (1980) posited that attachment insecurity derived from the death of a parent or the repeated failure to develop a

secure relationship with a parent, which ultimately led to feelings of hopelessness (i.e., the child would continually fail to gain adequate support from a parent who was no longer alive or a parent who continually rejected the child). Later in life the individual may become fearful of the world, and might not develop the coping mechanisms needed to cope with stressful life situations.

**Adult Attachment, Psychological Distress, Depression, and Anxiety in Non-clinical Samples**

Researchers have confirmed that adult attachment insecurity is associated with psychological distress symptomology (Mikulincer & Shaver, 2007). Further, researchers have specifically assessed the relationship between adult attachment style and both depression and anxiety. This dissertation will focus on general psychological distress, depression, and anxiety because they are specific constructs of psychological distress. Table 1 summarizes studies examining the relationship between adult attachment and depression while Table 2 summarizes studies examining the relationship between adult attachment and anxiety. Studies reveal that secure attachment is related to lower levels of depression and anxiety, while attachment anxiety is related to higher levels of depression and anxiety. However, the evidence for attachment avoidance is mixed. More than half of the studies reviewed report that avoidance is associated with depression, but there are also many studies that suggest there is no relationship. In addition, the pathway by which depression is associated with avoidance may be different than the pathway from attachment anxiety to depression. For instance, Wei, Russell, and Zakalik (2005) found that the capacity for self-reinforcement mediated the relationship between attachment avoidance and depression, while the need for positive reinforcement from others and self-reinforcement mediated the relationship between attachment anxiety and depression. In addition, Mikulincer and Shaver (2007) noted that the magnitude of the relationship between attachment avoidance

and depression is often smaller than the magnitude of the relationship between anxious attachment style and depression.

Attachment security is associated with overall positive mental health. Many studies of heterosexual couples have concluded that attachment security is related to less psychological distress and better overall health in comparison to attachment insecurity (Ditzen et al., 2008; Feeney, 2000, 2002; Fevens et al., 1994; Polek, van Oudenhoven, & ten Berge, 2008). This may be because securely attached individuals have developed the tools to successfully cope with stressful life events (Mikulincer & Florian, 1998).

There have been very few studies that examine the relationship between adult attachment and mental health in sexual minority populations; however, the studies that have been conducted generally focus on discrimination, internalized homophobia, and negative beliefs about sexual orientation as mediators of the relationship between attachment insecurityand depression. For instance, Zakalik and Wei (2006) found in a sample of 234 gay men that discrimination mediated the relationship between attachment anxiety and depression. There was no relationship between attachment avoidance and depression. In a survey study of 166 men, Brown, Schoppe−Sullivan, Mangelsdorf, and Neff (2010) found that attachment avoidance and anxiety were related to internalized homophobia and shame concerning gay identity. In addition, Mohr and Fassinger (2003) found that anxious and avoidance attachment styles were associated with negative beliefs about sexual orientation in a sample of 498 Lesbian, Gay, Bisexual (LGB) individuals. Further, Elizur and Mintzer (2001) found in a sample of gay men that secure attachment style was associated with social support from family member, as well as being out to family members. Attachment avoidance was also associated with lack of *outness* (the extent to which an LGB person openly expresses or discusses their sexuality) in daily life. Taken together, these studies

suggest that there are factors specific to being a sexual minority, including internalized homophobia and disclosure, that can affect the relationship between mental health and attachment among sexual minorities.

## Adult Attachment and Sexual Behavior

There have been very few studies that have sought to understand the relationship between attachment style and sexual behavior among sexual minority individuals; however, the studies that have been conducted suggest that there is little difference between heterosexual and homosexual populations (Mikulincer & Shaver, 2007; Mohr, 1999).

The adult attachment literature proposes that there is a relationship between sexual behavior and adult attachment. More specifically, researchers have found that individuals with and avoidant attachment style participate in more extra-relationship sex (any sexual acts performed outside of a monogamous relationship), are more likely to participate in casual sexual encounters, and are more likely to have multiple sexual partners at any given time than individuals with an anxious or secure attachment style (Brennan et al., 1998; Brennan & Shaver, 1995; Feeney, 2000; Feeney, Kelly, Gallois, Peterson, & Terry, 1999; Schachner & Shaver, 2004). Attachment avoidance is related to a higher number of concurrent sexual partnerships and the inability to maintain long-standing emotional bond with intimate partners (Kirkpatrick & Hazan, 1994; Kirkpatrick & Shaver, 1992; Sable, 2007). In addition, individuals who have an avoidant attachment style are characterized as finding sexual contact less satisfying than individuals with a secure attachment style. For instance, Levy and Davis (1988) found that individuals with an avoidant attachment style were more likely to participate in sex for amusement rather than for emotional bond formation with an intimate partner. Hazan, Zeifman, and Middleton (1994b) posited that securely attached individuals are more likely to enjoy sex

with a primary partner and not participate in sex outside of their relationships. Attachment anxiety is associated with a lack of sexual motivation and more intimate physical contact such as hugging and holding (Hazan et al., 1994b). Taken together, studies indicate that individuals who have an insecure attachment style find it more difficult to form and maintain emotional bonds with intimate or sexual partners than individual who have a secure attachment style.

## Adult Attachment and Sexual Risk Behavior

Though few empirical studies have examined the relationship between sexual risk and attachment, researchers suggest that attachment anxiety is associated with negative beliefs about condom use, decreased likelihood of condom use, and lower perceived risk of HIV infection (Feeney, 1999; Hazan, Zeifman, & Middleton, 1994a). In contrast, Feeney (2000) found that the attachment avoidance style was associated with more positive attitudes about condom usage. However, Feeney (2000) noted that individuals with an avoidant attachment style were also more likely to have multiple partners with whom they did not discuss using condoms. Overall, the available research on adult attachment and sexual risk behavior suggests that secure individuals participate in less risky sexual behaviors than individuals with an insecure (i.e., avoidant or anxious) attachment style. Exploration of how the adult attachment paradigm operates with YBMSM could provide new understandings of the adult attachment system and romantic love and sexual risk behaviors.

## Gaps in the Adult Attachment Literature

There has been a significant amount of research examining the relationship between adult attachment, mental health, and sexual risk behavior. However, very few studies have examined these relationships among LGB populations. Though attachment style is posited to be stable over the life course, Bowlby (1980) made it clear that there is plasticity in attachment-related mental

representations. Researchers have found that major life events (e.g., death of a parent, divorce, sexual trauma) can alter mental representations, and thus, attachment style (Fraley et al., 2011; Waters, Merrick, et al., 2000). Given that YBMSM report higher rates of childhood traumatic experiences (Radcliffe, Beidas, Hawkins, & Doty, 2011), levels of attachment avoidance and anxiety may be higher in YBMSM populations than in non-YBMSM populations. In addition, issues around identity formation and sexual orientation disclosure may influence the relationship between mental health, sexual risk behavior, and attachment (Latkin et al., 2012). Thus, this dissertation aims to address some of the gaps in the research literature by examining the relationships between psychological distress, sexual risk, and attachment in the quantitative component while exploring experiences of attachment in childhood, young adult mental health, and intimate partnerships in young adulthood.

## Mental Health among LGB Populations

Numerous studies have demonstrated that same-sex sexuality is a risk factor for mental health problems, including psychiatric disorders (Cochran, Sullivan, & Mays, 2003; King et al., 2003; King et al., 2008; Sandfort, de Graaf, & Bijl, 2003). For instance, in a representative sample of the United States, Gilman et al. (2001) found that women and men who had a same sex partner in the last five years reported more anxiety, mood, and substance use disorders as well as suicidal ideation in the last 12 months than respondents with only opposite sex partners. In addition, Cochran and Mays (2000a) found, in another nationally representative sample of the United States, that MSM had a higher lifetime prevalence of suicidal ideation than men who only reported having sex with women. More recently, in a large population study in the United States, researchers found that lesbian, gay and bisexual (LGB) individuals were more likely to experience psychiatric morbidity than heterosexual individuals (Cochran & Mays, 2009). In

contrast, Meyer, Dietrich, and Schwartz (2008) found in a sample of 388 LGB, that Black LGB had less depression than White LGB. Taken together, the majority of research studies suggest that Black LGB have higher levels of psychological distress than White LGB.

Increased levels of mental health problems in gay and lesbian persons are usually understood as a consequence of the social stigma associated with same-sex sexuality. The negative valuation of same-sex sexuality causes excess stress in persons with a same-sex sexual orientation beyond the level of stress that people, in general, experience; this "excess" stress, labeled by Meyer and others as sexual minority stress (Meyer, 2003), is in turn the cause of heightened levels of psychiatric morbidity. The *minority stress model* (Meyer, 2003) posits that stress occurs due to objective external events and conditions. The expectations of stressful events, as well as the vigilance this expectation requires, may lead to the internalization of negative social attitudes and the concealment of one's sexual orientation, all of which represent stressors that increase mental health concerns (Meyer, 2003).

Rates of depression are higher among Black MSM than White MSM (Reisner, Mimiaga, Skeer, et al., 2009; Simpson, Krishna, Kunik, & Ruiz, 2006). With elevated rates of depression and stress in minority populations, researchers have been concerned with explaining the relationship between depression, stress and sexual risk behavior (Brown & Vanable, 2008; Reisner, Mimiaga, Safren, & Mayer, 2009). One study examining differences in levels of depression and stress between heterosexual, bisexual, and gay Black men found that bisexual and gay men had higher rates of depression and stress than heterosexually identified Black men. Additionally, those bisexual or gay-identified men who were HIV-positive had the highest rates of depression and stress in the sample (Peterson, Folkman, & Bakeman, 1996). BMSM also have higher rates of depression than White MSM (Cochran & Mays, 1994; Mays & Cochran, 2001).

### Young Adult MSM and Mental Health

The factors that contribute to the well-being of young MSM are both similar and different from those factors that impact the broader MSM population (Halkitis et al., 2012). Researchers have reported high rates of depression and suicidal ideation among lesbian, gay, bisexual, and transgender youth as compared to general population estimates of youth (Botnick et al., 2002; Kipke et al., 2007; Perdue, Hagan, Thiede, & Valleroy, 2003; Salomon et al., 2009). For instance, in a population of 4,295 MSM, Salmon and colleagues found that young men who have sex with men (YMSM) aged 15-25 years were 1.55 times more likely to have depressive symptomology than older MSM. In addition, many young adult MSM deal with the stressors related to transitioning from adolescence to adulthood (Halkitis et al., 2011; Halkitis et al., 2012), while also tackling issues of sexual orientation disclosure (D'Augelli, Hershberger, & Pilkington, 2010) and issues surrounding the establishment of healthy interpersonal relationships with peers and intimate partners (Bauermeister, Ventuneac, Pingel, & Parsons, 2012; Reese-Weber & Marchand, 2002). In addition to these issues, young adult Black MSM face challenges associated with being a racial/ethnic minority, including discrimination (Chae et al., 2010). Taken together, these and other risk factors can increase the likelihood of emerging and young adult MSM experiencing psychological distress (Feldman, 2010). Though there are several studies that document the higher rates of depression among YMSM populations in general, there are few studies that focus specifically on YBMSM.

## Sexual Behavior among YBMSM

### Epidemiology of HIV among YBMSM

Though gay and bisexual men represent only 2% of the population, these, and other MSM, represent about half of all HIV infections in the United States (Chandra et al., 2011).

Young MSM, especially ethnic minority MSM, have some of the highest rates of HIV in the United States. In 2009, 63% of YMSM infected were Black YMSM (CDC, 2010). In 2009, YMSM accounted for 27% of new infection and 69% of new infection among individuals aged 13-29 years (CDC, 2010). Rates of HIV infection had increased by 48% from 2006-2008 (CDC, 2010). In a recent meta-analysis Millett, Peterson, et al. (2012) found that YBMSM were five times more likely to be HIV positive and seven times more likely to have an undiagnosed HIV infection than YMSM of other races and ethnicities. In addition, according to the New York Department of Health, from 2001-2006 rates of HIV increased 126% among YBMSM aged 13-29 years. Unprotected anal intercourse (UAI) accounts for most HIV infection among MSM in the United States (CDC, 2010). Due to the high rates of HIV among YBMSM, and because UAI is the primary means of transmission, many researchers have attempted to identify factors and situations that increase YBMSM likelihood of participating in behaviors that may place them at increased risk for HIV, including UAI and serodiscordant UAI. Millett, Peterson, et al. (2012) found that YBMSM were less likely to have a recent UAI encounter, less likely to use substances and were more likely to have been recently tested for HIV than other YMSM. Despite these findings, the authors found that YBMSM were five times more likely to be HIV positive, seven times more likely to have undiagnosed HIV infection, and 45% more likely to have a recent STI infection than other YMSM.

**Sexual Risk Behavior among YBMSM**

Researchers have conducted many studies examining factors related to sexual risk in MSM populations. Factors related to sexual risk taking include internalized homophobia, substance use, and high risk social and sexual networks, to name a few (Celentano et al., 2006; Detrie & Lease, 2007; Dudley, Rostosky, Korfhage, & Zimmerman, 2004; Mutchler et al., 2008;

Perdue et al., 2003). Though researchers have posited that there are many factors related to sexual risk taking, there have been mixed finding related to whether or not BMSM and YBMSM participate in more sexual risk taking behaviors than the general population and non-Black MSM.

With the growing incidence of HIV among YBMSM, there has been a proliferation of research examining factors related to risk of HIV in this population (Maulsby et al., 2013). This body of research has produced mixed findings related to disparities in UAI and number of sex partners between YBMSM and other MSM. Halkitis et al. (2011), in a sample of adolescents, emerging adults, and young adult MSM, found that Black participants were more likely than white participants to report unprotected receptive or insertive anal intercourse on their most recent sexual encounter. Mustanksi (2007) studied a sample of 310 young adult MSM aged 16-24 and found that Black participants were more likely to have multiple sex partners, but were less likely to have unprotected anal sex in the last three months than white participants. Millett, Peterson, et al (2012) found in a recent meta-analysis that YBMSM (13-29) were as likely as YMSM of other races or ethnicities to ever have UAI or similar number of male sex partners. In addition, the author found that YBMSM were less likely to engage in UAI in the last 6 months than YMSM of other race or ethnicity. Taken together, it seems that there may not be a difference between participation in UAI and multiple sex partners between YBMSM and other MSM. However, the majority of the presented findings are based on cross-sectional retrospective survey's that may mask the situational relationship between sexual risk encounters and vulnerability to HIV infection among YBMSM. Taken together, the findings related to racial disparities in UAI and multiple sex partners between YBMSM and other MSM are mixed and thus more research in this area should be conducted.

Serosorting practices, the act of selecting sexual partners with a similar HIV status, has become increasingly used as a means to reduce sexual transmission of HIV in MSM communities (Snowden, Raymond, & McFarland, 2009). Because more MSM are participating in serosorting activities, researchers have become interested in examining serodiscordant UAI as a significant sexual risk act that increases MSM's vulnerability to HIV. However, as with sexual risk indices such as UAI and multiple concurrent sexual partnering, findings related to disparities in serodiscordant UAI between Black and white MSM have been mixed. In a meta-analysis, Millett, Flores, Peterson, and Bakeman (2007) found that HIV negative Black and white MSM in the United States were equally as likely to have an HIV positive sex partner. However, some studies have suggested that there may be a greater likelihood of having an HIV status unknown sex partner for Black MSM than white MSM (Maulsby et al., 2013). For instance, in a recent study authors found that among newly diagnosed MSM, Black participants were more likely to report that their last sexual encounter was with an HIV unknown status male than white participants (Oster et al., 2011). Though the current study does not examine difference in sexual risk (i.e., UAI and serodiscordant UAI) between YBMSM and other MSM, it uses cross-sectional, longitudinal diary, and qualitative data to better understand specific factors that may contribute to the sexual risk behaviors that may be related to the high rates of HIV infection among YBMSM.

## Conceptual Model

As discussed in the literature review above, there is a burgeoning body of research aimed at understanding the relationship between psychological distress and sexual risk behavior among YBMSM in the United States. This study aims to add to the current research literature by exploring the way in which adult attachment may buffer the relationship between psychological

distress and sexual risk behaviors among YBMSM. The conceptual model for this dissertation is presented in Figure 4, below.

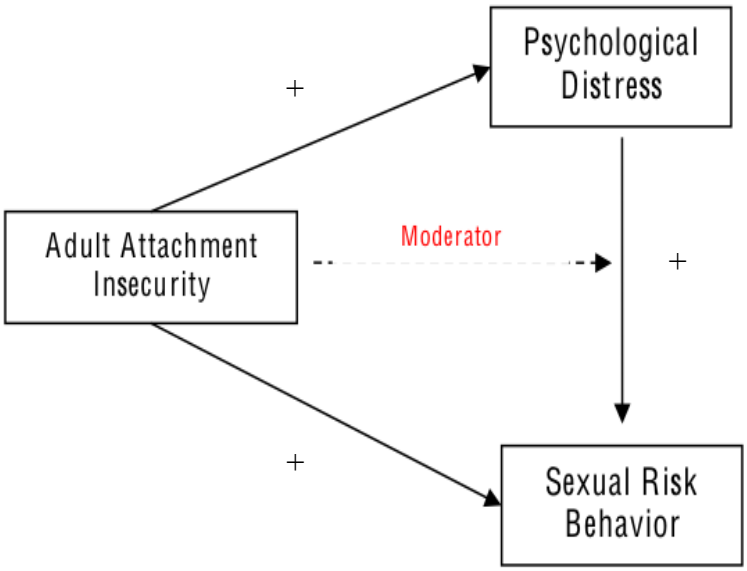


*Figure 4*. Conceptual model

As discussed in the literature review, adult attachment insecurity is associated with elevated levels of psychological distress and more specifically depression and anxiety in non-clinical adult samples. However, it is unclear if this findings holds true in populations of YBMSM who may be dealing with a myriad of psycho-social issues related to their racial/ethnic and sexual minority status (e.g., stigma and discrimination, sexual orientation disclosure, and identity formation). As noted in the conceptual model, I hypothesize that there continues to be a positive relationship between adult attachment insecurity and psychological distress among YBMSM.

As discussed in the reviewed literature, there is a paucity of research concerned with understanding the relationship between adult attachment insecurity and sexual behavior,

specifically sexual risk behavior. However, there is some evidence to suggest that adult attachment insecurity is related to an increase in sexual risk behavior. Given the small amount of adult attachment literature on sexual behavior, I posit that there is a positive relationship between adult attachment insecurity and sexual risk behavior among YBMSM.

The research literature presents mixed findings related to the relationship between psychological distress and sexual risk behavior among YBMSM. Some researchers suggest that psychological distress is related to sexual risk while other researchers suggest that there is in fact no relationship. However, their measurement of sexual risk behavior is varied and tends to use cross-sectional samples which can limit the ability to detect subtle relationships that may exist but be time varying. Thus, using a longitudinal approach, I posit that there is a positive relationship between psychological distress and sexual risk behavior among YBMSM.

To date, there has been no published research that examines adult attachment insecurity as a moderator of the relationship between psychological distress and sexual risk behavior. Emotional bond formation is an important coping and resilience factor that can mitigate the negative effects of poor mental health on sexual risk behavior, thus this dissertation aims to test a novel model to better understand how adult attachment may modify the relationship between psychological distress and sexual risk among YBMSM. The dissertation research questions and hypotheses are outlined in detail below.

**Research Question 1: Is Attachment Insecurity related to Psychological Distress?**

**Hypothesis 1a**. Men who have higher attachment anxiety scores will have higher levels of general symptoms of psychological distress than men who have lower attachment anxiety scores.

**Hypothesis 1b.** Men who have higher attachment avoidance scores will have higher levels of general symptoms of psychological distress than men who have lower attachment avoidance scores.

**Hypothesis 1c**. Men who have higher attachment anxiety scores will have higher levels of depression than men who have lower attachment anxiety scores.

**Hypothesis 1d.** Men who have higher attachment avoidance scores will have higher levels of depression than men who have lower attachment avoidance scores.

**Hypothesis 1e**. Men who have higher attachment anxiety scores will have higher levels of anxiety than men who have lower attachment anxiety scores.

**Hypothesis 1f.** Men who have higher attachment avoidance scores will have higher levels of anxiety than men who have lower attachment avoidance scores.

**Research Question 2: Is Attachment Insecurity Related to Sexual Risk Behavior among YBMSM?**

**Hypothesis 2a.** Men who have higher attachment anxiety scores will be more likely to have UAI than men who have lower attachment anxiety scores.

**Hypothesis 2b.** Men who have higher attachment avoidance scores will be more likely to have UAI than men who have lower attachment avoidance scores.

**Hypothesis 2c.** Men who have higher attachment anxiety scores will be more likely to have serodiscordant UAI than men who have lower attachment anxiety scores.

**Hypothesis 2d.** Men who have higher attachment avoidance scores will be more likely to have serodiscordant UAI than men who have lower attachment avoidance scores.

**Research Question 3. Are Changes in Psychological Distress related to Changes in the Likelihood of Having a Sexual Risk Encounter among YBMSM?**

**Hypothesis 3a.** Higher levels of general psychological distress will be related to the increased likelihood of having UAI over an eight-week period.

**Hypothesis 3b.** Higher levels of depression will be related to the increased likelihood of having UAI over an eight-week period.

**Hypothesis 3c.** Higher levels of anxiety will be related to the increased likelihood of having UAI over an eight-week period.

**Hypothesis 3d.** Higher levels of general psychological distress will be related to the increased likelihood of having serodiscordant UAI over an eight-week period.

**Hypothesis 3e.** Higher levels of depression will be related to the increased likelihood of having serodiscordant UAI over an eight-week period.

**Hypothesis 3f.** Higher levels of anxiety will be related to the increased likelihood of having serodiscordant UAI over an eight-week period.

**Research Question 4. Does Attachment Insecurity Moderate the Relationship between Psychological Distress and Sexual Risk Behavior?**

**Hypothesis 4.** Attachment insecurity will moderate the relationship between psychological distress and sexual risk in such a way that:

a. The relationship between general psychological distress and the likelihood of having UAI will be stronger for men who have higher attachment anxiety scores compared to men with lower attachment anxiety scores.
b. The relationship between general psychological distress and the likelihood of having UAI will be stronger for men who have higher attachment avoidance scores compared to men with lower attachment avoidance scores.

c. The relationship between general psychological distress and the likelihood of having serodiscordant UAI will be stronger for men who have higher attachment anxiety scores compared to men with lower attachment anxiety scores.
d. The relationship between general psychological distress and the likelihood of having serodiscordant UAI will be stronger for men who have higher attachment avoidance scores compared to men with lower attachment avoidance scores.

# CHAPTER III

# METHODS

The current chapter discusses the study methods, design, and procedure for this dissertation. The chapter starts by describing the Parent study to this dissertation, the Brothers Connect Study (BCS; PI: Patrick Wilson) design and procedure. The next part of this chapter focuses on the specific approach and methodology used for the dissertation work. In the approach and methodology section, the sample characteristics are presented first. Second, the quantitative method including measurement and data analysis procedure is described for the cross-sectional and diary component of the dissertation. Last, the qualitative method including the coding procedure and analysis procedure are discussed. The last section of this methods section will introduce the distribution of study variables for the sample.

BCS examines how contextual factors influence risk behaviors among young Black MSM. The study has four main aims: Aim 1) to describe *Proximal Contextual Risk Factors* (e.g., features of the sexual encounter, such as sexual partner characteristics) associated with risk-taking behaviors among YBMSM; Aim 2) to describe *Distal Contextual Risk Factors* (e.g., features of the developmental context, such as traumatic events) associated with sexual risk taking behaviors in the same population; Aim 3) to determine the facilitators and barriers to HIV testing, engagement in HIV prevention, and engagement in HIV care among YBMSM; Aim and 4) to explore the roles of social support and self-efficacy in understanding resilience among YBMSM.

## BCS Data Analysis Strategies

The BCS parent study utilized three different data collection strategies to address the study aims—a cross-sectional component, an eight-week longitudinal structured diary component, and a semi-structured interview component. The cross-sectional online survey was conducted with 228 participants. Of those 228 participants, individuals who reported two or more sexual encounters in the last two months were asked to participant in the eight-week online structured diary. Ultimately, 154 participants were enrolled in the structured diary component of the study. Thirty participants who participated in both the cross-sectional and eight-week structured diary were selected to participate in the 60-minute semi-structured interview.

### Cross-sectional Survey

The cross-sectional assessment was administered as part of the online survey tool to 228 participants. The cross-sectional survey was used to identify distal factors, which occurred during childhood and/or early adulthood and related to risk-taking behaviors among young and emerging adults. The survey utilized primarily established scales and indices to identify quality of relationship with parents, parental substance use, experiences of poverty, exposure to trauma, psychological distress, adult attachment insecurity, and social support.

### Structured Diary Survey

The eight-week structured sex diary involved a self-administered questionnaire that was completed on a weekly basis by 154 participants who participated in the cross-sectional study and who reported two or more sexual encounters in the last two months. Domains assessed included: sexual behavior (i.e., oral, anal, or vaginal sex), substance use of self and partner(s), sexual partner characteristics, feelings towards sexual partner(s), communication with sexual

partner(s), characteristics of the setting in which sexual act(s) occurred, sexual urges, mood (i.e., anxiety, anger, fatigue), and depression.

### Semi-structured Interview

Semi-structured interviews were conducted with 30 of participants who completed at least six weeks of the structured diary component. The interview was composed of: a) questions from the Adult Attachment Interview (George, Kaplan, & Main, 1985); and b) questions related to sexual behaviors throughout the life course, distal risk factors (exposure to poverty, substance use, racism, violence, trauma), and barriers and facilitators to HIV testing, prevention, and treatment.

## BCS Study Procedure

### Recruitment

BCS utilized a community-based sample of YBMSM living in New York City. Data were collected over a 12-month period using various recruitment strategies. Flyers and/or business cards were placed on websites targeted at YBMSM (i.e., Craigstlist, Village Voice Backpage, Black Gay Chat, Harlem One Stop, Kiki Function Page, and Facebook). Flyers and/or study business cards were also distributed or posted in gay bars, gay clubs, college campuses (i.e., NYU, Columbia, City College) and in cafés. Participants were recruited from community-based organizations (CBOs) such as, the LGBT Community Center and Callen Lorde Community Health Center, a primary care clinic that provides health care to LGBT individuals. Participants received a $10 gift card for referring up to two respondents who ultimately participated in the study. Overall, 340 individuals were recruited and screened for study participation. Out of potential participants, 10% were recruited from clubs/bars, 15% fliers/business cards, 18% were recruited via CBO's, 21% via online recruitment efforts, and 36% via snowball recruitment.

**Study Eligibility**

Criteria for participation were: (a) self-reported identification as "Black", (b) age 18 to 30, (c) having had sex with another man in the last two months, (d) residing within the New York tri-state area, and (e) having access to the internet. Participants who met study eligibility requirements were asked to come into one of the study offices for an in-person orientation. Participants were informed of their rights, including the ability to terminate the study at any time without repercussion and the right to confidentiality of their information. Once consent was obtained, each participant was shown how to navigate the study website for the cross-sectional component of the study. After this initial instruction, participants completed the cross-sectional survey using an internet-based computer-assisted self-interviewing (CASI) program.

After the completion of the cross-sectional survey, participants who reported two or more sexual encounters in the last two months were invited to participate in the eight-week structured sex diary. Before participating in the diary component of the study participants met with a study staff member to be trained on how to use the online survey tool and were informed that they were supposed to complete the diary every seven days. Those that agreed were consented and logged on to the ACASI system to complete week one of the diary. Multiple email reminders will be sent to participants concerning weekly diary completion. About 75% of the sample ($n$ = 114) completed six weeks or more of the structured diary component, 75% ($n$ = 115) completed all eight weeks, and 25% ($n$ = 38) completed two weeks or less.

Thirty participants who completed at least six weeks of the diary were selected to participate in the 60-minute semi-structured interview. Participants were given an explanation of this component, namely that the interview was interested in understanding family dynamic during childhood, feelings about sexual partners, and experiences with healthcare providers.

Participants who agreed to study participation were consented and then completed with 60-minute interview with a trained member of the BCS study staff.

**Compensation**

Participants were compensated for taking the time to complete the web-assessments and for their travel to and from any office visits. Participants who completed the cross-sectional component were compensated $30 for completing the assessment and $5 for transportation. Incentive payments for completing the sex diary ranged from $10 to $100, depending on the number of weekly surveys completed (i.e., participants received $10 for completing each week and a $20 bonus if they completed all eight-weeks). Participants who completed the qualitative interview received $40 as compensation and $5 for travel. There was also compensation for recruitment purposes. A participant who referred a participant who ultimately was enrolled was given a $10 Starbucks gift card. Participants were allowed up to two referrals.

## Dissertation Approach and Methodology

This dissertation examines the relationship between mental health and sexual risk behavior, as well as the moderating effect of adult attachment on this relationship in the BCS sample. To explore the relationships between these variables, this study employs a multi-method design that combines cross-sectional, longitudinal, and qualitative research methodologies. The aim of using such an approach is to address some of the limitations associated with utilizing each of the methods separately, such as problems with attrition and recall bias. Many of the hypotheses are explored through an examination of the results from the cross-sectional, structured diary, and semi-structured interview in conjunction with one another. This multi-method approach provides a detailed description of the relationships between attachment, psychological distress, and sexual risk behavior among YBMSM living in New York City. The

following sections will describe: a) the multi-method study design, b) the sample characteristics, c) the quantitative methodology, d) the qualitative methodology, e) the approach to data analysis of each hypothesis, and f) the distribution of study variables.

**Multi-method Study Design**

A multi-method approach to understanding the relationships between symptoms of psychological distress, sexual risk behavior, and adult attachment could build upon some of the limitations associated with using individual methods. The point of this multi-method approach is to triangulate the results as a means to provide a more detailed explanation concerning the relationships of interest. The sections below discuss some of the strengths and limitations to utilizing a cross-sectional, diary, and qualitative approach independently. The section concludes by discussing the benefits of utilizing a multi-method approach.

**Cross-sectional.** Cross-sectional studies can be a valuable means of understanding if relationships exist between stable constructs (Rea & Parker, 2012). For example, cross-sectional population surveys may help identify the prevalence of diseases in the population at a certain point in time. Many studies of adult attachment style employ cross-sectional survey techniques to determine an individual's attachment style and its relationship to other constructs, such as state affect (Mikulincer & Shaver, 2007). However, for constructs that are time-dependent a longitudinal approach may be more appropriate because it allows researchers to measure the stability of a construct and the way that a relationship may change over time. The current study utilizes a measure of adult attachment style that is considered to be a stable construct. Thus, using a cross-sectional measurement of this construct seemed more appropriate compared to utilizing longitudinal strategies.

Symptoms of psychological distress can be stable and/or time-variant (Bolger, Davis, & Rafaeli, 2003). Thus, both cross-sectional and longitudinal strategies could be adequate depending on the research question. Global distress, which is a stable construct that examines the average amount of distress for an individual, can be analyzed using cross-sectional measurements, while mood can be measured using longitudinal measures that show how mood may change in conjunction with another variable (e.g., time of day; Ivarsson, Lindström, Malm, & Norlander, 2011). Cross-sectional measurements provide information as to whether a relationship exists between two variables, but offers limited information concerning time-varying relationships. For the purpose of this dissertation, cross-sectional measurements examining symptoms of general psychological distress, depression, and anxiety in the last two months were used as a measure of global distress.

Sexual behavior is a construct that can be measured both longitudinally and cross-sectionally as well. Researchers have found little difference between the recalling of sexual behavior among MSM between retrospective accounts (usually three month recall) and diary accounts (usually 30 days; Glick, Winer, & Golden, 2012). Further, there does not seem to be a difference between reported sexual behavior in retrospective measures and diaries methods (Graham, Catania, Brand, Duong, & Canchola, 2003; Horvath, Beadnell, & Bowen, 2007). Though retrospective measurements of sexual behavior are thought to be valid, researchers contend that diary measurements of sexual behavior may be better at illuminating within-person variations over time in the relationship between sexual behaviors and other constructs of interests (Glick et al., 2012). Therefore the current study examines sexual risk behavior in the last two months as well as sexual risk behavior on a weekly basis.

**Structured diary.** The diary methodology allows for the collection of longitudinal data at various time intervals: daily, weekly, or monthly. Diary methods are utilized to establish temporal ordering between the independent and dependent variable, reduce the threat of recall bias due to the short recall period, and give researchers the flexibility to analyze both event-level data and within-person change over a given time period (Bolger et al., 2003; Okami, 2002). Diary methods have been used with MSM populations to examine correlates of sexual behavior, drug use, and psychological distress (Colfax et al., 2004; Mustanski, 2007; Ridley, Ogolsky, Payne, Totenhagen, & Cate, 2008; Wilson, Cook, McGaskey, Rowe, & Dennis, 2008).

Diary methodology addresses some of the limitations of measuring time dependent relationships between sexual behavior and psychological distress that may occur when using a cross-sectional design. Diary studies can have a high rate of missing data due to attrition, are usually non-representative, can have reactivity, and place a heavy burden on participants to remember to fill out their diary (Bolger et al., 2003; Gable, Reis, & Elliot, 2000; Glick et al., 2012). Researchers have suggested that reactivity (i.e., behavior change based on diary completion) may be a significant problem with collecting sexual behavior information; however, Glick et al. (2012) suggests that diaries may have some reactivity but overall continue to be a valid means of collecting information on sexual behavior. This study examines both retrospective accounts of sexual risk behavior and longitudinal measures of sexual risk behavior in an attempt to understand both the overall and situational relationship between sexual risk and psychological distress.

Diary methodology is also helpful in assessing how changes in psychological distress constructs, like depression and anxiety, are associated with changes behaviors (Bolger et al., 2003). Researchers have found that self-reported diary measurements of depressive symptoms

(Freeman, DeRubeis, & Rickels, 1996; Glick et al., 2012) and symptoms of anxiety (Fydrich, Dowdall, & Chambless, 1992; Nelson & Clum, 2002) are reliable and valid. Thus, many researchers have continued to use diary methodology to understand event and time related changes in psychological distress.

Overall, in an attempt to address some of the pros and cons associated with both cross-sectional and diary measurements, the current dissertation employs both measurement strategies as a way to better understand the stable and time dependent relationships between psychological distress, sexual risk behavior, and attachment insecurity. Hypotheses 1, 3, and 4 were conducted were conducted using both the cross-sectional and diary measurements. Hypothesis 2 used only diary measurements considering its inherently longitudinal nature. This multi-method approach allowed for the interpretation of the stable and time dependent nature of the relationships among variables to be examined in this dissertation.

**Qualitative interview.** The qualitative component of this dissertation is meant to add further support and detail for the relationships between psychological distress, sexual behavior, and attachment insecurity. The proposed conceptual model (see Figure 4) is guided by previous theoretical and empirical research, however; the novelty of the proposed conceptual model lends itself to further qualitative investigation. Qualitative research can provide a rich description of an individual's behaviors, attitude, beliefs, motivations, opinions, and lifestyles. Further, qualitative data can provide a detailed depiction of *how* phenomena are related to each other, while the majority of survey data is limited to providing information concerning *if* a relationships exists (Creswell & Clark, 2007). Thus, the qualitative interview approach has the advantage of providing rich information on subjective experiences and relationships that can help build or support theory. In this dissertation, the qualitative component is used to support and build upon

the limitations of the cross-sectional and diary components by further illuminating relationships between mental health, sexual behavior and attachment among YBMSM in New York City.

Attachment is concerned with an individual's ability to develop emotional bonds with caregivers, peers, and intimate partners, thus, studying how bonds are developed and maintained in childhood and adulthood and secondly how emotional bond formation influences both mental health and sexual behavior seems to naturally lend itself to qualitative inquiry. Recent studies of adult attachment have examined the question of how young adults in particular develop emotional bonds and how this is related to mental health (Gormley & Lopez, 2010) and sexual behaviors (Kidd, Martin, & Martin, 2012). The qualitative component of the current dissertation attempts to illuminate the seemingly complex relationship between mental health, sexual behavior, and adult attachment specifically among YBMSM as a means to understand how attachment bonds are formed and broken and how these bonds are related to mental health and sexual behavior.

**Sample Characteristics**

Table 3 displays the sample characteristics for the cross-sectional data. The average age of participants was 25 years, range = 17-35. Sixty-two percent of the sample identified as African American/Black. Nineteen percent of participants identified as Black Hispanic/Latino, 6% Afro-Caribbean/West Indian, and 13% mixed-race. Eight percent of participants had less than a high school degree, 69% percent completed high school or GED, 21% completed some college, and 2% completed college or graduate school. Thirty-seven percent of participants were employed while 39% of participants were unemployed. Seventy-four percent of participants were HIV negative. Seventy-three percent of participants reported being single. Tables 4 and 5

provide the sample characteristics for the structured diary and qualitative subsamples. The subsample characteristics were similar to the characteristics of the full sample.

## Quantitative Method

As mentioned before, the quantitative method for this dissertation is in two parts. The first part of this section will describe measures used in the cross-sectional component of the study, while the second part will describe the structured diary component measures. This section will end by describing the analysis I conducted by hypothesis. Table 6 displays the distribution of values and coding for all study variables used in the cross-sectional component. Table 7 displays the reliability statistics for all study scales.

### Cross-sectional Component

**Adult attachment insecurity.** A modified version of the Experience in Close Relationships Scale-Revised (ECR-R; Fraley, Waller, & Brennan, 2000) was used to measure level of attachment avoidance and attachment anxiety. The ECR-R is a 36-item self-report measure of adult attachment, consisting of two subscales, Anxiety and Avoidance. During administration, individuals were instructed to evaluate statements pertaining to their thoughts and feelings when in an intimate relationship. The measure's directions state, "The statements below concern how you generally feel in your relationship with an intimate partner (i.e., a girlfriend, boyfriend, or spouse)." Example items include, "I'm afraid that I will lose my partner's love" and "I often worry that my partner will not want to stay with me." Statements are then rated on a seven-point Likert scale ranging from 0 = *Not At All Like Me* and 7 = *Very Much Like Me*. The Chronbach's alphas for the avoidance and anxiety subscales were observed to be .93 and .95, respectively by Sibley and Liu (2004) in a validation study.

The current study used a modified version of this scale that encompassed 19 items from the original Experience in Close Relationships scale (ECR), which assess the insecure dimensions of attachment, avoidance and anxiety. Reliability analyses were run to assess the reliability of the ten-item anxiety and nine-item avoidance scales. The initial internal consistency reliability estimate for the avoidance and anxiety subscales were low, $\alpha = .54$ and .57, respectively. To improve the reliability of the scale's low performing items were removed, which improved reliability. The new attachment avoidance scale consisted of five items, $\alpha = .82$, and the new attachment anxiety scale included seven items, ($\alpha = .83$). Mean attachment anxiety and avoidance scores were used in the final analyses.

**Unprotected anal intercourse (UAI).** The Brief Assessment of Sexual Risk (BASR) questionnaire (Dolezal, Carballo-Diéguez, Nieves-Rosa, & Díaz, 2000) was used to measure high-risk sexual behaviors in primary and secondary relationships. Questions focusing on the characteristics of sex partners and types of sex (e.g., anal intercourse, vaginal intercourse, oral sex with men or women) were asked in the cross-sectional survey. The UAI variable was created by adding together the all the instances of reported UAI (e.g., IUAI and RUAI). The continuous measure of total UAI was skewed to the right due to a large number of individuals who did not have any UAI in the last two months (43%). Thus, the UAI variable was categorized into 0 = *No UAI encounter in the last two months* and 1 = *At least one UAI encounter in the last two months.*

**Serodiscordant UAI.** The BASR was also used to create the serodiscordant UAI variable. In addition to questions concerning type of sexual act, the inventory asked questions related to the HIV status of the sex partner. Using the HIV status of the participant taken from another part of the survey along with the HIV status of the sex partner and the type of sex (e.g., IUAI, RUAI), the serodiscordant UAI variable was created. The resulting variable was

categorical with 0 = *No serodiscordant UAI encounter in the last two months* and 1 = *At least one serodiscordant UAI encounter in the last two months.*

**Psychological distress.** The Kessler-10 (K10; Kessler et al., 2002) was used to assess non-specific psychological distress. The scale evaluates cognitive, affective, and behavioral symptoms of psychological distress. It asks participants to rate how often they felt a certain way during the last seven days, using a five-point scale that ranges from 1 = *None Of The Time* to 5 = *All Of The Time*. Items include: "Felt depressed?" and "Felt fidgety or restless?" In a validation study conducted with patients admitted to an emergency room for alcohol consumption, the K10 was found to have a Cronbach's alpha coefficient of .84, indicating good reliability (Arnaud, 2010). The reliability score for the current study was .92, indicating excellent internal consistency. As suggested by the Clinical Research Unit for Anxiety and Depression (CRUFAD), in the School of Psychiatry at the University of New South Wales, the following cut-off scores for the K10 were utilized (Andrews & Slade, 2007): a score of 10-15 is associated with low or no psychological distress, 16-29 suggests medium psychological distress, and 30-50 reflects high psychological distress. The variable was about normally distributed. Mean K10 scores were used in the final analyses.

**Depression.** In the cross-sectional survey, depression was analyzed using the depression subscale of the Brief Symptoms Inventory (BSI; Derogatis, 1975). The BSI consists of 53-items and nine subscales measuring symptoms associated with somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. In a validation study of the BSI, Derogatis and Melisaratos (1983) found that the depression subscale had strong internal consistency, $\alpha = .85$, and good test-retest reliability, .84, indicating that the depression subscale is reliable. Similarly, in the current sample of YBMSM,

the six-item depression subscale had strong internal consistency, α = .82. The variable was approximately normally distributed. Mean BSI Depression scores were used in the final analyses.

**Anxiety.** The six-item anxiety subscale of the BSI was used to assess anxious symptomology. In a validation study with a non-clinical sample of adults, the anxiety subscale was found to have good internal consistency, α = .81 and strong test-retest reliability, .79 (Derogatis & Melisaratos, 1983). In the current sample of YBMSM, the internal consistency for the six-item scale was, α = .79. The variable was approximately normally distributed. Mean BSI Anxiety scores were used in the final analyses.

**Demographic information.** Information pertaining to participant age and level of education was collected via the cross-sectional survey. Originally, participants were asked to describe their education as: *Grade School*, *Some High School*, *High School Diploma/GED*, *Some College*, *College Degree*, and *Graduate Degree*. Very few participants reported only completing grade school, some high school, or having a graduate degree; thus, the education variable was recoded to include participants who reported completing up to *Some High School* = 1, *High School Diploma/GED* = 2, *Some College* = 3, or *College Degree or Graduate Degree* = 4.

***Relationship status.*** The cross-sectional survey asked participants to identify their relationship status. Available selection options were, 1 = *Single*, 2 = *Have a boyfriend or girlfriend*, 3 = *Married*. Because only three participants reported being married, this variable was recoded into a dichotomous variable, 1 = *In A Relationship* = 1 and 2 = *Single*.

***HIV status.*** Participant were asked if they ever had an HIV test, if the participant answered affirmatively they were then asked if they were HIV negative or HIV positive or HIV unknown status. The final variable was dichotomous, 1 = *HIV Negative* and 2 = *HIV Positive/unknown.*

**Structured Diary Component**

**UAI.** Participants were asked to indicate if they had sex in the prior seven days. If the respondent reported engaging in sex, they were asked to report on a randomly selected encounter occurring in the seven days prior. Participants were then asked to specific information about the sexual encounter. UAI was assessed by two separate questions asking if the participant had: 1) Insertive unprotected anal intercourse (IUAI) or not during the encounter and 2) receptive unprotected anal intercourse (RUAI) or not during the encounter. The variable was dichotomous indicating the absence or presence of unprotected anal intercourse (insertive or receptive) in the selected sexual encounter for each week. The IUAI and RUAI variable was combined to produce the UAI variable which indicated 0 = *No UAI*, 1 = *UAI.*

**Serodiscordant UAI.** In addition to asking questions concerning the type of sex (i.e., IUAI and RUAI), the diary asked questions concerning sexual partner's HIV status. Thus, Using the HIV status of the participant taken from another part of the survey along with the HIV status of the sex partner and the type of sex (e.g., IUAI, RUAI), the serodiscordant UAI variable was created. The resulting variable was categorical with 0 = *No serodiscordant UAI encounter* and 1 = *At least one serodiscordant UAI encounter.*

**Psychological distress.** The same psychological distress measure administered in the cross-sectional component, the K10, was also administered on a weekly basis to participants. The internal consistency for the ten-item scale at week one of the diary was excellent, $\alpha = .92$. Mean K10 scores were used in the final analyses.

**Depression.** The presence of depressive symptoms in the last seven days was assessed using the depression subscale of a modified version of the Profile of Moods States-Short Form (POMS-SF; McNair, Lorr, & Droppleman, 1981). The POMS-SF is a 36-item scale that assesses

affective mood state fluctuations and has six subscales: Fatigue-Inertia, Vigor-Activity, Tension-Anxiety, Depression-Dejection, Anger-Hostility, and Confusion-Bewilderment. The Depression-Dejection subscale used for this study had four items instead of the six items in the full POMS scale. The POMS was modified to include 24 of the 36 items in the POMS-SF. The Depression-Dejection scale asks the participants to rate how often they experienced four mood states (sad, hopeless, discouraged, and depressed) during the last week using a five-point Likert scale which ranges from 0 = *Never* to 4 = *Very Often*. In a validation study conducted with a population of college students, Yeun and Shin Park (2006) found that the six-item depression-dejection subscale of the POMS had good internal consistency at week one of the diary, $\alpha = .82$. In the current analysis, the four-item depression-dejection subscale was found to have a strong internal consistency at week one of the diary, $\alpha = .86$. Mean POMS Depression scores were used in the final analyses.

**Anxiety.** Anxiety in the last seven days was assessed using the tension-anxiety subscale of a modified version of the POMS. The tension-anxiety scale asks the participants to rate how often they experienced four mood states ("on edge," "uneasy," "anxious," and "nervous") during the last week using a five-point Likert scale which ranges from 0 = *Never* to 4 = *Very Often*. In a validation study conducted with a random sample of college students found that the Cronbach's alpha for the tension-anxiety scale at week one of the diary was .82 (Yeun & Shin Park, 2006). The internal consistency for the scale in the current study at week one of the diary was .77. Mean POMS Tension-Anxiety scores were used in the final analyses.

## Analysis and Hypotheses

Ordinal Least Squares (OLS) regression, logistic regression, and General Linear Modeling (GLM) were used to test study hypotheses. To simply the equations below, I will

present the main study hypothesis and equation for each hypothesis. Attachment insecurity includes anxiety and avoidance. Sexual risk variables include UAI and serodiscordant UAI. Psychological distress includes general psychological distress, depression and anxiety. The specific statistical test for each study hypothesis is presented below.

**Hypothesis 1**

Hypothesis 1 states: *Men who have higher attachment insecurity scores will have higher levels of psychological distress than men who have lower attachment insecurity scores.* To examine the relationship between attachment insecurity and adult attachment, two separate regression models were conducted; one used the cross-sectional data and one used the diary data. The first model was designed using OLS and took the following form:

$$\gamma = \beta_0 + \beta_i \mathrm{X}_i + \beta_k \mathrm{X}_k + \varepsilon$$

Where $\gamma$ is the level of psychological distress, $\mathrm{X}_1$ is the attachment insecurity score for the model, $\mathrm{X}_k$ is a vector of covariates, and $\varepsilon$ is the unobserved error.

To examine the relationship between attachment and psychological distress over an eight-week period, I used population average analyses—General Estimation Equation (GEE; Zeger & Liang, 1986). GEE produces efficient estimators by estimating the average response for observations sharing the same covariates. I used an exchangeable correlation structure, which assumed that the average value of psychological distress at any two time points were the same. I used robust standard errors, which produce unbiased estimators. All of the analyses used a Gaussian distribution. Models controlled for age, relationships status, and HIV status. I ran three models with attachment insecurity predicting psychological distress (e.g., psychological distress, depression, and anxiety). The equation took the following form:

$$\gamma_{it} = \beta_0 + \beta \chi_i + \beta_k \mathrm{X}_k + \varepsilon_{it}$$

Where $\gamma_{it}$ is the level of psychological distress for individual *i* at time *t*, $\beta_0$ is the intercept, $\chi_i$ is the average adult attachment score for individual *i,* $X_k$ are the time invariant covariates, and $\varepsilon_{it}$ is unobserved error for individuals *i* at time *t*.

**Hypothesis 2**

Hypothesis 2 states: *Men who have higher attachment insecurity scores will be more likely to have sexual risk than men who have lower attachment anxiety scores.* The first equation pertains to testing the hypothesis using the cross-sectional data and the outcome variable is sexual risk vs. no sexual risk. The second equation pertains to the diary data with the same outcome. The first model was a logit model and took the following form:

$$\log\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_i\chi_i + \beta_k\chi_k + \varepsilon$$

Where $\log\left(\frac{P_{it}}{1-P_{it}}\right)$ is the probability of having a sexual risk encounter in the last two months vs. not having a sexual risk encounter, $\beta_0$ is the intercept of the model, $X_i$ is the attachment insecurity score for each individual and $\varepsilon$ is the unobserved error.

To examine the relationship between attachment and sexual risk over an eight-week period, GEE was used. An exchangeable correlation structure, which assumed that the average value of sexual risk behavior at any two time points were the same, was used. Robust standard errors, which produce unbiased estimators, were used. All of the analyses used a logit link function and a binomial distribution. Models controlled for age, relationships status, and HIV status (for model's predicting UAI only). I ran one model with attachment insecurity (anxiety and avoidance) predicting UAI first and one model with the same independent variables predicting serodiscordant UAI second. The equation took the following form:

$$\log\left(\frac{P_{it}}{1-P_{it}}\right) = \beta_0 + \beta_i\chi_i + \beta_k\chi_k + \varepsilon_{it}$$

Where $\log\left(\frac{P_{it}}{1-P_{it}}\right)$ is the probability of having a sexual risk encounter vs. not for individual *I,* at time *t*, $\beta_0$ is the intercept, $\chi_i$ is the average adult attachment insecurity score for individual *i,* $X_k$ are the time invariant covariates, and $\varepsilon_{it}$ is unobserved error for individuals *i* at time *t*.

**Hypothesis 3**

Hypothesis 3 states: *Higher levels of psychological distress will be related to the increased likelihood of having a sexual risk encounter over an eight-week period.* Logistic regression analysis was conducted to determine whether psychological distress was related to UAI. A random effect regression model was conducted to assess the relationship between psychological distress and sexual risk behavior. The model took the following form:

$$\log\left(\frac{P_{it}}{1-P_{it}}\right) = \beta_0 + \beta_{it}\chi_{it} + \beta_k\chi_k + \varepsilon_{it}$$

Where $\gamma_{it}$ is the occurrence or absence of sexual risk for the ith participant in week t, $X_t$ is psychological distress for the *i*th participant in the *t* week, $X_k$ are the time invariant covariates that will be adjusted for, and ε is the unobserved error.

**Hypothesis 4**

Hypothesis 4 states: *The relationship between psychological distress and sexual risk will be stronger for men who have higher attachment insecurity scores compared to men with lower attachment insecurity scores.*

Only the diary data was used to test this hypothesis because the there was no/small relationship between the psychological distress variables and the sexual risk behavior variables in the cross-sectional analyses. These analyses were conducted in three steps to address the study

hypotheses. I first, conducted logistic regression analyses to establish that if there was a relationship between the psychological distress variables and sexual risk variables. Second, using the variables that were significant, I created an interaction term between the attachment insecurity variable and the psychological distress variable and conducted moderation analyses. Third, I conducted follow up analyses with individuals high on attachment insecurity (top 25% of scores) and those low on attachment insecurity (bottom 25% of scores). My point in this three-step process was to establish that there was a main effect relationship between psychological distress and sexual risk behavior, to determine if attachment insecurity moderated this relationship, and to examine if this relationship existed for individuals with high or low scores on the attachment anxiety or avoidance scales. This process of analyses together helped to elucidate the potential moderating effect of adult attachment insecurity on the relationship between psychological distress and sexual risk.

To establish if a relationship existed between psychological distress and sexual risk behavior, I used population average analyses—General Estimation Equation (GEE). An exchangeable correlation structure, which assumed that the values of sexual risk behavior at any two time points were the same, was used. I used robust standard errors, which produce unbiased estimators. All of the analyses used an exchangeable correlation structure, a logit link function, and a binomial distribution. Models controlled for age, relationships status, HIV status (for model's predicting UAI model only). I ran three models with psychological distress (e.g., general psychological distress, depression, and anxiety) predicting UAI first and three models with the same independent variables predicting serodiscordant UAI second. The equation took the following form:

$$\log\left(\frac{P_{it}}{1 - P_{it}}\right) = \beta_0 + \beta\chi_i + \beta\chi_k + \varepsilon$$

$\log\left(\frac{P_{it}}{1-P_{it}}\right)$ is the probability of having a sexual risk encounter (i.e., UAI and serodiscordant UAI) over and eight-week period vs. not having a sexual risk encounter, $\beta_0$ is the intercept of the model, $X_i$ is the average psychological distress (i.e., psychological distress, depression, anxiety) score for each individual across the eight-week period and $\varepsilon$ is the unobserved error.

To establish if attachment insecurity was a moderator I used GEE with the same parameters. The equation took the following form:

$$\log\left(\frac{P_{it}}{1-P_{it}}\right) = \beta_0 + \beta\chi_{1t} + \beta\chi_2 + \beta\chi_{1t}\beta\chi_2 + \beta\chi_k + \varepsilon$$

$\log\left(\frac{P_{it}}{1-P_{it}}\right)$ is the probability of having a sexual risk encounter (i.e. UAI and serodiscordant UAI) over and eight-week period vs. not having a sexual risk encounter, $\beta_0$ is the intercept of the model, $X_{1t}$ is the average psychological distress (i.e., psychological distress, depression, anxiety) score for each individual across the eight-week period, $X_2$ is the attachment insecurity score from week one and $\varepsilon$ is the unobserved error.

To better understand the lack of moderation, the relationship between psychological distress and sexual risk for those high and those low on attachment insecurity were reviewed. These analyses were conducted with the same variables used in the section above. Due to the small number of men in each strata ($n < 100$), I did not use robust standard errors. Using robust standard errors with small sample sizes ($n < 100$) can cause coefficients to become unstable (Hoechle, 2007). To obtain low and high attachment insecurity variables, individuals in the top 25% of mean scores vs. individuals in the bottom 25% of mean scores for both the attachment anxiety and attachment avoidance measures were used to categorize individuals into high and

low attachment insecurity domains. I used GEE with the same parameters. The equation took the following form:

$$\log\left(\frac{P_{it}}{1-P_{it}}\right) = \beta_0 + \beta\chi_i + \beta\chi_k + \varepsilon$$

$\log\left(\frac{P_{it}}{1-P_{it}}\right)$ is the probability of having a sexual risk encounter (i.e., UAI and serodiscordant UAI) over and eight-week period vs. not having a sexual risk encounter, $\beta_0$ is the intercept of the model, $X_i$ is the average psychological distress (i.e., psychological distress, depression, anxiety) score for each individual across the eight-week period and $\varepsilon$ is the unobserved error.

## Qualitative Method

The aim of the qualitative analysis was to better understand how adult attachment was related to psychological distress and sexual risk behavior among YBMSM in New York City. The qualitative data provided a detailed description of contextual and historical factors that help further explain the relationships, or lack thereof, between attachment, psychological distress and sexual risk behavior reported in the quantitative data.

### Data Collection

The semi-structured interviews were conducted between August 2011 and October 2011 by trained BCS study staff members. Participants were selected from the cross-sectional component of the BCS study. Because the themes for the interview were related to understanding distal risk factors for HIV transmission among YBMSM, only men who reported two or more risky sexual encounters in the cross-sectional component were considered for selection. After the potential pool of participants was gathered, individuals were contacted by the BCS project coordinator and asked if they would like to participate. If the individual agreed to participation,

the interview was scheduled. This process continued until 30 individuals were completed the semi-structured interview component of the study. All participants went through an additional consent procedure for the qualitative component. Interviews took between 45 and 120 minutes with the average interview being 56 minutes long.

**Measurement**

The BCS interview protocol collected data based on five major themes: a) Childhood relationship with parents; b) Motivation for sex with partner; c) Sexual partnering and sexual behavior; d) Sexual and racial Identity; and e) Barriers and facilitators to HIV prevention, testing, and treatment. For the current dissertation, I used data collected for the first three themes. The six questions contributing to the first theme (childhood relationship with parents) were adapted from the Adult Attachment Interview (AAI; George et al., 1985). These items were designed to assess childhood and adult attachment style. The full semi-structured AAI asks adults about their childhood memories related to their relationship with a primary caregiver. The interview is aimed to trigger mental representations concerning early childhood attachment-relationship functioning. Probes were designed to trigger memories concerning experiences of rejection, trauma, physical maltreatment, psychological maltreatment and separation were inserted throughout the interview.

Researchers have used various assessment categories for the AAI, but the most common categories are: secure-autonomous, preoccupied, and dismissing-avoidant (Roisman et al., 2007). There is much debate concerning how the AAI categories map on to insecure (avoidant and anxious) attachments styles; however, many researchers have found that the "dismissing" category of the AAI maps onto the avoidant attachment style while the AAI category of "preoccupied" maps onto the anxious attachment style (Mikulincer & Shaver, 2007; Roisman et

al., 2007). The second and third themes (motivation for sex with partner and sexual partnering and sexual behavior) were examined to inform my understanding of adult attachment insecurity in sexual relationships. Though no specific questions related to psychological distress were asked during the semi-structured interview, many of the participants talked in depth about mental health issues related to their relationship with parents and intimate/sexual partners. The semi-structured interview guide can be found in Appendix C.

**Analytic Strategy**

My data analytic strategy was informed by the *Quantitative-qualitative Model* of mixed method's data analysis (Creswell, 2006; Leech & Onwuegbuzie, 2009). In this method, the quantitative data is the primary source of data, while the qualitative data is used to support and provide a more detailed description of the quantitative results. The analysis of the interviews was guided by a content analysis approach. A directed content analysis approach, as described by Hsieh and Shannon (2005), was used to identify themes based on the findings from the hypotheses tested in the quantitative component of the study. The qualitative interviews were created to more generally explore YBMSM's experiences of attachment in childhood, sexual behavior, and mental health. This exploration was created to potentially address some of the gaps in understanding the quantitative findings. Therefore, my qualitative analysis was guided by four main aims: Aim 1) to explore how childhood adult attachment insecurity may be related to symptoms of psychological distress among YBMSM, Aim 2, to understand how childhood attachment may influence sexual behavior among YBMSM, Aim 3) *to understand how psychological distress is related to sexual behavior among YBMSM*, and Aim 4) to understand how YBMSM with an insecure childhood attachment style differ in their mental health and sexual behaviors in young adulthood from men with a secure attachment style.

**Coding and Analysis**

I began the analyses of the qualitative data with the quantitative results in mind. Following Rosiman and colleagues' (2007) directed content analysis; I started by reading all thirty transcripts to immerse myself in the data. Initially, I met with four members of the BCS study team, to discuss, compare, and select codes for the entire interview. Based on the modified questions from the AAI, each complete interview was coded as *Secure*, *Avoidant*, *or Anxious*. After the other coders and I coded 4 interviews, we developed the first draft of the codebook, which included the primary and secondary codes and their definitions. At this point, two members of the BCS interview team continued to code transcripts using the codebook.

Because my primary method was quantitative, I set aside the qualitative data while I completed my hypotheses testing. Once I completed this part of my analysis, I re-read the transcripts focusing on the first three themes and with the quantitative results in mind. I wrote memos related to interesting findings or discoveries related to my qualitative research aims. On the second read, I coded for themes related to my quantitative hypotheses and the results from the hypothesis testing. For instance, hypothesis one was specifically related to understanding the relationship between attachment and psychological distress; thus, I coded for responses I felt related to this concept.

After I developed the codebook I attempted to make the connection between codes related to each of my qualitative aims. First, I listed each qualitative research aim and the corresponding result of the quantitative hypothesis testing. This strategy resulted in four clusters that helped direct my analyses. I looked for overlap between codes related to the cluster. For instance, for the first research question, I looked at where the codes "mental health" and "sexual behavior" overlapped. Second, using my notes, memos, and codebook, I started to explore the

relationship between attachment, mental health, and sexual behavior among YBMSM. Last, to exemplify these relationships, I developed a series of data displays. All interviews were transcribed and entered into NVIVO 10 software for data management and organization purposes. The data displays identifying overlapping codes for each of my four clusters can be found in Tables 1-3 of Appendix B.

## Study Variable Characteristics

### Cross-sectional Variable Description

The sample distribution of independent and dependent variables can be found in Table 8. The mean attachment anxiety score was 3.68 (*SD* = 1.60). The mean attachment avoidance score was 2.78 (*SD* = 1.62). The mean score on the K10 scale was 1.72 (*SD* = .76) indicating that the sample had overall medium level of psychological distress. About 52% of the sample (*n* = 119) had low psychological distress, 40% of the sample (*n* = 92) had medium levels, and about 7% of the sample (*n* = 17) had high levels of psychological distress. The mean of the BSI depression subscale was 0.73 (*SD* = 0.80). The mean for the BSI anxiety subscale was 0.72 (*SD* = 0.78). About 66% of the sample reported at least one UAI encounter in the last two months. About 29% of the sample reported a serodiscordant UAI encounter in the last two months.

### Structured Diary Variable Description

Sample distributions for the independent and dependent variables in the diary component can be found in Table 9. The attachment anxiety (*M* = 3.70, *SD* = 1.69) and attachment avoidance (*M* = 2.78, *SD* = 1.63) mean scores were similar to the cross-sectional. The K10 scores for the diary subsample (*M* = 1.57, *SD* = 0.71) and the cross-sectional full sample were similar. About 53% of the sample (*n* = 81) had low psychological distress, 36% of the sample (*n* = 36) had medium levels, and about 11% of the sample (*n* = 17) had high levels of psychological

distress. However, the mean score for the BSI depression subscale ($M$ = 2.00, $SD$ = 0.88) and the BSI anxiety subscale ($M$ = 2.14, $SD$ = 0.93) were higher in the diary measure than in the cross-sectional measure. Over the eight-week period about 37% of participants reported at least one week where they had a UAI encounter and about 14% reported at least one week where they had a serodiscordant UAI encounter.

**Qualitative Variable Descriptions**

The sample distribution of key variables used in the qualitative component of this dissertation can be found in Table 10. The mean attachment anxiety score was 3.94 ($SD$ = 1.80). The mean attachment avoidance score was 2.89 ($SD$ = 1.70). About 42% of the sample ($n$ = 11) had low psychological distress, 38% of the sample ($n$ = 10) had medium levels, and about 19% of the sample ($n$ = 5) had high levels of psychological distress ($n$ = 4 were missing). The mean BSI depression subscale score was 0.97 ($SD$ = 1.06). The mean for the BSI anxiety subscale was 0.90 ($SD$ = 1.04). Rates of sexual risk behavior were relatively low in the sample. About 52% of the sample reported at least one UAI encounter in the last two months. About 5% of the sample reported a serodiscordant UAI encounter in the last two months.

# CHAPTER IV

# ADULT ATTACHMENT INSECURITY AND PSYCHOLOGICAL DISTRESS

The following chapter presents quantitative and qualitative findings for Hypothesis 1. This chapter tests the quantitative Hypothesis 1 and uses the qualitative data to further explore the relationship between childhood attachment and sexual behavior among YBMSM in New York City. The first part of the chapter presents the quantitative findings for both the cross-sectional and diary data and discusses the results. The second part of the chapter presents the qualitative data and discusses the findings. The chapter concludes with the triangulation of the quantitative and qualitative findings. This chapter will explore the following hypotheses and present supporting qualitative data from the interviews:

Hypothesis 1a. Men who have higher attachment anxiety scores will have higher levels of general symptoms of psychological distress than men who have lower attachment anxiety scores.

Hypothesis 1b. Men who have higher attachment avoidance scores will have higher levels of general symptoms of psychological distress than men who have lower attachment avoidance scores.

Hypothesis 1c. Men who have higher attachment anxiety scores will have higher levels of depression than men who have lower attachment anxiety scores.

Hypothesis 1d. Men who have higher attachment avoidance scores will have higher levels of depression than men who have lower attachment avoidance scores.

Hypothesis 1e. Men who have higher attachment anxiety scores will have higher levels of anxiety than men who have lower attachment anxiety scores.

Hypothesis 1f. Men who have higher attachment avoidance scores will have higher levels of anxiety than men who have lower attachment avoidance scores.

## Quantitative Findings

Table 11 presents bivariate correlations between attachment avoidance, attachment anxiety, general psychological distress, depression, and anxiety. The results suggest that there was a moderate positive linear relationship between attachment avoidance and attachment anxiety, $r = .58$, $p < .001$. There was a moderate positive linear relationship between attachment anxiety and general psychological distress, $r = .47$, $p < .001$, depression, $r = .49$, $p < .001$, and anxiety, $r = .46$, $p < .001$. Furthermore, there was a positive linear relationship between attachment avoidance and the psychological distress variables. Lastly, there was also a moderate positive linear relationship between attachment avoidance and general psychological distress, $r = .38$, $p < .001$, depression, $r = .38$, $p < .001$, and anxiety, $r = .40$, $p < .001$.

Table 12 displays the multiple regression results for attachment insecurity predicting general psychological distress, depression, and anxiety. These analyses utilized the cross-sectional data only. Age, HIV status, and relationship status were included in the model as covariates. Model 1 predicted 25% of the variance, $R^2 = .26$, $F(5, 221) = 15.83$, $p < .001$, in general psychological distress. Attachment anxiety, $\beta = .17$, $p < .001$, attachment avoidance, $\beta = .08$, $p < .05$, and age, $\beta = .02$, $p < .05$, significantly predicted general psychological distress. The Cohen's d effect size for attachment anxiety was medium ($\eta = .09$), while the effect size for attachment avoidance was small ($\eta = .02$). Model 2 predicted 25% of the variance in depression, $R^2 = .25$, $F(5, 221) = 14.71$, $p < .001$. Attachment anxiety, $\beta = .20$, $p < .001$, and attachment

avoidance, β = .36, $p < .05$, significantly predicted depression. The Cohen's d effect size for attachment anxiety was medium ($\eta = .11$), while the effect size for attachment avoidance was small ($\eta = .01$). Model 3 predicted 24% of the variance in anxiety, $R^2 = .24$, F(5, 221) = 14.08, $p < .001$. Attachment anxiety, β = .83, $p < .001$, and attachment avoidance, β = .48, $p < .01$, significantly predicted anxiety. The Cohen's d effect size for attachment anxiety was medium ($\eta = .08$), while the effect size for attachment avoidance was small ($\eta = .03$).

Table 13 displays the results for the population average regression model using the structured diary. The GEE analysis technique was used to examine the relationship between the psychological distress variables and sexual risk behavior. There were 470 observations, 128 groups, and about 3.7 observations per group (min: 1, max: 8).

Model 1 predicting general psychological distress was statistically significant, $\chi^2 = 51.37$, $p < .001$. Higher attachment anxiety, β = .07, $p < .05$, higher attachment avoidance, β = .12, $p < .01$, and being older, β = .02, $p < .10$, was associated with higher levels of general psychological distress over the eight-week period. In addition, being single in comparison to being married, β = -.26, $p < .02$, was associated with less general psychological distress. Model 2 predicting depression was significant, $\chi^2 = 47.92$, $p < .001$. Higher attachment anxiety, β = .11, $p < .01$, and attachment avoidance, β = .11, $p < .05$, was associated with higher levels of depression over the eight-week period. Model 3 predicting overall anxiety was significant, $\chi^2 = 30.30$, $p < .001$. Higher attachment anxiety, β = .08, $p < .10$, and attachment avoidance, β = .12, $p < .05$, was associated with higher levels of anxiety over the eight-week period.

**Quantitative Discussion**

The findings were consistent with my hypothesis; attachment insecurity (i.e., attachment anxiety and avoidance) was related to increases in general psychological distress, depression, and

anxiety. The cross-sectional findings are in line with the research literature that posits that the magnitude of the relationship between attachment insecurity and depression is less for those who are more avoidant compared to those who are more anxious (Mikulincer & Shaver, 2007). However, the cross-sectional findings are in opposition to the diary findings, which suggest that the magnitude of the relationship between attachment avoidance, general psychological distress, depression, and anxiety is greater than for attachment anxiety. As mentioned in Chapter 2, the relationship between attachment avoidance and psychological distress has produced mixed findings (Mikulincer & Shaver, 2007). Thus, it could be the case that attachment avoidance is associated with varying expressions of psychological distress.

Some researchers have suggested that the difference in the magnitude of the relationships of anxious and avoidant attachment on depression may be because specific symptoms of depression are related to specific attachment styles (Batgos & Leadbeater, 1994; Bifulco, Moran, Ball, & Bernazzani, 2002; Bifulco, Moran, Ball, & Lillie, 2002; Davila, 2001; Murphy & Bates, 1997; Zuroff & Fitzpatrick, 1995). For instance, Murphy and Bates (1997) found that anxious attachment was associated with interpersonal components defined as the need to please others, whereas avoidant attachment was associated with factors related to autonomy such as self-criticism, perfectionism, and lack of control. Blatt, Lundblad, Kingdon, McLean, and Roberts (1974) defined interpersonal factors, such as dependency, as *anaclitic* (a strong emotional dependency on others) forms of depression while achievement related aspects of depression were defined as *introjective* (an unconscious adoption of the ideas and beliefs of others) forms of depression. The current study did not specifically examine these types of depression symptoms, thus it cannot be concluded that these specific differences do or do not exist for YBMSM. Future studies examining the relationship between depression and attachment insecurities may want to

examine different aspects of depression that may be differentially related to attachment avoidance and attachment anxiety.

Results from the linear regression models used for the cross-sectional data and the population average models used for the diary data showed a relationship between attachment insecurity dimensions and psychological distress. Other intervening variables may have accounted for at least some of the variance in depression and anxiety. For instance, it could be that for individuals who are anxiously attached, the hyperactive activation of their attachment system could lead to over-dependence on their intimate partner, which in turn could lead to more depression and/or anxiety (Mikulincer & Shaver, 2007). For individuals with an avoidant attachment style, their compulsive self-reliance and need for positive self-appraisal (two traits associated with this attachment style) could lead to depression when these individuals receive external signals that he is not performing well or is weak (Mikulincer & Shaver, 2007). For instance, depressive symptoms could emerge among YBMSM who have and avoidant attachment style when they are rejected by a peer or intimate partner. The rejection could conflict with their positive self-appraisal, thereby causing feelings of loneliness or sadness. Future research may want to examine different pathways by which attachment avoidance and attachment anxiety are differentially associated with symptoms of psychological distress.

**Qualitative Findings**

The qualitative aim associated with Hypothesis 1, *to explore how childhood adult attachment insecurity may be related to symptoms of psychological distress among YBMSM,* is examined in this section. Based on the coding of the qualitative section of the AAI, 17% of participants had a secure attachment style, 30% had an anxious attachments style, and 53% had an avoidant attachment style. Young men who had an insecure (i.e., anxious or avoidant)

attachment style had scores that placed them in the medium or high general psychological distress categories of the K10 compared to men who had a secure attachment style. Overall, the qualitative interview results concerning Hypothesis 1a suggested that the relationship between attachment and psychological distress may be more complex than what was suggested by the quantitative findings. Men with an insecure attachment style often discussed issues of trauma in the form of parental abuse, drug use, and a history of being in the foster care system. The interviews suggested that the relationship between attachment and psychological distress may be mediated and/or moderated by social (e.g., family structure) and psychological (e.g., self-efficacy) factors.

**Attachment Security and Mental Health**

Similar to young men with an avoidant and anxious attachment style, securely attached men experienced negative life events (such as, parental drug use and divorce) early in childhood. However, securely attached men emotionally bonded with their primary caregivers during their early childhood. Two young men bonded with their grandmother who became their primary caregiver, two men bonded with their mother, and one participant reported forming emotional bonds with both his parents. All of these men also reported low psychological distress in the cross-sectional survey.

Men who were securely attached would report loving and supportive relationships in their childhood. For instance, one 23-year-old man who reported low psychological distress said:

> *As a young child, I got along with my parents. Especially my mom 'cause I felt like I can always talk to my mom about anything. I always remember doing more activities with them when I was younger.*

In the next example, a 27-year-old man who reported low or no psychological distress talks about how his mother was supportive despite being abused as a child and a single mother. He said:

> *Nurturing. All of 'em? She was just always nurturing, just always very motherly, just very caring. I can't think of a specific event, but she had an abusive childhood, and luckily for us – my sister and I – she didn't continue that cycle, but she completely reversed it, so she was extra caring for us, extra supportive, extra there for us because her childhood was so bad.*

In addition to reporting strong emotional bonds with a primary caregiver, men with a secure attachment style also reported that the person they had a close emotional bond with in childhood was supportive of their sexual orientation. One 28-year-old young man with low psychological distress said:

> *The conversation I talked about before with my mom, before I even came into myself. The day that I came out to my mom and you know, as gay and asked her, "How do you feel?" And she was like, "I feel like I love you, and that's all I need to know."*

Also, two of the men who had a secure attachment style made positive reports about concerning their relationship with their religion. One 23-year-old man who had low psychological distress said:

> *I would say my pastor, religious-wise. When I was going to college, he gave me about $2,000.00 to help me with books and stuff, and before I went to Atlanta. So, yeah, so I would say religious-wise, too. The mothers in the church, and all of 'em, took a collection and did that. And they didn't even have to do that, but they did it 'cause I go to that church faithfully, so I was kind of active in church there. And I even expect it, so that's definitely support. So I would definitely say my religious – yeah. Definitely.*

Early childhood emotionally supportive relationships from primary caregivers seemed to translate into emotionally supportive and stable relationships for securely attached young men in adulthood. One man 23-year-old man with low or no psychological distress said:

> *Interviewer:* *What about aspects of your early experiences that you think might have held you back, like held you in terms of your development or maybe even have been setbacks for you?*
>
> *Interviewee:* *I don't think it set me back. I don't feel like it has, because if I was to get emotional support from my parents I honestly have had close friends that I'm still close friends with today when I was five,*

> *six years old, and their parents they're like parents to me. So I got emotional support elsewhere. I was lucky to find that. But I think if I didn't I think I probably would be different.*

**Attachment Avoidance and Mental Health**

Childhood attachment avoidance seemed to stem from the lack of bond formation with a primary caregiver in childhood. Each participant with an avoidant attachment style discussed particular moments in which they felt physically and/or emotionally distant from their mother and/or father. Usually these instances happened around or before the age of five years and shaped future interactions with parent(s). There seemed to be a clear trajectory from the lack of emotional bond formation in childhood with a lack of bond formation with peers and intimate partners in adulthood. The way in which attachment avoidance was related to symptoms of psychological distress was less clear. Some participants appeared to be unaffected by their inability to form emotional bonds, while others were clearly distressed for this reason. A prominent theme was that men who had an avoidant attachment style were aware that they lacked an ability to form emotional bonds and sometimes struggled to cope with this knowledge. Participants knew that it was not healthy to distrust and not be close to other individuals.

Participants with an avoidant attachment style tended to explicitly report not having an emotional connection with their mother and/or father in childhood. In the following dialogue, a 25-year-old man with a medium/high level of general psychological distress discusses his lack of an emotional bond with his mother:

> *I don't know if [the bond]is close. Kind of distant, I guess…I mean there's no like emotional bond – I know a lot of people are like momma's boys and stuff, and it's not like I hate my mother but it's like – it's not, I wouldn't say close…*

Men with an avoidant attachment style who had medium to high levels of general psychological distress often discussed lacking an emotional bond with their mother and, if present, father in

childhood. Young men who discussed their inability to form emotional bonds often would allude to the idea that this inability was not socially acceptable. For example, the same young man who was quoted above discussed his feelings concerning the absence of his father during his childhood:

> *I wasn't an emotional kid. I'm not a sociopath or anything but like I wasn't like – I knew[my father] wasn't there but I was like "Alright, big deal, big whoop."*

This lack of emotional bond formation seemed to be internalized and extended to an inability to form emotional bonds with peers and intimate partners in young adulthood. The connection between the inability to form bonds in childhood and young adulthood is evidenced by the observation made by one young man aged 24 years:

> *[My relationship with my mother] makes it hard for me to trust and wanna be close to people… I'd never had any friends in school. I never – everyone always picked on me when I was younger. I was the most hated. It caused me to be so afraid of people. I was so afraid of people, and that's why I have a people – person problem now. It may not seem like it, but I do, and I pride myself on intelligence, but when it comes to social skills I suck. And I need to exist in this world with people… I'm just – I've lost connection with the world, because the world gave up on me.*

The awareness of being afraid or seemingly unable to develop emotional bonds with peers and/or intimate partners seemed to be an area in which participants with an avoidant attachment style demonstrated symptoms of psychological distress. There appeared to be a tension between the need and desire to establish emotional bonds with others, but also an apprehension to do so. This apprehension appeared to be based on the expectation of being hurt or disappointed by another individual.

Participants with an avoidant attachment style also discussed not feeling close to their mother and/or father because of the religious views of their family did not support same sex relationships. The statement below is from a participant who felt that he could never have a

strong emotional bond with either of his parents because he was gay. A young man (aged 30 years with a medium/high level of general psychological distress) stated:

> *Like I was saying before, I would keep to myself, not let anybody in, put up walls, close my door and not want to be bothered, and that's how I am now. Like I said, but slowly I'm trying to open the door and let them in. I don't wanna inundate [my parents] with every aspect of my life because they are deeply religious. My dad is still – he's still a practicing minister, pastor, and I know this is in direct violation of what he believes in, and I don't wanna – he's old and I don't – he is. He's old. He's like almost 70, so I don't wanna stress him out, so, yeah, I just – I keep to myself.*

Participants with an avoidant attachment style frequently spoke about their fear of developing emotional bonds with other due to their fear of rejection. The passage above provides a specific example of religion as a barrier to forming an emotional bond with parent(s). Young men who had an avoidant attachment style often discussed their fear of coming out to their parents because same-sex relationships were seen as a sin in the participant's parent's religion. Thus, in addition, to the physical or emotional absence of a parent, religious beliefs also seemed to impede young men with an avoidant attachment style from being able to develop emotional bonds with parents.

Young men who had an avoidant attachment style reported the lack of an ability to develop emotional bonds with intimate partners in young adulthood. The majority of young men wanted to develop emotional bonds with others but was unable to, while a small minority of young men did not seem very interested in developing an emotional bond with an intimate partner. The excerpt below is from a 20-year-old young man who reported low psychological distress and who felt unable to form emotional bonds with others due to his distant relationship with mother. He stated:

> *It makes it hard for me to trust and wanna be close to people… 'Cause, if you can't count on your mother, who else you would count on? You can't trust anybody. She's supposed to be my go to person and I can never go to her for anything. So, it just – it makes me – I don't know, it just makes me distance myself from people.*

The excerpt above expresses the sentiment of many young men with an avoidant attachment style who were distressed by their inability to establish emotional bonds with others. Though there were young men distressed by their inability to develop emotional bonds, other young men with an avoidant attachment style did not necessarily exhibit the same distress. For instance, one young man aged 25 years with medium/high level of psychological distress said, "*I'm going to sound like a sociopath, but it's like I just don't – it just seems pointless to have an emotional attachment."* Though there was a small minority of men who didn't seem distressed concerning their inability to form emotional bonds with others in adulthood, most young men with an avoidant attachment style were concerned about their lack of emotional bond formation.

**Attachment Anxiety and Mental Health**

YBMSM who had an anxious attachment style developed some kind of emotional bond with a primary caregiver in childhood. However, for several participants, the emotional bond developed seemed to be unstable. Young men who were anxiously attached often spent time away from their primary caregiver, were hurt by, and/or were often disappointed by their primary caregiver. In contrast to YBMSM who had an avoidant attachment style, some men seemed to have either mended relationships with their parent's later in life or learned from the mistakes of their parents. Though many young men with an anxious attachment style were able to form emotional bonds with a mother and/or father in young adulthood, they continued to report medium to high levels of psychological distress.

Young men with an anxious attachment style many times spoke explicitly about their relationships with their primary caregiver (often times their mother) in childhood. Men reported their feelings of discontent from being abandoned emotionally or physically by a parent and the struggle to cope with those feelings. This is exemplified by the statement of a 25-year-old man

with a medium/high level of psychological distress. He discusses his experience of constantly being separated and then reunited with his mother, stating:

> *Our relationship was like an off and on thing. She basically had a habit of putting me in all these hospitals and group homes without actually sitting down and talking to me and finding out what was really getting to me. Instead she just wanted to run away from it. So our relationship was off and on. I actually thought at one point that that my own grandmother was my biological mother because my biological mother was off and on in the picture and my grandma was the one who changed my diapers and fed me and stuff like that when I was an infant…*

The example above is indicative of many young men who explicitly discussed being physically distant from their mother during childhood. The passage also shows an emotional distance from the mother and a deeper emotional bond with the grandmother. This participant expressed a desire to feel close to his mother though he felt rejected by her. Though men did not often explicitly say that they felt sad, this and other similar participants expressed distress by their feelings of rejection by their mother and/or father in childhood.

In other interviews it was clear that participants felt emotionally distant from their parent(s) even though they were in the same physical location as their parents. Emotional distance by parents in childhood often translated into emotional distance from others in young adulthood. For example, one young man lived with both his mother and father during childhood but felt that they were cold towards him. The 28-year-old man with a medium/high level of psychological distress said:

> *Both parents. I think I come off as really conservative, really – well, sometimes. When I'm not under the influence or I'm not having an unusually happy day, I come off as very serious, maybe a little cold, and I think it's just that's how my parents come off – very serious, very – maybe a little self-righteous, a little judgmental.*

Young men with an anxious attachment style often reported feelings of emotional and/or physical distance from their parent(s) that contributed to the way they formed emotional bonds in

young adulthood. The same young man described how he believed his parent's coldness affected him as a young adult:

> *So, I'm always at conflict with how I naturally come off and how I actually am because I – sometimes I do feel that way, but then, sometimes – most of the time – I'd say more so I don't feel that way, but people tend to interact with me in that way. I think people tend to be more formal with me, versus just – "Eh. Whatever."*

In contrast to young men with an avoidant attachment style, some young men with an anxious attachment style seemed to overcome the physical and/or emotional distance from their parent(s) in childhood. In the excerpt below, a 29-year-old young man with low or no psychological distress discusses how he became close with his mother after years of neglect from her drug habit. He said:

> *Yeah. Because now – I mean I feel I was asking … like when I was younger or not, because now we're like extremely close. I tell my mother everything, everything. She knows about my sexuality. She has no problem with that. We share everything, and there are no trust issues – you know what I mean? – so we've gotten past all that.*

He later goes on to talk about how his mother's drug use and his subsequent poor living circumstances inspired him to be successful in life. He said:

> *I know I wanted better for myself. I mean I know she did the best she could, but then between that and the drug usage, it wasn't really the best kind of growing up. So I knew I was gonna go to school, and I knew I wanted to better myself, and like I said, I didn't want to follow down the same road that she did – basically just doing nothing. Once she hit retirement, it was just like, okay, then the next two years it was drug haven, like all day, every day. And it was just like that's not something I want.*

Though some young men seemingly overcame the barrier of having an unstable emotional attachment to their mother and/or father, some participants saw how their unstable attachment in childhood negatively affected them in adulthood. One 22-year-old young man with a medium/high score on the K10 said:

*I could say it does to have a negative because my friends kind of pushing away from me because of some of the negatives that my mom has taught me, so I'm putting that onto them and it's like – they're like, "XXX, you have to relax. You're pushing us away." My mom was pushing me away when I was a kid, so everything that she did to me I'm doing to them, so, yeah, it does have a little negative aspect of it.*

**Qualitative Discussion**

Overall, many of the young men had an insecure attachment style. These young men reported familial problems in childhood (i.e., absent parent(s)/caregivers, family drug or physical abuse present, rejection by parent[s]) that translated into trouble establishing emotional bonds with peers and/or intimate partners in young adulthood. Though there were many similarities between young men with avoidant and anxious attachment styles, there were also notable differences. First, some men with an avoidant attachment style expressed indifference about forming emotional bonds with others, while some men felt distress for this reason. All of the young men with an anxious attachment style were consistently distressed by their lack of emotional bond formation in childhood. However, many of these men were nonetheless able to form emotional bonds in young adulthood. Second, though men with an avoidant attachment style continued to feel distant from their parents or primary caregivers in adulthood, some young men with an anxious attachment style were able to overcome early experiences of absence /distance and develop emotional bonds with parent(s) and others in young adulthood.

Young men who had a secure attachment style reported supportive familial relationships with parents and/or other primary caregivers even after experiencing challenging live events such as parental drug abuse and divorce. In addition, young men with a secure attachment style more often had positive childhood memories with a parental figure (i.e., mother, father and/or grandparent) than participants who had an insecure attachment style (i.e., avoidant or anxious). Securely attached participants also reported having at least one parent who was accepting of their

sexual orientation, while young men with an insecure attachment style often reported not having supportive parents. Further, many YBMSM who were securely attached reported finding comfort in their primary caregiver before, during, and/or after they came out.

**Pathway from Childhood Attachment to Adult Attachment and the Mental Health Implications**

The qualitative results support Bowlby's (1980) theory concerning the link between attachment insecurity and psychological distress. Young men with an avoidant or anxious attachment style tended to experience physical or emotional distance from parent(s) and lack another primary caregiver to provide social and emotional support during adolescents. As discussed by Bowlby, this lack of an emotional bond contributes to feelings of rejection and loneliness in young adulthood, thus making it difficult for these men individuals to develop emotional bonds. What is less clear concerning the relationship between childhood attachment and psychological distress is the way in which a myriad of life circumstances potentially mediate and/or moderate this relationship.

All men in the sample experienced stressful life events during adolescences that contributed to their childhood attachment. In addition, childhood attachment style generally seemed to predict adult attachment style to the extent that if a young man had an insecure attachment style in childhood he would have an insecure attachment style in young adulthood, and the same was true for young men with a secure attachment style. To understand the link between childhood and adult attachment it is useful to refer back to Hazan and Shaver's (1994) developmental attachment phases (Figure 2). In early childhood (Phase 2), children with a secure attachment style use parent(s) as a safe haven and secure base in order to explore the world and attempt to develop emotional and social bonds with peers. The majority of men in the qualitative interviews experienced the physical or emotional absence of a parent, which can lead to the

absence of a secure base and safe haven in early childhood. However, young men with a secure attachment style who formed attachment relationships with primary caregivers (e.g., grandmother) continued to have an emotional bond with a parent no longer living in the same house (e.g., father of a divorced child), and/or reinforced their bond with their mother when faced with an absent father.

Without having a safe haven or secure base in early childhood there is a breakdown in the transition from childhood to adult attachment that can lead to the formation of insecure emotional and social bonds with peers and intimate partners in adulthood. Young men in the qualitative sample who had an insecure attachment style (and thus did not physically and/or emotionally have a safe haven and secure base) often felt that their childhood experiences with their primary caregiver directly affected their ability to form emotional and social relationships with others in young adulthood in comparison to young men who had a secure attachment style. Thus, insecure young men were not able to feel secure when a peer or intimate partner was near or comforted by attachment figure when distressed (proximity maintenance) in young adulthood. Anxiously attached young men often described being scared to form emotional bonds or being vulnerable in a way they could be hurt by another person, while young men with an avoidant attachment style reported either not wanting to form emotional bonds or being distressed by not being able to form emotional bonds with peers and/or intimate partners. Overall, the results from the qualitative interview support the idea that young men who experience stressful life events, and thus have disruptions in the developmental process associated with attachment style transition, are vulnerable to feelings of distress and to developing an inability to form health emotional bonds with peers and intimate partners. However, men in the sample who had a secure attachment style either had new attachment figures introduced to them or continued to maintain

an emotional bond with an attachment figure who did not live with them during childhood. This formation of an attachment bond in early childhood appeared to have allowed these men to have a safe haven and secure base and transition more effectively into adulthood with a secure attachment style than young men who did not have a secure attachment relationship during childhood.

**The Influence of Stressful or Traumatic Life Events, Attachment Transition, and Mental Health**

Researchers have found that experiencing traumatic and/or stressful life events in childhood are related to attachment insecurity and psychological distress across (Main et al., 1985). Consistent with this line of research, young men who experienced the absence of one or more parents, drug use by a parent, or abuse by a parent were more likely to have an insecure attachment style and to report medium or high general psychological distress. Interestingly enough, though the majority of men reported stressful and/or traumatic life events during their childhood, some men did not have medium or high psychological distress while others did. All the men who were securely attached reported no or low psychological distress, which is consistent with study findings from research on attachment, traumatic life events and psychological distress (Rholes & Simpson, 2006).

Young men with an anxious attachment style often had medium to high scores on the K10, but some men had low or no psychological distress and were able to overcome childhood stressful and/or traumatic life circumstances in young adulthood. One young man whose mother used drugs and whose father was a drug dealer during most of his childhood explained that he had a close emotional bond with his mother in young adulthood after she was no longer using drugs, but did not have this bond as a child. It may be that the negative ramifications of drug use were eliminated after his mother stopped using drugs and thus the young man was able to

develop an emotional bond with his mother. However, it may also be the case that young men who are anxiously attached in childhood but overcome some of the effects of traumatic life events are able to somehow repair the emotional bond with the primary caregiver and thus limit some of the negative effects of attachment insecurity on psychological distress.

Men with an avoidant attachment style seemed to either be indifferent concerning their ability to develop emotional bonds or were highly distressed. All of the men with an avoidant attachment style experienced stressful or traumatic life events often surrounding the absence of a primary caregiver and all reported medium to high general psychological distress. Therefore, even though young men with an avoidant attachment style discussed feelings of indifference towards not being able to develop emotional bonds with others, they experienced heightened levels of distress. It could be the case that men with an avoidant attachment style have different ways in which they cope with the stress of not having a stable emotional bond with a parents or primary caregiver in childhood and an inability to develop emotional bonds with others in young adulthood. *Avoidance or disengagement coping* (a negative coping concept), is the idea that youths' coping or reaction to traumatic or stressful life events are typically associated with emotional problems (e.g., high anxiety in social situations) or maladaptive behaviors (e.g., being violence towards other individuals; Causey & Dubow, 1992; Dempsey, 2002). Youth exhibiting this coping strategy usually distance themselves psychologically and/or physically from a stressful life event. Other symptoms include acting out in social situations (e.g., getting into fights), worrying, or feeling sad. Youth experiencing avoidance or disengagement coping often experienced heightened levels of depression and anxiety (Causey & Dubow, 1992). Thus, young men with an avoidant attachment style who are seemingly indifferent concerning their ability to develop emotional bonds but have medium to high levels of general psychological distress may

be negatively coping with the stress of not being able to develop emotional bonds. Future research should examine how men with an avoidant attachment style cope with stressful and/or traumatic life events and how their coping response is related to psychological distress.

**Attachment, Sexual Orientation Disclosure, and Mental Health**

In addition to the importance of traumatic or stressful life events that were experienced by most of the sample in childhood, sexual orientation disclosure seemed to be a major theme that influenced attachment relationships and mental health status for the young men. Studies have found that LGBT individuals who have a secure attachment style are more open concerning their feelings with peers and intimate partners because they are more comfortable with the attachment figure than individuals who are insecurely attached (D'Augelli, Grossman, Starks, & Sinclair, 2010; Rothman, Sullivan, Keyes, & Boehmer, 2012). There have been very few studies conducted which examine the relationship between attachment and the coming out process, but the studies that have been conducted support the notion that men with a childhood and young adulthood secure attachment style have an easier time with disclosing or coming out to their friends, family, and peers and thus have less distress than men who have an insecure attachment style (Jellison & McConnell, 2004). There could be several explanations for this findings, however, one reason could be that securely attached young men continue to have their primary caregiver as a secure haven (see Figure 2) while also having friends and/or intimate partners who provide support during the disclosure/coming out process. This notion is supported by data from the qualitative interviews. Out of men who had a secure attachment style, two had mothers who knew they were gay at an early age and continued to love and support them, one had two parents that accepted and continued to love him after he disclosed to them, and one young man had an accepting and loving grandmother who supported him during the coming out process. Only one

man had not disclosed to his grandmother, his primary caregiver, for fear that he would lose her support and love. Many of the young men with a secure attachment style reported being grateful for the support of their primary caregiver and supportive network of friends. In contrast, men with an avoidant or anxious attachment style many times had either not disclosed to their primary caregiver or had been rejected by their primary caregiver after disclosure. Many of these young men discussed their feelings of distress, or in the case of some of the men with an avoidant attachment style their indifference, because they felt uncomfortable with disclosure or were rejected after disclosure.

**Attachment, Religion, and Mental Health**

Religion was often discussed in the qualitative interviews and played an important role in understanding attachment and mental health among YBMSM in two ways: 1) some young men with a secure attachment style discussed finding social support from members of their church or from God, and 2) some young men with an anxious or avoidant attachment style reported being rejected by family members in the name of religion and or by their church. Researchers examining the role of religion in the lives of Black gay men have found support for both of these assertions (Hill & McNeely, 2011; Kurtz, Buttram, Surratt, & Stall, 2012; Pitt, 2010; Wilson, Wittlin, Muñoz-Laboy, & Parker, 2011). For instance, Pitt (2010), in a qualitative study of 34 gay Black men, found that regular church attendance and engagement with the church members was an important form of social support in the lives of these men. Thus, it may be the case that YBMSM who are able to develop strong emotional bonds with a primary caregiver in childhood feel more comfortable with seeking support provided their religious institution and in turn have less psychological distress than young men with an insecure attachment style.

Researchers have found that much of the stigma within the Black community concerning gay men stems from the close ties that the community has to religious institutions (Kraft, Beeker, Stokes, 2010). Researchers have found that negative attitudes concerning BMSM can lead to feelings of isolation and alienation from the community (Glick et al., 2012; Harawa et al., 2008; Kraft, Beeker, Stokes, & Peterson, 2000). The findings from this body of research are consistent with the qualitative findings from this study, which suggest that young men who are rejected by their religious institution and/or community members experience more symptoms of psychological distress. Overall there is a tension between the role or religion and religious institutions as supportive entities and an institution that has historically stigmatized and rejected gay men. Future research may want to better evaluate this tension and how it may affect the mental health of YBMSM.

## Conclusion

The quantitative and qualitative findings suggest that there is a relationship between attachment insecurity (attachment anxiety and avoidance) and general psychological distress among YBMSM. In the quantitative section I focused on explaining why the strength of the relationship between attachment anxiety and depression was greater than the relationship between attachment avoidance and depression by introducing Blatt's (1974) idea of *anaclitic* vs. *introjective* forms of depression. The qualitative data supported and enhanced the quantitative findings by specifying additional pathways through which attachment in childhood is related to attachment young adulthood and psychological distress.

The these findings presented three additional areas of inquiry that may be important to understanding the ways in which attachment in childhood and young adulthood is related to psychological distress among YBMSM. First, future research should examine the transition

between childhood and adult attachment and its relationship to mental health in young adulthood among YBMSM. Men experienced a number of challenges due to their sexual orientation and other traumatic and stressful life events. Thus, understanding how these factors contribute to attachment and mental health are important in conceptualizing how to help these young men make more positive transitions into adulthood. Second, stressful life events and/or traumatic life events and attachment may be key points of interests in the lives of these men that are directly tied to mental health. Third, being able to develop emotional bonds seems to mitigate these challenges to help young adults either be successful or not across the life course. Fourth, sexual orientation disclosure and the coming out process seemed to be uniquely related to mental health among YBMSM, and attachment seemed to moderate this relationship. Thus, having a secure childhood attachment style seemed to help facilitate sexual orientation disclosure because young men had supportive parents and peers. In contrast, YBMSM with an anxious or avoidant attachment style many times had not disclosed to parent(s) or primary caregivers and described a the fear around disclosing to others. Last, the role of the religion continually arose as a key area of interest. Religion both facilitated bond formation in childhood and destroyed emotional bonds in late childhood and early adulthood. Better understanding the friction between religion as way to cope with stressful life events, but also as a barrier to emotional bond formation with a parent or primary caregiver could be important to understanding mental health among YBMSM.

# CHAPTER V

# ADULT ATTACHMENT INSECURITY AND SEXUAL RISK BEHAVIOR

The following chapter presents quantitative and qualitative findings for Hypothesis 2. This chapter explores the relationship between attachment, sexual behavior, and sexual risk behavior among YBMSM using a multi-method approach of qualitative and quantitative data. The chapter is divided into two sections, beginning with the presentation of findings for the quantitative hypotheses that use both the cross-sectional and diary data. The second part of the chapter presents findings from the qualitative data that describes the childhood attachment relationship and young adult sexual behavior with casual and intimate partners. The chapter concludes by triangulating the quantitative and qualitative findings. This chapter will test the following hypothesis and present supporting qualitative data from the interviews:

Hypothesis 2a. Men who have higher attachment anxiety scores will be more likely to have UAI than men who have lower attachment anxiety scores.

Hypothesis 2b. Men who have higher attachment avoidance scores will be more likely to have UAI than men who have lower attachment avoidance scores.

Hypothesis 2c. Men who have higher attachment anxiety scores will be more likely to have serodiscordant UAI than men who have lower attachment anxiety scores.

Hypothesis 2d. Men who have higher attachment avoidance scores will be more likely to have serodiscordant UAI than men who have lower attachment avoidance scores.

## Quantitative Findings

Table 15 presents the correlation between attachment avoidance, attachment anxiety, overall UAI, and serodiscordant UAI. The bivariate correlation matrix suggests that there was not a relationship between the sexual risk variables and the attachment insecurity variables. There was a moderate correlation between attachment anxiety and attachment avoidance, $r = .58$, $p < .001$, and a small correlation between serodiscordant UAI and overall UAI, $r = .42$, $p < .001$.

Using the cross-sectional data, two sets of logistic regression models were used to predict the overall UAI and serodiscordant UAI. Table 15 shows the results of both models. Model 1 did not significantly predict UAI, $\chi^2 = 3.79$, $p = .58$. Model 2 did not significantly predict Serodiscordant UAI, $\chi^2 = 1.71$, $p = .79$.

Using the structured diary data, conducted logit regression models predicting overall UAI and serodiscordant UAI were conducted. The GEE analysis technique was used to examine the relationship between the attachment insecurity variables and sexual risk behavior. For the model predicting overall UAI, there were 470 observations, 128 participants, and about 3.7 observations per group (min: 1, max: 8). For the model predicting serodiscordant UAI, there were 457 observations, 124 participants, and about 3.7 observations per group (min: 1, max: 8).

The results for these analyses are displayed in Table 16. Model 1 predicting UAI was significant, $\chi^2 = 15.85$, $p < .01$. Attachment avoidance was statistical significance at the trend level. Men who had higher attachment avoidance, $OR = 1.17$, $p < .10$, were more likely to have UAI. Men who were single where less likely than men in a relationship to have a UAI encounter over the eight-week period, $OR = 0.38$, $p < .01$. Attachment anxiety was not related to the likelihood of having a UAI encounter. Model 2 predicting serodiscordant UAI was not statically significant, $\chi^2 = 6.15$, $p = .19$.

## Quantitative Discussion

My hypothesis regarding the relationship between adult attachment insecurity and sexual risk behavior was not supported by the data. There was no relationship between attachment anxiety and the likelihood of having a UAI encounter or a serodiscordant UAI encounter. In addition, there was no relationship between attachment avoidance and the likelihood of having a UAI encounter. However, YBMSM who were higher on attachment avoidance were more likely to have a serodiscordant UAI encounter over the eight-week period.

This finding was surprising given that the research literature suggests that attachment anxiety is related to the failure to negotiate sexual relationships, resulting in low condom self-efficacy (Feeney, Peterson, Gallois, & Terry, 2000) and the ability to be coerced into unwanted sexual activities (Davis, Shaver, & Vernon, 2003; Mikulincer & Shaver, 2007). Both self-efficacy and sensitivity to coercion are factors that can increase an individual's risk of HIV/STI transmission.

Contrary to much of the research literature, the results of these analyses suggest that there may in fact not be a relationship between attachment anxiety and sexual risk behavior in this sample of YBMSM. However, it could be the case that other factors influence the relationship between attachment insecurity and sexual risk behavior. This dissertation does not examine emotional closeness to sexual partners or questions regarding sexual relationship satisfaction though research has shown that these may be key variables in understanding the attachment/sexual behavior relationship (Bogaert & Sadava, 2002; Strachman, Impett, Henson, & Pentz, 2009). Understanding characteristics of the sexual relationship (e.g., length of relationship and love) may provide a better understanding of the relationship between attachment insecurity and sexual risk behavior. A further analysis that investigates factors that moderate or

mediate the relationship between attachment insecurity and sexual risk behavior, such as sexual relationship satisfaction is needed.

Prior studies regarding the relationship between attachment avoidance and sexual risk behavior have been inconclusive. Studies have found a relationship between avoidant attachment and sexual risk-taking behaviors in heterosexual (Anderson, May, & Anderson, 1992) and same-sex relationships (Ridge & Feeney, 1998) and some studies have found no relationship (Bogaert & Sadava, 2002). Attachment avoidance has been associated with both avoiding sex and having many casual sexual partners (Gentzler & Kerns, 2004; Kalichman, Roffman, Picciano, & Bolan, 1998). In addition, several studies have shown that men and women with an avoidant attachment style are more likely to accept the idea of having casual sexual partners, as well as engage in sexual relations with more casual sexual partners than secure or anxiously attached individuals (Brennan & Shaver, 1995; Feeney, Noller, & Patty, 1993; Gentzler & Kerns, 2004; Kershaw et al., 2007; Simpson & Gangestad, 1991). In addition, studies employing different measures of risk (i.e., STI history, knowing partners STI history, condom self-efficacy, and condom usages) have produced mixed findings. For instance, Ahrens, Ciechanowski, and Katon (2012) found in a sample of adult female primary care patients that avoidant attachment was not related to STI history, lifetime sex partners, or number of sex partners in the last year. In contrast, Kershaw et al. (2007) found in a sample of pregnant women that attachment avoidance was related to less condom self-efficacy and the belief that the participant may upset her sexual partner if she asked him to wear a condom. Thus, future studies should be conducted that attempt to clarify the relationship between attachment avoidance and sexual risk behavior.

When specifically focusing on anxious attachment, there may be other factors that influence the relationship between anxious attachment and sexual risk behavior. For instance,

Edwards and Barber (2010) found that rejection sensitivity and anxious attachment are similar constructs that relate to less condom use with intimate and casual sexual partners. The authors posit that understanding the relationship between rejection sensitivity, anxious attachment, and sexual risk behavior may be of value in helping to understanding how interpersonal factors relate to sexual risk taking. Other researchers have suggested that motivations for sex (Schachner & Shaver, 2004), self-esteem and negative affect (Gentzler & Kerns, 2004), and relationship satisfaction (Kershaw et al., 2007) mediate the relationship between attachment insecurity and sexual risk behaviors.

It is also important to note that there are several different configurations of sexual relationships (e.g., long-term sexual relationships vs. one night stands) that could complicate our understanding of the relationship between adult attachment and sexual risk behavior. Much of the theorization of adult attachment and sexual behavior has been confined to couples (e.g., married couples and long term dating couples; Stefanou & McCabe, 2012) and research examining the relationship between attachment and forms of sexual trauma (e.g., intimate partner violence; Bogaert & Sadava, 2002; Feeney & Raphael, 1992). There has been limited research conducted with single individuals and LGB populations in terms of sexual behavior. Further there has been limited research examining the relationship between attachment and sexual risk behavior (e.g., UAI, serodiscordant UAI). Future research should examine attachment and sexual risk within different configurations of sexual relationships (e.g., single individuals, casually dating individuals, and LGB individuals).

## Qualitative Findings

The qualitative aim associated with Hypothesis 2, *to understand how childhood attachment may influence sexual behavior among YBMSM,* is examined in the following section. Because specific questions concerning sexual risk behaviors were not asked in the qualitative interview, my aim is to understand sexual behaviors and characteristics of sexual relationships the may have implications for future research on sexual risk behavior. The qualitative findings lead to new questions concerning how YBMSM form emotional bonds with sexual and/or committed partners and how these connections inform their perceptions of their sexual behaviors. Participants generally reported having a mix of short- and long-term intimate relationships as well as casual sexual relationships. Most young men had both casual and monogamous sexual partners, however young men with a secure attachment style were more likely to currently be in a monogamous relationship or to have had a monogamous relationship in the past three months, compared to young men with an insecure attachment style.

Participants who had an avoidant childhood attachment style often spoke of feeling detached or uninterested in developing emotional bonds with intimate partners. However, in some instances young men reported understanding the benefits of being emotionally connected to another person intimately or platonically, but unable to develop an emotional bond either due to feeling scared of being hurt, due to the lack of desire to do so. Young men with an anxious attachment style often discussed sex as a means to find a committed partner or reinforce an emotional bond with a sexual partner. Like some young men with a secure attachment style, men with an anxious attachment style didn't often participate in casual sexual relationships and instead discussed how they wanted to be in a committed monogamous relationship.

**Secure Attachment and Intimate Partnerships**

Out of the five young men who had a secure childhood attachment style, two men reported being in a committed monogamous relationship currently, one reported being in a committed monogamous relationship in the last three months, and one participant reported not being in a relationship currently or in the previous three months. Four out of five of the men preferred being in a monogamous committed relationship with a man. Overall, men with a secure attachment style felt that their current or previous monogamous relationship was supportive and comforting. In terms of sex, young men with a secure attachment style described feeling emotionally close to their sexual partner during their last sexual encounter more often than young men who had an anxious or avoidant attachment style. Furthermore, men who were not currently in a monogamous relationship reported having multiple sexual partners but distinguished between someone they would like to be in a monogamous relationship with and someone they would not.

Men often spoke of being in love and emotionally connected with current or previous intimate partners; they reported feeling comforted by the love they receive from intimate partners. For instance, one young man aged 27 years who was currently in a monogamous relationship and spoke about the love he received from his monogamous partner said:

> *I felt really good because he asked me to be his boyfriend. It was Christmas, and he asked me to be his boyfriend, and that's all I wanted. And I felt really good. Like I felt I was in love, I am in love, and I felt really, really good about it.*

It appeared that young men with a secure attachment style were able to develop secure emotional bonds with their previous and/or current intimate partners and feel secure in their relationship.

Young men often reported positive feelings after having sex with a current and/or previous intimate partner. One man, aged 23 years, discussed his feelings after having sex with his current intimate partner. He said:

*Interviewer:* *How do you feel after sex?*

*Interviewee:* *Loved, tired, fulfilled.*

*Interviewer:* *Fulfilled in what way or in what ways?*

*Interviewee:* *Fulfilled emotionally—well not even emotionally, because I don't need sex. Just fulfilled—I guess just fulfilled sexually.*

In addition, some young men with a secure attachment style reported wanting an emotional connection to have sex with another person. For example, a 23-year-old man reported needing to have emotional feelings for someone to have sex with them:

*Interviewer:* *You mentioned a little while ago, that there wasn't an emotional sort of connection there. Is that important to you when having sex with any partner?*

*Interviewee:* *It's not always important but it's important…especially with someone who I like being with. Like what are we gonna talk about after the sex and there's nothing, really to talk about. I feel like there has to be something there…"*

Young men with a secure attachment style also seemed to differentiate between men they wanted to have an emotional connection with during sex and men they did not. For instance, a 27-year-old young man discussed how he managed sexual partners with whom he was interested in forming an emotional connection versus those with whom he was not interested in developing an emotional bond. He explained:

> *Depending on who I'm with, if I like you a lot or if I'm in love with you, then I'm gonna lay up. If I don't, if I'm just doing this for sex, then I want to leave immediately and I wanna go home.*

Young men often reported feeling emotionally close to sexual partners they were in love with or cared about but did not report this emotional closeness with casual sex partners.

**Avoidant Attachment and Intimate Partnerships**

Four general themes emerged regarding the relationship between attachment avoidance and sexual behavior. First, young men with an avoidant attachment style often reported having trouble building emotional bonds with intimate partners. These men attributed this difficulty creating emotional bonds with intimate partners to the many unhealthy relationships they experienced in their childhood and adulthood. Second, some men with an avoidant attachment style seemed to distinguish between casual sexual relationships and relationships with partners, with whom they were currently or would like to be emotionally attached. Third, some young men with an avoidant attachment style reported using sex as a means to establish an emotional connection with a potential relationship partner. Lastly, some men reported not wanting to have an emotional bond with a sexual partner at all.

In an attempt to facilitate bond formation with sexual partners in young adulthood, young men sometimes participated in negative behaviors The passage below exemplifies self-destructive behaviors experienced by a 29-year-old young as an attempt to emotionally connect with a potential sexual partner:

> *Okay. I think, again, it's made me a little more wise in certain things, but I think that, at times, in terms of, again, that emotional connection I felt I needed that I didn't get in my adulthood. And then, on some level, still [having unprotected sex] just not as much in the present, and that is seeking [sex] in not so healthy ways – that emotional connection – as well as it's – it's acting out sexually or those kinda things…*

Similar to men with an anxious attachment style, it appeared that some men with an avoidant attachment style used sex as a means to seek out an emotional attachment to another man. For instance, one young man aged 21 years said:

> *I think to build—develop a connection. 'Cause, you know, you may be talking to someone, you may have an emotional connection; but sometimes, you know, having a sexual connection can be, you know—feel things a bit more.*

Young men with an avoidant attachment style, similar to young men with a secure or anxious attachment style, distinguished between sex with a sexual partner they cared about and sex for sexual release only. This distinction seemed to drive the way in which young men behaved during the sexual encounter (e.g., leaving directly after the sexual act as opposed to staying). One young man aged 25 years said:

> *I try not to [have sex with other men] because I am in a relationship, so sometimes it's like to fuck and that's it—just to get a nut off. So, I don't wanna like get all—you know—I don't' like to cuddle or anything. Like, we just had sex.*

In addition, young men with an avoidant attachment style were more likely than men with a secure attachment or anxious style to report that they did not want their sexual partner to engage in emotionally intimate behaviors (e.g., cuddling) after sex. Some young men reported using sex as a way to gain gratification, but not a means of building or maintaining an emotional bond with another man. One young man who was describing his sexual encounter with his last sexual partner explained:

> *Not really, cause' I do feel like I just want him to leave after I finish having sex with him anyway. I'm not really the touchy touchy feel type of guy. Some people like to lay down after they finish having sex. Not me. I'm like, okay, get out. Goodbye.*

Another 24-year-old man who was asked what his motivation for sex was noted, *"I guess it's just pleasure, a bond I guess. For the moment at least."* The two young men above conveyed that there were less interested in forming a long-term emotional bond with sex partners. Some young men with an avoidant attachment style emotional described their sexual experiences in terms of pleasure seeking and less so in terms of bond formations or maintenance.

**Anxious Attachment and Intimate Partnerships**

Similar to young men with a secure and an avoidant attachment style, young men with an anxious attachment style often distinguished between men they hook-up with and men they want to be in a monogamous relationship with. This distinction between types of sexual partners may drive their willingness to connect emotionally with a sexual partner. Young men with an anxious attachment style often reported needing to feel an emotional connection with their sexual partner. Though some men participated in casual sexual encounter, many reported wanting to be in a committed or monogamous relationship and having one sex partner only. Lastly, the interviews suggest that there was a connection between enjoying a sexual encounter and being emotionally connected to the sexual partner.

Young men often discussed the different types of sexual relationships and their interest in forming an emotional bond or not. A young man aged 27 years exemplified this point in the following excerpt:

> *If it's not a relationship or it's not somebody you're trying to get to know the sex is just sex and you just kind of want them to go after the sex. But if it's a relationship you want to like, you know, cuddle kind of thing, having them spend days at your house instead of just a night, so it's a little bit different.*

Another young man aged 22 years said:

> *It depends on the relationship. It could be a sexual relationship or it could be a romantic relationship. With a sexual relationship I expect—I wanna release and you can go, but if it's a romantic relationship, I wanna stay there with you. I wanna be there with you after sex. I want you—let's take a shower together.*

Thus, it appears that, similar to men with an avoidant and secure attachment style, young men with an anxious attachment style had two types of sexual partners—sexual partners with whom they simply wanted to have sex and the sexual partners with whom they wanted to have an emotional connection.

Men with an anxious attachment style often discussed the need for an emotional bond with sexual partners. One young man aged 29 years discussed in detail how his need for an emotional connection with a sexual partner was tied to his ability to enjoy sex with that partner. He said:

> *If I'm about to have sex with somebody, I like—I'm about to have an emotional connection, at least. And, I'm gonna be passionate and whatnot, and if I have that emotion, if I have that connection, then I can enjoy myself, really. If I'm not, if it's just random person, or just something random—or somebody says the wrong thing, or something just pops in my head, I'll just get preoccupied with that. Or, my demeanor or mood just completely changes, and I don't enjoy myself.*

Another young man who was in a monogamous relationship, aged 31years, self-identified as being a person that perceived sex as a tool to generate emotional connectedness to a relationship:

> *Personally, I [have sex] to bring us closer. I don't like having sex outside of a relationship…but I've always been like that. I don't like one nightstands and hook ups. I can't say I've never done them, but that's not primarily who I am.*

The majority of men with an anxious attachment style echoed the sentiment of the young man quoted above. They often reported not fully enjoying the sexual encounter or feeling unfulfilled after the sexual encounter. In addition, some young men with an anxious attachment style reported using sex as a means to find a partner with whom they could have an emotional bond. For instance, one 31-year-old man discussed the importance of sex when attempting to form an emotional bond with another man:

> *Interviewee:* *...I'm just looking for that special connection.*
>
> *Interviewer:* *Okay. So the most important reason to have sex aside from the obvious is to look for a special connection.*
>
> *Interviewee:* *Yeah. At this point in time for me.*

Many young men felt that sex could lead to an emotional bond. Therefore, they often discussed their sexual relationships as a means to develop this bond with another man. Men with an anxious attachment style seemed to overwhelmingly have sex with men with whom there was already an emotional connection or use sex as a means to finding an emotional connection with another man

## Qualitative Discussion

Overall, men with a secure attachment style were more likely to report being in a monogamous or committed relationship and feeling emotionally close to their last sexual partner. The qualitative data suggests that being able to form and maintain emotional bonds in childhood is related to being able to maintain these emotional bonds with sexual partners in adulthood for men with a secure attachment style. YBMSM, regardless of their attachment style, distinguished between casual sexual partners with whom they did not want an emotional bond and sexual partners with whom they potentially wanted to be emotionally close.

Men with an avoidant style were much more likely than men with a secure attachment style to have casual sexual partners and not be in a committed relationship. Unlike men with a secure attachment style, men with an avoidant attachment style seemed to have many different narratives in terms of their relationships with sexual partners. Men with a secure attachment style reported using sex as a means to establish an emotional bond with a sexual partner, participating in potentially risky sexual behaviors in an attempt to establish an emotional bond with another man, and not being particularly interested feeling a connection with sexual partners.

Similar to men with a secure attachment style, men with an anxious attachment style were more likely to want to be in a monogamous relationship. In addition, men with an anxious

attachment style reported using sex as a means to reinforce an emotional bond with a sexual partner or to create an emotional bond.

**Attachment across the Life-course and Relationship Functioning in Adulthood**

The qualitative data produced limited information concerning the relationship between childhood attachment and adult relationships, however, previous research on attachment and relationship functioning support some of the findings that emerged from this data. Some men with either an anxious or avoidant childhood attachment style reported difficulties in forming relationships with potential partners stemming from their difficulties in forming relationships in childhood or early adulthood, while young men with a secure childhood attachment style generally reported currently having (or having had in the last three months) successful intimate relationships. These findings are supported by the research literature examining linkages between childhood and adult attachment style (Bogaert & Sadava, 2002). Though research is limited, attachment researchers have proposed and tested several theories that examine the process by which childhood attachment is related to adult relationship functioning (Bogaert & Sadava, 2002).

One theory explaining the impact of attachment relationships on intimate relationships is known as the prototype hypothesis. This theory analyzes the attachment relationship between both the parents during childhood and intimate partners in adulthood. The prototype hypothesis suggests that working models associated with relationship formation and the attitudes, feelings, and behaviors associated with those relationships are developed early in the life-course and inform future close relationships (Simpson & Rholes, 2010). These working models incorporate experiences in early attachment relationships to guide views, procedural knowledge, and behaviors in future attachment relationships (Grossman, Grossman, & Waters, 2005; Simpson,

Collins, Tran, & Haydon, 2007). Thus, working models are created and adjusted through the life course to inform how an individual will feel and behave in an intimate relationship. Using this framework, attachment researchers have found that individuals who are more anxious or avoidant, compared to secure, are more likely to have negative feelings and thoughts associated with successful relationship formation and maintenance (Feeney, 2008). For instance, Feeney (2008) found that individuals who were more anxiously attached, than securely or avoidantly attached, were more likely to believe that their intimate partner was less available than they actually were. Further research is needed to extend the scope of this inquiry to understand how attachment relationships and subsequent relationship dysfunction may facilitate risk behaviors in casual sexual relationship among YBMSM. This line of research could provide further insight into understanding the relationship between attachment and sexual risk behavior by showing how different configurations attachment and relationship types may facilitate risky sexual behaviors.

**Attachment and Sexual Behavior**

Another key theme that emerged from the qualitative interviews concerned the ways in which sex was utilized differentially by men with different attachment styles. For instance, some men who were more avoidant or anxious, in comparison to men who were more secure, used sex to establish emotional bonds with potential intimate partners. They also tended to not be in a committed relationship. Young men who were more secure used sex to reinforce an emotional bond and were more likely to be in a committed relationship. This finding is supported by prior research findings. The limited research concerned with understanding the relationship between attachment and sex shows that attachment style is related to different configurations of sexual behavior (Bogaert & Sadava, 2002). Hazan and Shaver (1987) found that adults with a secure attachment style are more likely to have longer relationships than individuals with an insecure

attachment style. In addition, researchers have found that men who are more avoidant are more likely to have casual sexual partners than men with an anxious or secure attachment style (Brennan & Shaver, 1995; Miller & Fishkin, 1997). Despite this research, questions remain about the process by which attachment style influences sexual relationships—casual and monogamous. Future research may investigate the particular internalized experiences that influence sexual motivations of YBMSM who demonstrate insecure attachment style. This may lead to a deeper understanding of how attachment may be related to sexual behavior.

**Attachment and Sexual Risk Behavior**

As mentioned previously, there has been limited research specifically examining the relationship between attachment and sexual risk, however, the qualitative data provides insight regarding sexual relationship configurations that facilitate risk behavior. Young men who were more secure seemed to desire a monogamous relationship as defined by having sex with only one partner. Young men with an anxious attachment style expressed this same sentiment but were often not in a monogamous relationship and had multiple casual sex partners. Young men with an avoidant attachment style reported this same sentiment while others reported not being interested in an intimate relationship. These results are supported by the extant research literature examining the relationship between attachment and sexual behavior (Stefanou & McCabe, 2012). Attachment researchers have posited that attachment avoidance could be related to HIV/STI risk due to the likelihood that these individuals are more likely to have multiple casual sex partners than individuals with a secure attachment style (Anderson et al., 1992). However, it could be that because individuals with an avoidant attachment style have more sexual partners, they use condoms more frequently, thus limiting their risk of HIV/STI transmission. In addition, attachment anxiety may be related to sexual risk due to these individuals' need to feel

emotionally bonded to another individual, thus resulting in frequent sexual encounters with casual partners (Feeney, 2000). Future research could benefit from further examination of the specific mechanisms associated with attachment and sexual relationships that may facilitate risk behaviors.

## Conclusion

Both qualitative and quantitative results suggest that the relationship between attachment and risk may be facilitated by other relationship factors. The quantitative findings suggest that there may be no relationship between attachment insecurity and sexual risk behavior. However, the qualitative results suggest that there may be factors facilitating the relationship between attachment insecurity and sexual risk behavior. Perhaps factors such as relationship satisfaction, perceived support from a sexual or intimate partner, and relationship type (casual sexual relationship vs. monogamous relationship) may be pathways by which the relationship between attachment insecurity and sexual risk behavior are related.

The qualitative findings identified emotional bond formation (the creation or reinforcement) with a sexual partner as a significant component of sexual relationships among YBMSM. However, the array of relationship configurations complicate the ability to clearly examine and identify the specific pathways by which childhood attachment and adult sexual behavior are related. After analyzing both the quantitative and qualitative data several questions about the relationships of YBMSM and motivations for risky sexual behaviors remain unanswered. The following questions can help direct future research to identify the relationship in hopes to design successful intervention that can mediate or prevent risky sexual behaviors:

1. For young men who have an insecure attachment style, how does sexual/intimate relationship satisfaction influence risk behavior among YBMSM?

2. What are potential mechanisms that influence the relationship between attachment and sexual risk behavior among YBMSM?
3. What are the pathways by which childhood attachment is related to adult relationship dysfunction and sexual risk behavior?
4. What strategies, if any, do young men with insecure attachment styles use to increase their ability to form emotional bonds?

The exploration of these research questions could provide a better understanding of the influence of attachment on sexual risk behaviors among YBMSM.

# CHAPTER VI

# PSYCHOLOGICAL DISTRESS AND SEXUAL RISK BEHAVIOR

This chapter explores the relationship between psychological distress and sexual risk among YBMSM using the quantitative and qualitative data. The first part of the chapter will test the quantitative Hypothesis 3 and discuss the findings. The second half of the chapter focuses on describing the relationship between mental health and sexual behavior among YBMSM that may facilitate risk. The chapter concludes with a triangulation of the quantitative and qualitative findings. This chapter will test the following hypotheses and present supporting qualitative data from the interviews:

Hypothesis 3a. Higher levels of general psychological distress will be related to the increased likelihood of having UAI over an eight-week period.

Hypothesis 3b. Higher levels of depressive mood will be related to the increased likelihood of having UAI over an eight-week period.

Hypothesis 3c. Higher levels of anxiety will be related to the increased likelihood of having UAI over an eight-week period.

Hypothesis 3d. Higher levels of general psychological distress will be related to the increased likelihood of having serodiscordant UAI over an eight-week period.

Hypothesis 3e. Higher levels of depressive mood will be related to the increased likelihood of having serodiscordant UAI over an eight-week period.

Hypothesis 3f. Higher levels of anxiety will be related to the increased likelihood of having serodiscordant UAI over an eight-week period.

## Quantitative Findings

Table 17 displays the frequencies by week for overall UAI and serodiscordant UAI. Each week about 15% of sexual encounters were UAI and about 13% of participants had serodiscordant UAI. To examine within-person changes in sexual risk over the eight-week period, random effects regression analyses were conducted. The attachment insecurity variables along with the covariates were entered as fixed effects in each regression model. Two sets of three different logistic regression analysis, with each of the psychological distress variables (e.g., psychological distress, depression, and anxiety), were conducted for each week. Psychological distress variables were not placed in to one model for each of the sexual risk outcomes due to multicollinearity issues. All of the random effect models predicting overall UAI had 470 observations and 128 participants. Each individual had an average of 3.7 weeks of data (min = 1; max = 8). All of the random effect models predicting serodiscordant UAI had 457 observations and 124 participants. Each individual had an average of 3.7 weeks of data (min = 1; max = 8). Each model controlled for relationship status when predicting serodiscordant UAI in addition to HIV status for models predicting overall UAI.

Table 18 reports the results for the first set of regression models predicting the likelihood of having a UAI encounter. Model 1 with psychological distress predicting the likelihood of having a UAI encounter over the eight-week period was statistically significant, $\chi^2 = 11.88$, $p < .01$. Men who were single were less likely to have a UAI encounter compared to men who were in a relationship, $OR = 0.27$, $p < .01$. Psychological distress did not significantly predict the likelihood of having a UAI encounter. The intraclass correlation was .43. Thus, the propensity to have a UAI encounter given any two weeks for an individual was .43 (43% of the variance in the propensity to have UAI encounter that can be attributed to the individual).

Model 2 with depression predicting the likelihood of having a UAI encounter over the eight-week period was statistically significant, $\chi^2 = 12.78$, $p < .05$. Men who were single were less likely to have a UAI encounter compared to men who were in a relationship, $OR = 0.25$, $p < .01$. Depression did not significantly predict the likelihood of having a UAI encounter. The intraclass correlation was .45. Thus, the propensity to have a UAI encounter given any two weeks for an individual was .45 (45% of the variance in the propensity to have UAI encounter that can be attributed to the individual).

Model 3 with anxiety predicting the likelihood of having a UAI encounter over the eight-week period was statistically significant, $\chi^2 = 10.80$, $p < .05$. Men who were single were less likely to have a UAI encounter compared to men who were in a relationship, $OR = 0.24$, $p < .01$. Anxiety did not significantly predict UAI. The intraclass correlation was .46. Thus, the propensity to have UAI encounter given any two weeks for an individual was .46 (46% of the variance in the propensity to have a UAI encounter that can be attributed to the individual).

Table 19 reports the results for the second set of regression model's predicting serodiscordant UAI. Model 1 with psychological distress predicting the likelihood of having a serodiscordant UAI encounter over the eight-week period was statistically significant, $\chi^2 = 9.53$, $p < .05$. Individuals who experienced higher levels of psychological distress were more likely to have a serodiscordant UAI encounter than individuals who had lower levels of psychological distress, $OR = 2.22$, $p < .01$. The intraclass correlation was .44. Thus, the propensity to have serodiscordant UAI given any two weeks for an individual was .44 (44% of the variance in the propensity to have serodiscordant UAI can be attributed to the individual).

Model 2 with depression predicting the likelihood of having a serodiscordant UAI encounter over the eight-week period was statistically significant, $\chi^2 = 11.60$, $p < .01$.

Individuals who were more depressed were more likely to have serodiscordant UAI than individuals who were less depressed, *OR* = 2.36, $p < .01$. The intraclass correlation was .49. Thus, the propensity to have an serodiscordant UAI encounter given any two weeks for an individual was .49 (49% of the variance in the propensity to have serodiscordant UAI encounter can be attributed to the individual). Model 3 with anxiety predicting the likelihood of having a serodiscordant UAI encounter over the eight-week period was not statistically significant, $\chi^2 = 3.18$, $p = .36$. Thus, individuals with higher levels of anxiety were not more likely to have a serodiscordant UAI encounter than individuals with lower levels of anxiety, *OR* = 1.25, $p = .28$.

**Quantitative Discussion**

Overall, 47% of young men reported medium to high general psychological distress. This finding is consistent with research literature that shows that a high proportion of Black MSM report elevated levels of general psychological distress and depression (Cochran & Mays, 2000b). In addition, over the eight-week period young men who had higher depression and general psychological distress were more likely to have a sexual risk encounter than men who had lower depression and general psychological distress scores. These findings support the extant research literature that finds a relationship between mental health and sexual risk behavior. As I mentioned in the introduction, quantitative studies have had varying results related to the relationship between mental health and sexual risk (Maulsby et al., 2013). Koblin and colleagues (2006) found a longitudinal relationship between depression and unprotected sex in a sample of MSM. In contrast, Stall et al. (2003) did not find an association between Center for Epidemiological Depression Scale (CES-D) and UAI with a serodiscordant or HIV unknown sex partner in a sample of MSM.

There have been very few studies concerned with understanding this relationship specifically for Black MSM. However, one study found that Black MSM who had more depressive symptoms were more likely to participate in serodiscordant unprotected sex than Black MSM with less depressive symptoms (Reisner, Mimiaga, Skeer, et al., 2009). In addition, Wilson et al. (2008) found that Black HIV positive MSM who reported elevated levels of depression were more likely to not use condoms during their most recent sexual encounter than men with lower levels of depressive symptoms. Taken together, there seems to be a relationship between mental health and sexual risk behaviors in populations of Black MSM that may place them at higher risk of HIV transmission; however, more research needs to be conducted to understand this relationship among YBMSM.

In addition, potential pathways by which mental health is associated with characteristics of the sexual encounter should be explored further. The findings from these analyses specifically describe the relationship between psychological distress in the last seven days and a single sexual episode in the same week. Collecting additional information about the sexual encounter may help further explore the pathways by which psychological distress is associated with characteristics of the sexual encounter. For instance, Newcomb and Mustanski (2013) found that YBMSM were more likely to have sexual risk behavior during their last sexual encounter if their sexual partner was older. Though this specific study does not describe the role of psychological distress in predicting sexual risk behavior, it does indicate the importance of understanding characteristics of the sexual encounter for YBMSM. Future studies may want to examine how additional features of the sexual encounter influence the relationship between negative mood or psychological distress and sexual risk behavior to better understand this relationship.

There was no relationship between weekly reports of anxiety and subsequent risky sexual encounters in this analysis. There are researcher's that have reported similar findings, such as a study by Crepaz and Marks (2001), who suggested that there was no relationship between anxiety and sexual risk behavior. It is possible that there is no relationship; however, given the heightened rates of depression and generally psychological distress, it seems unlikely that there is no relationship between anxiety and sexual risk behavior. Instead it could be the case that anxiety is a general concept that is tested in a myriad of ways. Thus, it could be that feeling anxious in a week is not associated with having a sexual risky encounter, but instead people who are anxious for an extended period of time typically participate in more risk behavior. Thus, the additive effect of anxiety is related to sexual risk behavior. For instance, Lelutiu-Weinberger et al. (2013) found in a cross-sectional study that there was a strong independent relationship between generalized anxiety disorder (GAD) and lack of condom use in the last 6 sexual encounters for a sample of MSM. Therefore, researchers may want to further investigate the type of anxiety (e.g., GAD or anxious symptoms) associated with sexual risk behavior among YBMSM to better understand if this relationship exists.

Overall, there is very little research that examines the mechanisms by which mental health is related to sexual risk among YBMSM (Maulsby et al., 2013). YBMSM experience many hardships associated with the coming out process and the stigma of being of a sexual minority status (Newcomb & Mustanski, 2011). Thus, there may be pathways by which mental health is associated with sexual risk behavior that incorporates other psychosocial factors that have not been explored in this particular analysis. Future research many want to focus on understanding additional psychosocial variables that may mediate the relationship between psychological distress and sexual risk taking among YBMSM.

## Qualitative Findings

The qualitative aim associated with Hypothesis 3, *to understand how psychological distress is related to sexual behavior among YBMSM,* is examined in the following section. Again, this qualitative aim diverges from the sexual risk framework slightly because the qualitative interviews did not specifically ask questions about sexual risk behavior. However, young men often discussed sexual experiences that could facilitate risk behaviors, including some findings that may be related to sexual risk. The majority of young men who participated in the qualitative interview had scores on the K10 that placed them in the medium to high psychological distress categories. In addition, the majority of young men reported: 1) being single and having casual sexual relationships in the last two months and 2) having had positive affect before sex and having a release after sex. There were two main findings that arose from the qualitative interviews regarding psychological distress and sexual behavior. First, some men reported having sex as a way to "escape" their negative or depressed mood. Interestingly enough some discussed having sex because they were generally sad or lonely, while other men described only having these feelings directly before their last sexual encounter. In these situations, sex could be seen as a negative form of coping that could lead to participating in risky sexual behaviors. Though men who discuss having a negative mood didn't specifically discuss if their mood resulted in decreased condom use, there may have been increased incidence of UAI happening in response to their negative mood or psychological distress. Second, the few young men who did discuss sexual risk discussed their anxiety related to the fear of contracting HIV. Young men spoke extensively about the anxiety of having unprotected sex given their fears of violating the pervasive condom use norms circulating in the MSM community. Sometimes men seemed to be conscious of their behavior in response to these norms, while others seemed to not

be conscious of the ways in which their behaviors changed in response to the expectation of adhering to these norms. Examples of the themes described here will be presented below.

**The Proximal Relationship between Negative Mood and Sex**

Young men sometimes reported having a negative mood and subsequently having a sexual encounter to feel better. For instance, one young man aged 33-years-old with low to no psychological distress said:

> *I was kind of like tired and everything, this and that. I had a bad day. But, then we started talking and everything, this and that, then from there he hold my hand, I hold his hand. We started caressing each other. And, then a little foreplay from there we do the do.*

Another man, aged 21 years, with low to now psychological distress said:

> *Well, I felt—I don't know why I was feeling down. Probably that lonely feeling came back; this whole sadness, you know, stressing out from school, and then you start to get down. You just wanna get away and the next thing you know, you start to get sexually aroused and you feel like you're needing something and you need to do something.*

Young men described their negative moods in a myriad of ways. Some men simply talked about being in a "bad mood" while others talk about feeling, sad, lonely or depressed. In all of these instances, men engaged in sex in response to their emotions. It almost seemed as if men were compelled to seek out sexual companionship from the nearest potential sex partner. Men with a monogamous sex partner usually sought out their partner if they were experiencing a negative mood. However, men who did not have a monogamous sex partner sought sex from many different types of individuals (e.g., male friends, casual acquaintances) and in a myriad of places (e.g., the park, internet).

**The Distal Relationship between Negative Mood and Sex**

Some men reported generally being sad or lonely and having sex in response to these generally or frequently occurring negative feelings. One young man aged 29 years with a medium/high level of psychological distress exemplified this point when he discussed how his loneliness would lead him to have casual sexual encounters. He said:

> *And I realized that that—that the use of [drugs] and the areas in which I chose to use was to some—stemmed from the need to be a part of something—to not feel lonely, not to feel alone in my own thoughts, in my own skin…and then, when I got sexually active, then I can also seek it from different people and doin' that kind of thing 'cause I didn't wanna be alone. That led me to goin' to cruisn' spots and doin' that sort of behavior.*

Another young man aged 21 years with high psychological distress said:

> *Emotional, I could definitely agree to that because sometimes when I'm depressed I – and I -- I would – and I'm watching – let's say I'm sad – when I was depressed and stressed through the whole incidents, when I would watch the porn on the peep show, I really got a sense of – I really go the services that I needed, I felt much relieved. It just gave me the satisfaction.*

Some men reported consistent negative mood or psychological distress. Usually young men reported that these symptoms would last for a long period of time and become more acute at specific times. Having sex seemed to be one of the responses to their negative mood or psychological distress, As outlined by the 29-year-old man, drug use was also referenced as a means to relieve stress or a negative mood. Similar to men who reported only acute instances of psychological distress, men who reported general distress often discussed triggers that lead them to sexual situations (e.g., drug use, argument).

**Psychological Distress, Perceived Risk of HIV, and Sex**

Men also discussed their anxiety concerning having sex due to the high levels of HIV in MSM populations. One young man aged 19 years with low to no psychological distress said:

> *You know what I mean? Then messing with like black guys is like added risk, and then messing with like DL guys is another added risk. You know what I mean? So there's always that risk that I'm at constant risk or something. Like even – now like I have this nasty cough, and I'm here thinking like, what's going on with me? Why is this cough not going away? Have I ... after sex? Have I sucked some dick? I have. I know I'm not well, and there's a chance of you getting something to that. Did I ever clean my mouth? Did I brush my teeth? Did I floss before I did anything? I don't remember. You know what I mean? It's always just like – there's always a stereotype.*

Another young man aged 29 years with a medium/high level of psychological distress said:

> *I don't necessarily wanna cheat on anybody, but I can't control someone else's actions. So, I think in those experiences, there [is] stuff in just navigating it, but it scares me now in terms of sexuality and the risks behind that because of that a lotta my friends – at least two friends I know – one from high school and one from junior high school – the same one that I did the oral to in the park that I mentioned – he became HIV positive. I didn't find that out until maybe a few weeks ago.*

Similar to these two young men's statements, other young men discussed being very cognizant of condom use norms and feeling anxious about having sex without a condom. Men often spoke about their fears of contracting HIV through unprotected sex and of needing to abide by condom use norms.

## Qualitative Discussion

The qualitative findings provided support for the quantitative findings. Men who reported being sad, lonely or depression often reported having sex to feel better. In addition, there were two types of negative mood or psychological distress that contributed to sexual behavior: 1) general or frequently occurring loneliness, depression, or sadness associated with sexual behavior; and/or 2) acute instances of negative mood or affect that was followed by engaging in a sexual act. These findings are supported by qualitative research literature that supports the notion that sex may be used as a tool to relieve stress or cope with stressful life events and/or daily stressors (Alvy et al., 2011). For instance, one qualitative study found that feelings of

sadness and loneliness were associated with sexual risk behavior in a sample of MSM (Alvy et al., 2011). In addition, another research team found that MSM who were depressed took fewer precautions (e.g., condom usage) to protect themselves from HIV/STI transmission when engaging in sex (Bancroft, Janssen, Strong, & Vukadinovic, 2003).

Inconsistencies in the research literature on psychological distress and sexual risk behavior may be due to the complex nature of this relationship. There may be additional psychosocial variables that mediate this relationship. For instance, Alvy et al. (2011) found that the relationship between depression and sexual risk was mediated by cognitive escape and poor self-efficacy. In addition, Beck, McNally, and Petrak (2003) determined that the association between depression and sexual risk taking behavior was mediated by inaccurate sexual cognitions in such a way that the relationship disappeared when the authors controlled for cognitions like thinking that only practicing insertive sex was sufficient protection against STI transmission.

**A Cognitive Escape Perspective: Mental Health and Sexual Behavior**

The Cognitive Escape Perspective provides a framework for understanding the qualitative findings. This perspective proposes that individuals who are experiencing a negative mood or feeling depressed may attempt to escape this mood by seeking out pleasurable circumstances (McKirnan, Ostrow, & Hope, 1996; McKirnan, Vanable, Ostrow, & Hope, 2001; Williams, Elwood, & Bowen, 2000). This process involves individuals escaping cognitive awareness, thus making them more vulnerable to making poor decisions in an attempt to 'escape' from their negative mood or sadness (McKirnan et al., 2001). This model explains why some of the young men in the qualitative interview reported having sex in order to feel better or gain relief from a

negative mood. Thus, cognitive escape could be one pathway by which negative mood is associated with sexual behavior.

McKirnan et al. (1996) suggested that MSM may be cognizant of the normative expectation to use condoms due to the high rate of HIV/AIDS incidence. The authors posit that the majority of MSM regularly use condoms for anal sex, but have moments in which they do not. These moments are thought to be a moment in which MSM "cognitively escape" from the pressure placed upon them by the norms of safer sex by participating in high risk behaviors (e.g., sex without a condom or sex with an HIV infected sex partner). The cognitive escape perspective proposes that there is an immediate response to a negative mood or depressive feelings and does not account for how generalized psychological distress may be related to sexual risk behavior. As noted in the previous section, some men discussed participating in sexual risk behavior even though they were aware of normative expectations of condom usage and HIV risk among MSM.

Taken together, the cognitive escape model supports the qualitative interview findings in two ways: 1) it provides a framework for thinking about how YBMSM who seek out sex in response to a negative mood or moment of depression could seek out a potentially risky sexual encounter because of their need to "escape" or cope with their negative mood, and 2) it provides a framework for understanding how pervasive safer sex norms may lead to increased individual risk of HIV/STI transmission in populations of YBMSM.

**Psychological Distress and Sexual Risk Behavior**

The cognitive escape framework provides a way of understanding how sexual risk behavior may occur in response to a negative mood; however this framework does not provide a way of thinking through how general negative mood or psychological distress may be associated with the overall frequency of sexual risk encounters. Thus, there may be additional pathways by

which general psychological distress is related to sexual risk behavior among YBMSM. These pathways may be similar to the ones discussed above in the *quantitative findings* section (i.e., cognitions regarding sexual risk behavior and self-efficacy). Future studies may want to examine psychosocial factors that mediate the proximal and distal relationship between sexual psychological distress and sexual risk behavior among YBMSM in an attempt to better understand this population's vulnerability to HIV/STI.

## Conclusion

The qualitative and quantitative findings generally support my hypothesis and present new psychosocial factors that may mediate the relationship between psychological distress and sexual behavior. The quantitative findings suggest that weekly reports of general psychological distress and depression are associated with a higher odds of having UAI with a positive or unknown status partner for HIV negative YBMSM; this supports the notion that changes in mood or level of psychological distress on a weekly basis are related to whether or not a YBMSM has at least one sexual risk encounter or not in that same week. The qualitative data further explored the relationship between distress and sex by introducing potential pathways by which this relationship occurs. The cognitive escape perspective helps to explain the proximal relationship between negative mood or feelings of depression and the immediate need to seek pleasure in the form of sex, but fails to explain the distal relationship between distress and sex. Other factors such as self-efficacy may help explain how general psychological distress may be related to sexual behavior in populations of YBMSM.

In addition to highlighting the need for future research aimed at understanding pathways by which psychological distress is related sexual behavior (particularly behaviors that may increase their risk for HIV/STI transmission), these findings demonstrate that additional research

aimed at understanding the distal and proximate relationship between psychological distress and sexual behavior is necessary. Researchers may want to examine questions such as, “are young men who experience a negative mood more likely to have a risky sexual episode in response to their mood in comparison to young men who are not in a negative mood?” or “Do men with general vs. acute instances of psychological distress have different levels of sexual risk behavior?” Further research addressing questions such as these may allow the public health community to know when and how to properly intervene to ensure the health and well-being of YBMSM.

# CHAPTER VII

# ADULT ATTACHMENT INSECURITY AS A MODERATOR OF THE RELATIONSHIP BETWEEN PSYCHOLOGICAL DISTRESS AND SEXUAL RISK BEHAVIOR

The following chapter presents quantitative and qualitative findings for Hypothesis 4. This chapter explores the role of attachment in moderating the relationship between psychological distress and sexual risk behavior among YBMSM. A multi-method approach that includes analysis of qualitative and quantitative data is employed to explore this relationship. The chapter is divided into two sections, beginning with the presentation of findings for the quantitative hypotheses using the diary data. The second part of the chapter presents findings from the qualitative data that describes the childhood attachment relationship, mental health and young adult sexual behavior with casual and intimate partners. The chapter concludes by triangulating the quantitative and qualitative findings. This chapter will test the following hypothesis and present supporting qualitative data from the interviews:

Hypothesis 4. Attachment insecurity will moderate the relationship between psychological distress and sexual risk in such a way that:

a. The relationship between general psychological distress and the likelihood of having UAI will be stronger for men who have higher attachment anxiety scores compared to men with lower attachment anxiety scores
b. The relationship between general psychological distress and the likelihood of having UAI will be stronger for men who have higher attachment avoidance scores compared to men with lower attachment avoidance scores

c. The relationship between general psychological distress and the likelihood of having serodiscordant UAI will be stronger for men who have higher attachment anxiety scores compared to men with lower attachment anxiety scores
d. The relationship between general psychological distress and the likelihood of having serodiscordant UAI will be stronger for men who have higher attachment avoidance scores compared to men with lower attachment avoidance scores

## Quantitative Findings

### The Relationship between Psychological Distress and UAI

For the outcome of UAI, there were 470 observations and 128 participants. Each individual had an average of 3.7 weeks of data (min = 1; max = 8). For the outcome of serodiscordant UAI, there were 457 observations and 124 participants. Each individual had an average of 3.7 weeks of data (min = 1; max = 8).

Table 20 reports the results for the models predicting UAI. Model 1 with psychological distress predicting UAI was statistically significant, $\chi^2 = 11.97$, $p < .05$. Single men, in comparison men in a relationship, were less likely to participate in UAI, $OR = 0.39$, $p < .01$. Psychological distress was not statistically significant in the model. Model 2 with depression predicting UAI was statistically significant, $\chi^2 = 13.75$, $p < .05$. Single men, in comparison men in a relationship, were less likely to participate in UAI, $OR = 0.38$, $p < .01$. Depression was marginally statistical significance, indicating that men who were more depressed were more likely to have a UAI episode over the eight-week period, $OR = 1.25$, $p < .10$. Model 3 with anxiety predicting UAI was statistically significant, $\chi^2 = 12.35$, $p < .05$. Single men, in comparison men in a relationship, were less likely to participate in UAI, $OR = 0.38$, $p < .01$. Anxiety was not statistically significant in the model.

Table 21 reports the results the models predicting serodiscordant UAI. Model 1 with psychological distress predicting serodiscordant UAI was marginally statistical significance, $\chi^2$ = 6.47, $p < .10$. General psychological distress was statistically significant, indicating that men who had higher levels of psychological distress were more likely to have a serodiscordant UAI episode over the eight-week period, *OR* = 1.77, $p < .05$. Model 2 with depression predicting serodiscordant UAI was statistically significant, $\chi^2$= 10.09, $p < .05$. Depression was statistically significant, indicating that men with higher levels of depression were more likely to have a serodiscordant UAI episode over the eight-week period, *OR* = 1.87, $p < .05$. Model 3 with anxiety predicting serodiscordant UAI was not statistically significant, $\chi^2$ = 2.65, $p = .45$. Thus, individuals who with higher levels of anxiety were not more likely to have a serodiscordant UAI encounter than individuals with lower levels of anxiety, *OR* = 1.16, $p = .50$.

**Attachment Insecurity as a Moderator of the Relationship between Psychological Distress and Sexual Risk**

Only the statistically significant relationships reported in the last section were used in the moderation analyses. A continuous by continuous interaction term (attachment insecurity variable and mean psychological distress variable) was included in the three statically significant regression models from the section above. Six regression models were conducted overall.

Table 22 displays the results for the models predicting UAI. Model 1 was statistically significant, $\chi^2$ = 14.88, $p < .05$. The interaction term between attachment anxiety and depression was not significant. Model 2 was statistically significant, $\chi^2$ = 17.25, $p < .01$. The interaction term between attachment avoidance and depression was not statistically significant.

Table 23 displays the results for the models predicting serodiscordant UAI. Model 1 was not statistically significant, $\chi^2$= 8.32, $p = .14$. The interaction term between attachment anxiety and general psychological distress was not significant. Model 2 was not statistically significant,

$\chi^2$ = 7.02, $p$ = .22. The interaction term between attachment avoidance and general psychological distress was not significant. Model 3 was not statistically significant, $\chi^2$ = 12.41, $p$ = .13. The interaction term between attachment anxiety and depression was not significant. Model 4 was not statistically significant, $\chi^2$ = 11.64, $p$ = .19. The interaction term between attachment avoidance and depression was not significant.

**Stratified models-low/high attachment insecurity and psychological distress**

**attachment anxiety and UAI.** For young men in the high attachment anxiety strata, the number of observations was 131, with 38 participants. There was an average of 3.4 observations per group (min: 1; max: 8). For young men in the low attachment anxiety strata, the number of observations was 339, with 90 participants. There was an average of 3.8 observations per group (min: 1; max: 8). Table 24 displays the results for the models predicting UAI.

For young men in the high anxiety strata, Model 1 with depression predicting UAI was not statistically significant, $\chi^2$= 4.40, $p$ = .35. For young men in the low anxiety strata, the Model 2 with depression predicting UAI was marginally statistical significance, $\chi^2$ = 7.88, $p$ < .10. Single men, in comparison men in a relationship, were less likely to participate in UAI, *OR* = 0.39, $p$ < .05. The HIV status variable was marginally statistical significance, indicating that men who were HIV positive or had an unknown status, in comparison to HIV negative men, were more likely to have a UAI encounter, *OR* = 2.02, $p$ < .10.

**Attachment avoidance and UAI.** For young men in the high attachment avoidance strata, the number of observations was 134, with 32 participants. There was an average of 4.2 observations per group (min: 1; max: 8). For young men in the low attachment avoidance strata, the number of observations was 336, with 96 participants. There was an average of 3.5 observations per group (min: 1; max: 8). For young men in the high avoidance strata, the Model

3 with depression predicting UAI was not statistically significant, $\chi^2 = 6.76$, $p = .15$. For young men in the low avoidance strata, the model 4 with depression predicting UAI was not statistically significant, $\chi^2 = 6.89$, $p = .14$.

**Attachment anxiety and avoidance and serodiscordant UAI (psychological distress).** Table 25 displays the results for the models predicting serodiscordant UAI. For young men in the high anxiety, the number of observations was 129, with 38 participants. There was an average of 3.4 observations per group (min: 1; max: 8). For young men in the low anxiety strata, the number of observations was 328, with 86 participants. There was an average of 3.8 observations per group (min: 1; max: 8). For young men in the high anxiety strata, the Model 1 with general psychological distress predicting serodiscordant UAI was not statistically significant, $\chi^2 = 4.49$, $p = .21$. For young men in the low anxiety strata, the Model 2 with general psychological distress predicting serodiscordant UAI was not statistically significant, $\chi^2 = 1.15$, $p = .77$.

For young men in the high avoidance, the number of observations was 133, with 32 participants. There was an average of 4.2 observations per group (min: 1; max: 8). For young men in the low avoidance strata, the number of observations was 324, with 92 participants. There was an average of 3.5 observations per group (min: 1; max: 8). For young men in the high avoidance strata, the Model 3 with general psychological distress predicting serodiscordant UAI was marginally statistical significance, $\chi^2 = 6.80$, $p < .10$. General psychological distress was marginally statistical significance in the model, indicating that men with higher levels of psychological distress were more likely to have a serodiscordant UAI encounter, $OR = 1.88$, $p < .10$. The relationship status variable was marginally significant indicating that, single men, in comparison men in a relationship, were less likely to participate in serodiscordant UAI, *OR* =

0.28, $p < .10$. For young men in the low avoidance strata, the Model 4 was not statistically significant, $\chi^2 = 4.23$, $p = .24$.

**Attachment anxiety and avoidance and serodiscordant UAI (depression).** Table 26 displays the results for the models predicting serodiscordant UAI. For young men in the high anxiety strata, the Model 1 with depression predicting serodiscordant UAI was not statistically significant, $\chi^2 = 5.25$, $p = .15$. For young men in the low anxiety strata, the Model 2 was marginally statistical significant, $\chi^2 = 6.39$, $p < .10$. Depression was statistically significant in the model, indicating that men with higher levels of depression were more likely to have a UAI encounter, $OR = 1.89$, $p < .05$.

For young men in the low avoidance strata, the Model 3 with depression predicting serodiscordant UAI was statistically significant, $\chi^2 = 8.76$, $p < .03$. Depression was statistically significant in the model, indicating that men with higher levels of depression were more likely to have a serodiscordant UAI encounter, $OR = 2.03$, $p = .05$). The relationship status variable was marginally significant indicating that, single men, in comparison men in a relationship, were less likely to participate in serodiscordant UAI, $OR = 0.23$, $p < .10$. For young men in the low avoidance strata, the Model 4 was not statistically significant, $\chi^2 = 5.81$, $p = .12$.

## Quantitative Discussion

Overall, Hypothesis 4 was not supported. The results of the moderation analyses suggest that though there was a main relationship between depression and UAI, general psychological distress and serodiscordant UAI, and depression and serodiscordant UAI, adult attachment insecurity did not moderate these relationships. Follow-up analyses suggested that there may be a relationship between general psychological distress and serodiscordant UAI as well as depression and serodiscordant UAI for individuals in the top 25% of avoidant attachment scores

but not for individuals in the bottom 25% of avoidant attachment scores. However, the stratified analyses utilized half of the sample size and thus there may not have been sufficient power to detect a result.

The findings from stratified analyses suggested that, perhaps with greater power, there could be a potential for detecting a moderating effect of attachment avoidance on the relationship between psychological distress and serodiscordant UAI. This point is supported by the follow-up findings that suggested that there could be a potential moderating effect of attachment avoidance on the relationship between psychological distress and serodiscordant UAI. It could be the case that individuals very high on attachment avoidance who are depressed seek out sex as a means to "escape" their depression and do not think about the HIV status of their sexual partner. It could also be the case that individuals high on avoidance who are attempting to alleviate their depressive symptoms may be indifferent about asking their sex partner about their HIV status. In the future, researchers may want to focus on understanding differences in the relationship between depression and sexual risk for YBMSM who are more avoidant versus men who are more secure.

Research on resilience may provide a framework for thinking through the potential moderating properties of attachment on the relationship between psychological distress and sexual risk behavior. Fergus and Zimmerman (2005) posit that, "Resilience refers to the process of overcoming the negative effects of risk exposure, coping successfully with traumatic experiences, and avoiding the negative trajectories associated with risks" (p. 399). The authors review two types of resilience: (1) assets, or intra-personal factors such as coping and self-efficacy; and (2) resources, or extra-personal factors such as social support and community involvement, which can promote positive youth development. Both types of resiliency have the

ability to counter the negative effects of risk on youth development. Fergus and Zimmerman (2005) present several models of resilience—compensatory, protective, and challenge. The protective model is most consistent with the findings from the moderation hypothesis. The authors suggest that resiliency assets and or resources reduce the negative effects of risk on negative outcomes for youth. In terms of attachment, the protective model suggest that being higher on attachment security may be associated with better self-efficacy and positive coping skills that help alleviate some of the negative effects of psychological distress on the likelihood of participating in sexual risk behaviors among YBMSM. In the future, researchers may want to further examine how using a resilience framework may lead to a better understanding of the relationship between psychological distress, sexual risk and attachment.

In addition, there was no relationship between psychological distress and UAI but between psychological distress and serodiscordant UAI. Thus, psychological distress was associated with the higher risk category (serodiscordant UAI) but not the lower risk category (UAI) among YBMSM. Research has shown that MSM are more likely to wear a condom with men they know well (e.g., friend, committed partner) versus men they do not know as well (Sullivan, Salazar, Buchbinder, & Sanchez, 2009). Thus, it could be the case that YBMSM who are distressed and seek out sex are more likely to seek out sex from someone they know and are more likely to not use a condom regardless of the partner's HIV status. Given the high rates of HIV incidence of UAI in communities of YBMSM, it could be that this inhibition to utilize safer sex practices (e.g., serosorting, condom usage) when depression could lead to the high likelihood of having a serodiscordant UAI partner.

Further, research has shown that YBMSM report less UAI than other MSM populations (Millett, Jeffries, et al., 2012), thus it may be the case that psychological distress is not related to

UAI encounters among YBMSM. Due to the lower rates of UAI among YBMSM, but the increasingly high rates of HIV (CDC, 2010), researchers have begun to examine community viral load, sexual networks, and serodiscordant UAI encounters as a way to understand the discrepancy between relatively low rates of UAI and high HIV incidence among YBMSM (Halkitis, Wolitski, & Millett, 2013). In the future, researchers may want to examine how characteristics of sexual networks of YBMSM may facilitate a better understanding of the relationship between psychological distress and serodiscordant UAI.

## Qualitative Findings

The qualitative aim associated with Hypothesis 4, *to understand how YBMSM with an insecure childhood attachment style differ in their mental health and sexual behaviors in young adulthood from men with a secure attachment style*, is examined in the following section. Chapters 4-6 discussed the experiences of YBMSM in childhood and young adulthood related to emotional bond formation, mental health, and sexual behavior. This chapter provides further insight into how type of attachment relationship (i.e., insecure vs. secure) may shape the relationship between mental health and sexual behavior. Thus, the current section presents data that summarizes and builds upon the findings from earlier chapters by presenting results about differences in mental health and sexual behavior by attachment style.

Young men with a childhood secure attachment style seemed to have lower levels of distress and reported positive relationships with sexual partners in young adulthood. Young men with an insecure attachment style were more likely to report global distress and acute distress before a sexual encounter compared to young men with a secure attachment style. The findings presented here demonstrate that the relationship between poor mental health and sexual behavior

may be more pronounced for men with an insecure attachment style than men with a secure attachments style.

**Secure Childhood Attachment, Mental Health, and Sexual Behavior**

As mentioned in Chapter 5, young men with a secure attachment style were more likely to currently be in committed relationship than men who had an insecure attachment style. In addition, securely attached men reported low psychological distress generally and appeared to have no distress before a sexual encounter. A 27-year-old man with a secure attachment style and low psychological distress recalled the feelings he had with his last monogamous boyfriend;

*Interviewer:* *Okay. And you think that was sort of how you generally felt when you were together right before having sex*

*Interviewee:* *Mm-hmm. Yeah, always physically, emotionally, mentally good.*

As shown in the example above, YBMSM with a secure childhood attachment style often reported feeling positive before and after having a sexual encounter with a sexual partner. Another young man aged 23 years with a secure childhood attachment style and low psychological distress said:

*Interviewer:* *Were there other feeling that played before you two had sex?*

*Interviewee:* *Love, happy that's about it.*

*Interviewer:* *How do you feel after sex?*

*Interviewee:* *Loved, tired, fulfilled.*

*Interviewer:* *Fulfilled in what way or in what ways?*

*Interviewee:* *Fulfilled emotionally—well not even emotionally, because I don't need sex. Just fulfilled—I guess just fulfilled sexually.*

When discussing their last sexual experience, young men with a secure attachment style frequently referred to their boyfriend or monogamous sex partner. The men appeared to

experience no distress around the sexual encounter, but instead discussed feelings of love and fulfillment.

**Anxious Childhood Attachment, Mental Health, and Sexual Behavior**

As described in Chapter 4, young men with an anxious attachment style often reported medium to high levels of psychological distress and more often described being distressed before their last sexual encounter compared to young men with a secure attachment style. In addition to these findings, there seemed to be some evidence to suggest that young men with an anxious attachment style. A young man aged 29 with an anxious attachment style and low psychological distress said;

*Interviewer: Tell me, how did you feel right before that sexual encounter?*

*Interviewee: Anxious.*

Another young man aged 27 years old with an anxious attachment style and a medium/high level of psychological distress also discussed being anxious before his last sexual experience with his boyfriend of two months, stated;

> *I was anxious to have sex with him, you know? I wasn't very pushy towards having sex because, you know, sex wasn't the biggest part of, you know, us trying to get to switch gears and trying to get to know him a little bit better*

The first example represented men who were not in a committed relationship, whereas the second example represented men in a committed relationship. It appeared that these feeling were tied to the participants need to be accepted by the sexual partner.

**Avoidant Childhood Attachment, Mental Health, and Sexual Behavior**

Similar to young men with an anxious attachment style, men with an avoidant attachment style discussed having sex in response to feelings of distress (acute or global).

One man aged 29 years, with an avoidant childhood attachment style and a medium/high level of psychological distress said;

> *I think, for me, it really was just me trying to not deal with feelings because I'm the kinda person that – or – I have been the kinda person that when something was – something uncomfortable that I don't wanna deal with at that moment, the first – or I can't put my hand on, I'll do sex – I'll have some sexual encounter – if it happens – I don't really – sometimes I don't really think I'm even looking for it, but I'll settle for it – just have to deal with those feeling anyway.*

Another young man who was 25 years old with an avoidant childhood attachment style and low psychological distress said; "*I'm very self-conscious. In my relationship I'm always hearing that my lover is going to cheat on me or break my heart in some way."* This particular young man discussed how his last two relationships with other men were short and did not include sexual intimacy due to him being self-conscious and having trust issues. Other young men with an avoidant childhood attachment style also reported general or acute feelings of distress that appeared to affect their sexual behaviors (i.e., sex in response to a negative mood, lack of sexual encounter because of general distress).

**Qualitative Discussion**

The qualitative findings suggest that the experiences of men with a secure attachment style may be different from the experiences of men with an insecure attachment style in terms of how mental health is related to sexual behavior. Young men with a secure attachment style discussed having positive feelings and experiences with sexual partners, in general, and before the sexual encounter. In contrast, men with an anxious or avoidant attachment style often discussed negative feelings and experiences with sexual partners, in general, and directly before the sexual encounter. These findings suggest that being able to develop emotional bonds in childhood may contribute to YBMSM experiences of distress and sexual partnerships in young adulthood. As discussed in previous chapters, it could be the case that men with a secure

attachment style develop better coping skills because of their general positive experiences with a primary caregiver in childhood and as a result have more positive coping mechanisms that allow them to readily cope with stressful life events (e.g., sexual orientation disclosure). This may be associated with better mental health and subsequently participating in less sexual risk behaviors.

The findings of the qualitative analysis underline the importance of attachment security in childhood and its potential relationship with bond formation, mental health, and sexual relationships in young adulthood. As described in previous chapters, individuals with a secure attachment style seem to develop positive coping strategies and have other psychological assets such as self-efficacy that improve their ability to navigate stressful situations that may be associated with sexual risk behaviors. YBMSM with an insecure attachment style seemed to have either developed negative (e.g., avoidant) strategies that potentially decreased their ability to cope with stressful situations. In the future, researchers should further examine how attachment style may influence negative and positive coping strategies that may impact the relationship between psychological distress and sexual risk behavior in YBMSM.

## Conclusion

Though the moderation analyses were not significant, the stratified analyses suggested that their was a relationship between adult attachment avoidance and psychological distress. Using a resilience framework may help in understanding why for men who are more avoidant there appears to be a relationship between psychological distress and risk behavior (i.e., serodiscordant UAI), while for men who are more secure this relationship does not hold. Notably, in the stratified models, psychological distress was associated with serodiscordant UAI but not UAI. In addition, the qualitative findings showed differences in both mental health and sexual behavior between young men who were securely versus insecurely attached that could be

moderated through other variables. As mentioned in previous chapters, regardless of attachment style, YBMSM seemed to experience stressful life events in early childhood and again in young adulthood. However, men with a secure attachment style seemed to have developed more positive coping mechanisms that help mitigate the negative effects of stressful life events on their well-being, while young men with an insecure attachment style developed no coping mechanisms or negative coping strategies that negatively affected their well-being. Thus, using a resilience framework may help to understand how men with a secure attachment style develop positive coping strategies that help them navigate negative life circumstances more effectively than men with an insecure attachment style.

Though I have presented one resilience model above that helps to understand the qualitative findings, the temporal ordering and specific pathways by which attachment fits into a resilience framework is unclear. For instance, it could be the case that men who have a secure attachment style simply have better lives, more support, and thus less distress and (potentially) subsequent less sexual risk behavior than men with an insecure attachment style. However, it could also be the case that caregiver bond formation in early childhood helps YBMSM cope with stressful life circumstances in early childhood (and through young adulthood) and this bond forms the impetus for lower distress and sexual risk behaviors in young adulthood in comparison to men with an insecure attachment style. Future research should examine the way in which attachment influence the relationship between psychological distress and sexual risk behavior.

# CHAPTER VIII

# CONCLUSION

Sexual transmission of HIV among YBMSM has increased in the last five years in the United States (CDC, 2010). In addition, rates of STI's are disproportionately high among YBMSM (CDC, 2010). This dissertation examined the ways in which psychological distress and emotional bond formation influenced psychological distress and sexual risk behavior among YBMSM. The findings suggest that focusing on adult attachment may lead to a better understanding of psychological distress and sexual risk behavior among YBMSM. The quantitative and qualitative findings highlight the importance of considering social and emotional bond formation in the development of prevention intervention activities aimed at addressing psychological distress and sexual risk behaviors among YBMSM. The following conclusion summarizes findings from this dissertation, highlights key themes, discusses specific future research directions and discusses implications of the findings on interventions and future research. A summary of the findings for the quantitative and qualitative results can be found in Table 27.

## Summary of Results

### Attachment to Psychological Distress

In line with research on attachment and mental health, the results from both the quantitative and qualitative components of this dissertation showed a consistent relationship between high attachment anxiety and psychological distress. The research concerning high attachment avoidance and psychological distress has been mixed; however, the results from this

dissertation support research that shows an association between high attachment avoidance and psychological distress. The magnitude of the relationships between attachment anxiety and psychological distress was stronger than the relationship between attachment avoidance and psychological distress in the cross-sectional component in comparison to the diary component. The qualitative findings supported and added to the quantitative findings by describing factors that may have influenced relationships among childhood attachment, adult attachment, and psychological distress. The qualitative findings pointed to sexual orientation disclosure, trauma, and stressful life events as factors that may influence emotional bond formation and mental health among YBMSM. In addition, religiosity/spiritual coping appeared to both facilitate bond formation in childhood and damage emotional bonds in late childhood and early adulthood.

Though the quantitative results were relatively straightforward, interesting pathways by which attachment insecurity in childhood was related to young adult mental health emerged from the qualitative data. For instance, sexual orientation disclosure emerged as a significant developmental milestone associated with mental health in which YBMSM seemed to transition through differently based on their attachment style. Men with a secure childhood attachment style seemed to successfully disclose their sexual orientation to friends and family and thus have better mental health, while YBMSM high on either attachment anxiety or attachment avoidance had mainly negative disclosure experiences and subsequent poor mental health. Though there seems to be a relationship between attachment in childhood, sexual orientation disclosure, and mental health the specific features of this relationship are unknown. It could be the case that having a secure attachment style helps foster less negative appraisal of stressful disclosure experiences and thus better mental health. Men with an avoidant childhood attachment style appraise the disclosure experience as very stressful which could promote avoidant coping

strategies (i.e., internalizing negative experiences that usually leads to avoiding stressful situations), while individuals with an anxious childhood attachment style could also appraise the disclosure experience as very stressful which could promote emotion focused coping strategies (i.e., outwardly emoting, sometime expressed in terms of violent behavior). Both of the previously mentioned scenarios could lead to poor mental health during young adulthood

It could also be the case however, that YBMSM who have a secure primary caregiver in childhood are able to successfully disclose to their primary caregiver in young adulthood and in return receive support and love throughout the disclosure process, which could facilitate positive mental health. Attachment security is associated with having a secure base, being able to contact the primary caregiver for love and support. In addition, as posited in Hazan and Shaver's (1994) developmental model (see Figure 2), during young adulthood individuals continue to participate in secure base activities with their primary caregiver. In contrast, individuals who have an avoidant childhood attachment style may have primary caregivers who are emotionally or physically unavailable and thus provide less support and do not operate as a secure base during the disclosure process. This lack of support could be associated with poor mental health for avoidant YBMSM. For individuals with an anxious childhood attachment style, lack of adequate support during the disclosure process and subsequent poor mental health could be associated with lack of support from a primary caregiver as well. Individuals with an anxious attachment style sometimes received inconsistent support from their primary caregiver during childhood. Thus, YBMSM could lack the appropriate support from a primary caregiver to successfully navigate the disclosure process during young adulthood, which could in turn lead to more psychological distress.

Lastly, it could be a combination of both processes. However, there remain many unanswered questions. For instance, in the second example where support from an early attachment figure is important to successfully navigating the disclosure process, can individuals who are either high on attachment anxiety and avoidance who receive support from a peer or intimate partner successfully navigate the process and in turn have more positive mental health in comparison to individual who do not have supportive peer and/or intimate partners? In addition, if both support and the development of proper coping mechanisms to handle the disclosure process interact to influence mental health among YBMSM, what are the specific components of this process? A better understanding of these questions and ones similar to those posited here are important to better understanding the expression of attachment related processes, its relationship to important developmental periods (i.e., the sexual orientation disclosure process), and mental health among YBMSM. Overall, understanding the specific ways in which childhood attachment and sexual orientation disclosure interact to influence mental health could be important to creating tailored mental health programming.

**Attachment and Sexual Risk**

The quantitative findings suggest that attachment anxiety was not associated with sexual risk behavior among YBMSM; however, attachment avoidance was associated with serodiscordant UAI. The qualitative data showed that men with a secure attachment style were more likely to be in a monogamous relationship with another man and report feeling emotionally connected to their sexual partners before having sex (regardless of it they were in a monogamous relationship or not) compared to men with an insecure attachment style. In addition, men with an insecure attachment style were more likely to use sex use as a means to develop an emotional bond with another man than men with a secure attachment style.

As noted before, researchers have discussed the theoretical link between attachment and sexual risk behavior. Very few studies have examined this link empirically. The quantitative component of this study found that there was no relationship between attachment and sexual risk behavior. Based on evidence presented in the qualitative component of this dissertation, I contend that it may be a measurement problem in such a way that the outcome of interest should not be UAI for instance, but instead other sexual practices that may contribute to risk (e.g., number of sexual partners, relationship characteristics). The qualitative results supported this idea by showing how attachment insecurity was associated with different characteristics of sexual relationships and sexual partner configurations. Overwhelmingly, men with a secure childhood attachment style reported being in a monogamous sexual relationship and feeling good about that relationship. This finding is in line with other research that has shown that having a secure attachment style facilitates positive affect concerning one's relationship. Thus, it could be the case that the link between attachment and relationship satisfaction facilitates safer sex practices (e.g., having sex with only one partner vs. many concurrent partners, and communicating about condom use with sexual partners) among YBMSM.

Consistent with literature on attachment and relationship satisfaction, YBMSM with an avoidant attachment style seemed to be self reliant and uninterested in forming emotional bonds with potential relationship or sexual partners. Researchers have found that attachment avoidance could be associated with a high frequency of concurrent sexual partners. Avoidant men typically evade feelings of closeness with potential sex or relationship partners, thus it may be the case that avoidant men have many sexual partners to achieve physical release but do not get emotionally close to their sexual partners. Future empirical analyses should examine the

relationship between attachment avoidance and numbers of concurrent sexual partners to better understand the influence attachment avoidance has on number of sexual partners.

YBMSM with an anxious childhood attachment style seemed have multiple sex partners as a means to obtain emotional bond formation with a sexual or potential relationship partner. The research on attachment anxiety and close relationships suggests that men with an anxious attachment style may also have multiple sex partners, but the underlining cause is different from men with an avoidant attachment style. It may be the case that men with high attachment anxiety have sex with many different partners in an attempt to reinforce or create an emotional bond. The need to have an emotional bond may lead to men having sex with many concurrent partners.

Overall, based on the findings from the quantitative and qualitative components of this dissertation, future studies should empirically examine the relationship between attachment and sexual practices that may be related to sexual risk behaviors among YBMSM. Specific attention should be paid to understanding the differences in sexual practices between individuals with higher attachment avoidance in comparison to individuals with higher attachment anxiety. This line of research could potentially aid in a better understanding of attachment related behaviors, and in turn the attachment system, and sexual behaviors. This line of inquiry could also provide a better framework for understanding how potential HIV/STI prevention interventions must be differentially tailored for individuals with higher attachment avoidance versus individuals with higher attachment anxiety.

**Psychological Distress and Sexual Risk**

The quantitative findings from this dissertation suggested that there was a relationship between psychological distress and sexual risk behavior. YBMSM who were more depressed and had higher levels of general psychological distress were more likely to have a serodiscordant

UAI encounter in the past week. Notably, psychological distress was not associated with UAI, but with serodiscordant UAI. The qualitative findings supported the quantitative findings and illuminated possible influences on the relationship between mental health and sexual practices and sexual risk behaviors. These findings suggested that negative feelings had a proximal and distal relationship with sexual behaviors. Young men who were distressed appeared to seek out sexual encounters in response to their distress. Young men also reported general negative feelings that caused them to often seek out sexual encounters in an attempt to alleviate their distress. A cognitive escape perspective was used to explain how sexual risk behavior might occur in response to negative emotions or distress. This framework may explain how YBMSM seek out pleasurable experienced to escape their negative mood.

Additional research aimed at understanding the proximal and distal relationship between psychological distress and sexual risk behavior is warranted. Future research may want to explore additional factors that influence the proximal relationship between psychological distress and sexual risk, as well as how level and type of psychological distress increase or decrease an individual's likelihood of participating in sexual risk behavior.

**Attachment Insecurity as a Moderator of the Relationship between Psychological Distress and Sexual Risk**

Attachment anxiety or avoidance was not shown to moderate the relationship between psychological distress and sexual risk behavior. However, the stratified analysis demonstrated that there was a relationship between psychological distress and serodiscordant UAI among individuals with high attachment avoidance, but there was no relationship with individuals who had low attachment avoidance. The qualitative findings suggested that men with a secure attachment style were less distressed in general and less distressed before a sexual encounter compared to young men with an anxious or avoidant attachment style. Resilience was explored

as one possible framework to think about how men with and anxious or avoidant childhood attachment style develop\ necessary strategies to cope with stressful life events. Positive coping strategies could help negate the negative effects of distress on sexual risk behavior for men with an insecure attachment style. In contrast, negative coping strategies could facilitate sexual risk behavior. A further exploration of the resilience framework is discussed below.

Future research should explore the pathways by which attachment and coping may interact to influence mental health and sexual risk behavior among YBMSM. For instance, attachment could be a precursor to stressful life events that helps facilitate better coping mechanisms that in turn enable better health outcome. In contrast, it could be that attachment and coping interact with one another to affect health outcomes. Additional studies may also want to explore how childhood and adult attachment may influence the development of supportive intimate relationships, which may in turn affect mental health and subsequent sexual behavior among YBMSM.

## Study Limitations

Several limitations should be considered when interpreting the findings from this dissertation. First, because we used a convenient sample of YBMSM living in New York City, the results cannot be generalized to all YBMSM. Only YBMSM who had a sexual encounter in the last two months were eligible for the cross-sectional component of the study. Of these men, only men who had at least two sexual encounters were eligible for enrollment in the diary component of the study. Though this strategy limits the generalizability of study findings, it allowed for the assessment of factors that influence sexual risk encounters among sexually-active YBMSM.

Second, causal interpretations cannot be applied to these study findings. These findings are a first step to understanding the relationships that exist between psychological distress, sexual risk behavior, and attachment. The quantitative components of this dissertation were concerned with assessing if relationships existed and the extent to which time (in the diary measurements only) influenced these relationships. Further, the qualitative findings elucidated the relationship between attachment, mental health and sexual behavior among YBMSM. However, none of these methodologies allowed for causal inference.

Third, the results may be affected by Common Method Bias (CMB). Common Method Bias arises when two measurement sources are highly correlated based on individual subjective experiences. This bias could lead to type I error. The attachment insecurity and psychological distress measures are both based on negative subjective experiences associated with well-being. Therefore, though these constructs are different, the measurements may share a high proportion of variance. However, in the qualitative component of this dissertation I used a modified objective measure of the attachment (i.e. the AAI) which indicated that about 90 percent of participants in the qualitative interview subsample had attachment styles consistent with their attachment style in the cross-sectional component of the study. The comparison of the subjective and objective measures of attachment provides some evidence that attachment style was accurately obtained in the quantitative component of the study. In addition, the attachment insecurity subscales (i.e. anxiety and avoidance) and the psychological distress subscales (general psychological distress, depression, and anxiety) in the cross-sectional component shared between 14% and 24% of the variance, indicating that these measures were similar but different. Combined, this evidence suggests that Common Method Bias did not seem to be an issue in this dissertation.

Fourth, given the scope of this dissertation, it was not possible to assess the multitude of factors that may influence sexual risk behaviors among YBMSM. This dissertation tested specific hypotheses based on a novel conceptual model and used the qualitative data to describe how these relationships exist in the lives of YBMSM. As described in the qualitative findings, there were a myriad of other factors that could have influenced the proposed relationships tested in the quantitative component of the study. For instance, the qualitative findings in Chapter 3 suggested that sexual orientation disclosure experiences may influence the relationship between childhood attachment and mental health among YBMSM. However, exploring the influence of sexual orientation disclosure on attachment and mental health was beyond the scope of the quantitative hypotheses and therefore not empirically tested. In spite of these limitations, the multi-method approach to assessing the relationships between psychological distress, sexual risk behavior, and attachment added to the current body of research literature while also providing information on future research directions.

Fifth, as discussed in the methods section, there are a few limitations to cross-sectional and weekly diary measurements. In terms of cross-sectional measurements of sexual behavior, retrospective cross-sectional surveys are the most common means of collecting data on sexual behavior; however, the potential for measurement error is high due to factors such as recall bias (Glick et al., 2012; Horvath et al., 2007). Retrospective surveys of sexual behavior often ask participants to report an aggregated number of sexual encounter and/or partners over a certain period of time, which is problematic because participants could inadvertently report behaviors outside of the specified timeframe or forget certain occurrences of a sexual behavior (Catania, Gibson, Chitwood, & Coates, 1990).

Given these limitations to cross-sectional measurements of sexual behavior the current dissertation collected measurements of sexual risk behavior in both the cross-sectional and longitudinal diary. However, weekly diaries, compared to daily diaries, are more prone to recall bias. It may be the case that recalling mood or feelings in the past seven days is more difficult that assessing events (e.g., sexual behavior, condom use). Thus, it could be the case that participants at times inaccurately reported on weekly measurements of general psychological distress, depression, and anxiety. However, this did not seem to be an issue because mean psychological distress scores were similar between the cross-sectional and diary measurements.

Sixth, the current study used the attachment insecurity domains of anxious and avoidant; however, there are other configurations of attachment that were not tested in this dissertation. For instance, Feeney and Ryan (1994) posit that attachment should been seen as a multidimensional construct that includes the category of anxious-ambivalence (characterized by fearfulness of being close to another person and thus avoiding close relationship formation). However, this dimension of attachment is considered to be relatively uncommon (Cassidy & Berlin, 1994) and beyond the scope of this dissertation work. Considering other dimensions of attachment insecurity, such as anxious-ambivalence, could lead to a nuanced understanding of psychological distress and sexual risk behavior among YBMSM. Thus, future research should examine how different profiles of attachment influence psychological distress and sexual risk behavior.

## Key Emerging Themes

### Stress and Coping

The qualitative findings suggested that attachment might be a key factor related to stress-coping responses that influence better mental health and secure bond formation in young

adulthood. YBMSM with an insecure attachment style seemed to develop coping strategies that negatively affected their mental health and in turn may have increased their vulnerability to poor mental health and HIV/STI transmission. Research suggests that stress can lead to psychological and physiological illness (Bolger & Eckenrode, 1991; Bolger & Zuckerman, 1995; Cohen, 2004; Cohen, Kamarck, & Mermelstein, 1983; Colfax et al., 2004; Lazarus, 2000). Research has also suggested that this impact is more pronounced in racial/ethnic and sexual minority populations (Meyer, Schwartz, & Frost, 2008). Sexual and racial minority populations in the United States are believed to have higher levels of stress compared to non-minority populations due to prejudice, stigma, and discrimination associated with their marginalized identity and/or behavior (Meyer, 2003). In addition, many researchers have found that there are factors that moderate the relationship between stress and sexual behaviors. For instance, researchers have increasingly explored the role of social support from friends, family, and community as a moderator or "buffer" of the relationship between stress and sexual health (Carlos et al., 2010; Wohl et al., 2010). Thus, it is important for future research to examine the relationship between attachment and stress-coping frameworks as a way to better understand psychological distress and sexual risk behaviors among YBMSM.

A key feature of the attachment system is associated with how individuals will cope with stressful life events. As discussed briefly above, men in the qualitative study who were secure seemed to participate in positive coping strategies (e.g., problem focused coping) and seemed to have subsequent positive mental health. Men who were more anxious participated in emotion-focused coping strategies and seemed to have subsequent poor mental health. Men who were avoidant participated in avoidant (or distancing) coping strategies (Lazarus & Folkman, 1984) and seemed to have mixed (poor and/or positive) subsequent mental health. Some researchers

believe that even when participating in avoidant coping strategies individuals can still have subsequent depression (Mikulincer & Shaver, 2007). Under circumstances of extreme or prolonged stress individuals with an avoidant style look more like anxious individuals—in line with Bowlby's theory, avoidant individuals cannot maintain distance and independence indefinitely.

Thus, attachment may facilitate YBMSM's reaction to a stressor that in turn leads to the implementation of different coping mechanisms to manage (or not manage) the stressor. The way in which a stressor is handled ultimately is associated with if an individual will experience positive or negative mental health outcomes. YBMSM are faced with many daily and life stressors (e.g., sexism, and racism) and are in a period of transition from adolescence to adulthood, which can also be stressful. Thus, having a secure attachment style could facilitate the effective management of these stressors. However, as shown in the quantitative and qualitative components of this dissertation, many YBMSM had higher levels of attachment insecurity. Therefore, researchers may want better understand the specific stress appraisal and coping strategies employed among YBMSM with an insecure attachment style as a means to developing better programs aimed to increase the well-being of YBMSM.

It is also important to note that negative coping strategies employed to manage stress can increase YBMSM's vulnerability to HIV/STI transmission. For instance, I discussed the cognitive escape framework in Chapter IV, which highlights YBMSMs' need to escape normative believes about safer sex practices and HIV risk. Though the model specifically discuses UAI and drug use as a means to "escape" negative emotions or moods, this model can also be seen as a way to understand potentially maladaptive coping mechanisms. In the future,

researchers may also want to examine how attachment insecurity may influence negative coping strategies that increase YBMSM's vulnerability of HIV/STI transmission.

**Resilience**

Some YBMSM were able to develop positive strategies to cope with stressful life events (e.g., the sexual orientation disclosure process) while others were not. Research on resilience may provide a framework for thinking through how attachment may be associated with mental health and sexual behaviors. Fergus and Zimmerman (2005) posit that, "Resilience refers to the process of overcoming the negative effects of risk exposure, coping successfully with traumatic experiences, and avoiding the negative trajectories associated with risks" (p. 399). The challenge model of resilience further explains that low and high risk exposure is associated with unsuccessfully coping with stressful life events while moderate levels of risk exposure are associated with developing positive coping mechanisms to manage stressful life events (Yates, Egeland, & Sroufe, 2003).

Studies suggest that when youth are exposed to risky situations, and successfully cope with these situations, they are able to use these coping strategies as a response to future stress inducing events (Fergus & Zimmerman, 2005; Yates et al., 2003). Thus, it may be the case that YBMSM who are able to form moderate emotional bonds and have moderate levels of trauma exposure experience better mental health and participate in less risk behavior than men who have other levels of emotional bond formation and trauma. One limitation of the research on resilience is that most studies are cross-sectional in nature. Models of resilience have a developmental component that can only accurately be examined over a period of years. In addition, though there are research studies that elude to the importance of the challenge model of resilience as a means to understanding positive health outcomes, there are no studies specifically designed to

understand how this model of resilience may help understand the development of positive health behaviors among YBMSM. In the future, researchers may want to further examine this issue by asking questions such as, "How does level of risk exposure influence changes in mental health and sexual risk behavior over a seven-year period in a cohort of YBMSM?"

**Stability of Attachment across the Life-course and Trauma**

Study findings support extant research that suggests that forming secure attachment relationships in childhood and young adulthood is important for mental health outcomes across the life-course (Fraley, 2002). YBMSM in the current study often described how their relationship with their primary caregiver in childhood affected their young adult functioning. However, this study did not look at the stability of attachment style and how the transition to a different attachment style (e.g., secure in childhood to insecure in adulthood) could affect mental health and sexual behavior in young adulthood. Future studies should examine the stability of attachment style, as well as, how transitions in attachment style may influence mental health and sexual risk behavior among YBMSM.

A high proportion of YBMSM reported trauma in the qualitative component of this dissertation. High rates of trauma have also been documented in other studies conducted with YBMSM (Fields, et al., 2013; Radcliffe et al., 2011). Researchers have found that a change in attachment style between childhood and adulthood can usually be attributed to experiencing a traumatic life event (Waters, Weinfield, et al., 2000). Recent study findings suggest that trauma may be a significant issue among YBMSM that is related to poor health outcomes (Fields et al., 2013; Kamen et al., 2013). In addition, trauma may not only change attachment style but has also been linked to the increased likelihood of sexual risk taking (Jones et al., 2013; Miller, Reed, McNall, & Forney, 2013). This body of research is relevant to the current study considering that

88% percent of participants experience at least one form of trauma during childhood (e.g., sexual abuse, physical abuse, the death of a parent, etc.). Given that YBMSM are more likely to experience earlier sexual debut, report a history of sexual trauma, and have a low income compared to other racial/ethnic YMSM (Millett, Peterson, et al., 2012), it is crucial to understand the way in which structural disparities (e.g., income inequality) and attachment frame one's understanding of the relationships between trauma, mental health, and sexual behavior among YBMSM across the life-course.

**Adult Attachment and Relationship Configurations**

The results in this dissertation reflect the perceptions of the participants, and thus inferences concerning the influence of dyadic processes (e.g., factors associated with couples in relationships) on the hypothesized relationships cannot be made. YBMSM in the sample had many different configurations of relationships (e.g., committed, sexual relationship only, dating relationship). Much of the research literature on adult attachment, sex, and mental health has been conducted with one individual in a couple (e.g., married, dating, and engaged). Fewer studies have been conducted with both individuals in a coupled relationship (Fraley & Shaver, 2000; Stefanou & McCabe, 2012). Research suggests that couple-level factors (e.g., the power dynamics in a relationships) may influence the relationship between adult attachment and mental health (Crowell et al., 2002; van IJzendoorn & Bakermans-Kranenburg, 1996). Thus, future research should examine dyadic relationships and relationship functioning when attempting to understand the relationships between attachment and mental health.

In addition, recent research has suggested that couple and/or dyad based analyses could lend to a better understanding of HIV risk among young and Black MSM (Mustanski, Lyons, & Garcia, 2011). Research has shown that most UAI occurs within committed relationship among

MSM (Sullivan et al., 2009). Therefore, partner characteristics and relationship dynamics may play a critical role in understanding behaviors that may contribute to HIV/STI risk. For instance, power dynamics within a relationship may influence factors such as condom negotiation. Further, emotional bond formation within intimate relationships could contribute to understanding relationship dynamics (e.g., the power dynamic between two individuals in a coupled relationship) and subsequent HIV/STI risk among YBMSM. Future research should examine dyadic-based relationships when attempting to better understand the relationships between attachment and sexual risk behavior among YBMSM.

## Implications

The findings from this dissertation highlight the need for future research studies that examine the role of emotional and social bond formation in understanding mental health and sexual risk behavior among YBMSM. The study demonstrates that children who form a secure bond with a primary caregiver (e.g., primary caregiver) in childhood have lower levels of general psychological distress, depression, and anxiety. Therefore, mental health interventions should be aimed at educating parents on how to form emotional bonds with children. In addition, findings suggest that parental bonding is important to the successful navigation of the sexual orientation disclosure process, mental health, and the maintenance of healthy sexual relationships in young adulthood for YBMSM.

Though there have been a few studies that suggest that working models and attachment are fairly stable across the life-course, there can be tweaks and changes to working models, as well as the incorporation of coping strategies, which can limit the negative effects of attachment insecurity on health outcomes. The findings from this dissertation suggest that health

professionals may want to focus on promoting positive coping strategies as a means to reduce the effects of attachment insecurity.

In addition, these dissertation findings are rather preliminary but may signal the importance of incorporating a framework of emotional bond formation into the creation or modification of current HIV prevention interventions for YBMSM. Consistent with the research literature, this population of young men has heightened rates of trauma and psychological distress and is disproportionately affected by poverty, unemployment and incarceration (Millett, Peterson, et al., 2012). Thus, HIV prevention interventions must take a holistic approach in addressing this population's vulnerabilities while understanding young men's resilient strategies for managing their stress. One way to approach implementing a more inclusive model is to start with an understanding of the distribution of YBMSM's childhood and current attachment style. As discussed above, attachment can be an important means of understanding what coping strategies YBMSM will employ to manage daily stressors or stressful life events. Thus, understanding the pathways by which attachment is related to stress & coping, and subsequent HIV vulnerability would not only be one step in developing more comprehensive HIV prevention interventions, but would also help address some of the limitations of current narrowly focused HIV prevention interventions.

In addition, though the quantitative data suggested that there was no relationship between adult attachment and sexual risk behavior among YBMSM, themes emerging from the qualitative data suggested that the formation of healthy emotional bonds in childhood is important to the formation of healthy sexual relationships in young adulthood. However, considering that most UAI risk occurs within committed sexual relationships among MSM (Sullivan et al., 2009), it would be important for HIV interventions to assess issues such as

communication and support concerning safer sex practices (e.g., condom use) for YBMSM who are in a relationship because having a secure attachment style may facilitate such discussions, whereas having an insecure attachment style may hinder this process.

In summary, this dissertation marks an important contribution to the research on mental health and sexual risk behavior among YBMSM by elucidating the important role attachment plays in the development of positive mental health and health behaviors. Given the numerous health disparities and rapidly increasing incidence of HIV/STI between YBMSM and other MSM, it is important for researchers to reach beyond understanding the incidence of sexual risk behaviors and instead critically examine the role of attachment and mental health in shaping sexual practices that may increase YBMSM's risk of HIV/STI transmission.

REFERENCES

Ahrens, K. R., Ciechanowski, P., & Katon, W. (2012). Associations between adult attachment style and health risk behaviors in an adult female primary care population. *Journal of Psychosomatic Research, 72*, 364-370.

Ainsworth, M. (1967). *Infancy in Uganda: Infant care and the growth of love*. Oxford, UK: Johns Hopkins Press.

Ainsworth, M. (1989). Attachments beyond infancy. *American Psychologist, 44*, 709-716.

Ainsworth, M., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Oxford, UK: Lawrence Erlbaum.

Alvy, L. M., McKirnan, D. J., Mansergh, G., Koblin, B. A., Colfax, G. N., Flores, S. A., & Hudson, S. (2011). Depression is associated with sexual risk among men who have sex with men, but is mediated by cognitive escape and self-efficacy. *AIDS and Behavior, 15*, 1171-1179.

Anderson, R. M., May, R. M., & Anderson, B. (1992). *Infectious diseases of humans: Dynamics and control*. Oxford, UK: Oxford University Press.

Andrews, G., & Slade, T. (2007). Interpreting scores on the Kessler psychological distress scale (K10). *Australian and New Zealand Journal of Public Health, 25*, 494-497.

Bancroft, J., Janssen, E., Strong, D., & Vukadinovic, Z. (2003). The relation between mood and sexuality in gay men. *Archives of Sexual Behavior, 32*, 231-242.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*, 226-244.

Batgos, J., & Leadbeater, B. J. (1994). *Parental attachment, peer relations, and dysphoria in adolescence*. New York, NY: Guilford Press.

Bauermeister, J. A., Ventuneac, A., Pingel, E., & Parsons, J. T. (2012). Spectrums of love: Examining the relationship between romantic motivations and sexual risk among young Gay and Bisexual men. *AIDS and Behavior*, 16, 1549-1559.

Beck, A., McNally, I., & Petrak, J. (2003). Psychosocial predictors of HIV/STI risk behaviours in a sample of homosexual men. *Sexually Transmitted Infections, 79*, 142-146.

Bifulco, A., Moran, P. M., Ball, C., & Bernazzani, O. (2002). Adult attachment style. I: Its relationship to clinical depression. *Social Psychiatry and Psychiatric Epidemiology, 37*, 50-59.

Bifulco, A., Moran, P. M., Ball, C., & Lillie, A. (2002). Adult attachment style. II: Its relationship to psychosocial depressive-vulnerability. *Social Psychiatry and Psychiatric Epidemiology, 37*, 60-67.

Blatt, P. M., Lundblad, R. L., Kingdon, H. S., McLean, G., & Roberts, H. R. (1974). Thrombogenic materials in prothrombin complex concentrates. *Annals of Internal Medicine, 81*, 766-770.

Bogaert, A. F., & Sadava, S. (2002). Adult attachment and sexual behavior. *Personal Relationships, 9*, 191-204.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary method: Capturing life as it is lived. *Annual Review of Psychology, 54,* 579-616.

Bolger, N., & Eckenrode, J. (1991). Social relationships, personality, and anxiety during a major stressful event. *Journal of Social Psychology, 61*(3), 440-449.

Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology, 69*(5), 890-902.

Botnick, M. R., Heath, K. V., Cornelisse, P. G., Strathdee, S. A., Martindale, S. L., & Hogg, R. S. (2002). Correlates of suicide attempts in an open cohort of young men who have sex with men. *Canadian Journal of Public Health, 93*, 59-62.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York, NY: Basic Books.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger* New York, NY: Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss*. New York, NY: Basic Books.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (Eds.). (1998). *Self-report measurement of adult romantic attachment: An integrative overview*. New York, NY: Guilford Press.

Brennan, K. A., & Shaver, P. R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality and Social Psychology Bulletin, 21*, 267-283.

Brown, G. L., Schoppe−Sullivan, S. J., Mangelsdorf, S. C., & Neff, C. (2010). Observed and reported supportive coparenting as predictors of infant–mother and infant–father attachment security. *Early Child Development and Care, 180*, 121-137.

Brown, J. L., & Vanable, P. A. (2008). Cognitive-behavioral stress management interventions for persons living with HIV: A review and critique of the literature. *Annals of Behavioral Medicine, 35*, 26-40.

Carlos, J. A., Bingham, T. A., Stueve, A., Lauby, J., Ayala, G., Millett, G. A., & Wheeler, D. (2010). The role of peer support on condom use among Black and Latino MSM in three urban areas. *AIDS Education and Prevention, 22*(5), 430-444.

Cassidy, J., & Berlin, L. J. (1994). The insecure/ambivalent pattern of attachment: Theory and research. *Child Development, 65*, 971-991.

Catania, J. A., Gibson, D. R., Chitwood, D. D., & Coates, T. J. (1990). Methodological problems in AIDS behavioral resarch: Influences on measurement error and participantion bias in studies of sexual behavior. *Psychological Bulletin, 108*(3), 339-362.

Causey, D. L., & Dubow, E. F. (1992). Development of a self-report coping measure for elementary school children. *Journal of Clinical Child and Adolescent Psychology, 21*, 47-59.

CDC. (2010). Prevelance and awareness of HIV infection among men who have sex with men -- 21 Cities, United States, 2008. *MMWR Morbidity & Mortality Weekly Report, 59*, 1201-1207.

Celentano, D. D., Valleroy, L. A., Sifakis, F., MacKellar, D. A., Hylton, J., Thiede, H., . . . LaLota, M. (2006). Associations between substance use and sexual risk among very young men who have sex with men. *Sexually Transmitted Diseases, 33*, 265-271.

Chae, D. H., Krieger, N., Bennett, G. G., Lindsey, J. C., Stoddard, A. M., & Barbeau, E. M. (2010). Implications of discrimination based on sexuality, gender, and race/ethnicity for psychological distress among working-class sexual minorities: The United for Health Study, 2003-2004. *International Journal of Health Services, 40*, 589-608.

Cochran, S. D., & Mays, V. M. (1994). Depressive distress among homosexually active African American men and women. *American Journal of Psychiatry, 151*(4), 524-529.

Cochran, S. D., & Mays, V. M. (2000a). Lifetime prevalence of suicide symptoms and affective disorders among men reporting same-sex sexual partners: results from NHANES III. *American Journal of Public Health, 90*, 573-578.

Cochran, S. D., & Mays, V. M. (2000b). Relation between psychiatric syndromes and behaviorally defined sexual orientation in a sample of the US population. *American Journal of Epidemiology, 151*, 516-523.

Cochran, S. D., & Mays, V. M. (2009). Burden of psychiatric morbidity among Lesbian, Gay, and Bisexual individuals in the California Quality of Life Survey. *Journal of Abnormal Psychology, 118*, 647-658.

Cochran, S. D., Sullivan, J. G., & Mays, V. M. (2003). Prevalence of mental disorders, psychological distress, and mental services use among Lesbian, Gay, and Bisexual adults in the United States. *Journal of Consulting and Clinical Psychology, 71*, 53-61.

Cohen, S. (2004). Social relationships and health. *American Psychologist*, 676-685.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 386-396.

Colfax, G., Vittinghoff, E., Husnik, M. J., McKirnan, D. J., Buchbinder, S., Koblin, B. A., . . . Mayer, K. H. (2004). Substance use and sexual risk: A participant- and episode-level analysis among a cohort of men who have sex with men. *American Journal of Epidemiology, 159*, 1002-1012.

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*, 644-663.

Crepaz, N., & Marks, G. (2001). Are negative affective states associated with HIV sexual risk behaviors? A meta-analytic review. *Health Psychology, 20*, 291.

Creswell, J. W. (2006). *Qualitative inquiry & research design: Choosing among five approaches* (2nd ed.). London, UK: Sage.

Creswell, J. W., & Clark, V. L. (2007). *Designing and conducting mixed methods research*. London, UK: Sage.

Crowell, J. A., Treboux, D., Gao, Y., Fyffe, C., Pan, H., & Waters, E. (2002). Assessing secure base behavior in adulthood: Development of a measure, links to adult attachment representations and relations to couples' communication and reports of relationships. *Developmental Psychology, 38*, 679-693.

D'Augelli, A. R., Grossman, A. H., Starks, M. T., & Sinclair, K. O. (2010). Factors associated with parents' knowledge of Gay, Lesbian, and Bisexual youths' sexual orientation. *Journal of GLBT Family Studies, 6*, 178-198.

D'Augelli, A. R., Hershberger, S. L., & Pilkington, N. W. (2010). Lesbian, Gay, and Bisexual youth and their families: Disclosure of sexual orientation and its consequences. *American Journal of Orthopsychiatry, 68*, 361-371.

Davila, J. (2001). Refining the association between excessive reassurance seeking and depressive symptoms: The role of related interpersonal constructs. *Journal of Social and Clinical Psychology, 20*, 538-559.

Davis, D., Shaver, P. R., & Vernon, M. L. (2003). Physical, emotional, and behavioral reactions to breaking up: The roles of gender, age, emotional involvement, and attachment style. *Personality and Social Psychology Bulletin, 29*, 871-884.

Dempsey, M. (2002). Negative coping as mediator in the relation between violence and outcomes: Inner−city African American youth. *American Journal of Orthopsychiatry, 72*, 102-109.

Derogatis, L. R. (1975). SCL-90-R administration, scoring and procedures manual-II for the revised version and other instruments of the psychopathology rating scale series. *Clinical Psychometrics Research*.

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 3*, 595-605.

Detrie, P. M., & Lease, S. H. (2007). The relation of social support, connectedness, and collective self-esteem to the psychological well-being of Lesbian, Gay, and Bisexual youth. *Journal of Homosexuality, 53*, 173-199.

Ditzen, B., Schmidt, S., Strauss, B., Nater, U. M., Ehlerta, U., & Heinrichs, M. (2008). Adult attachment and social support interact to reduce psychological but not cortisol responses to stress. *Journal of Psychosomatic Research, 64*, 479-486.

Dolezal, C., Carballo-Diéguez, A., Nieves-Rosa, L., & Díaz, F. (2000). Substance use and sexual risk behavior: Understanding their association among four ethnic groups of Latino men who have sex with men. *Journal of Substance Abuse, 11*, 323-336.

Dudley, M. G., Rostosky, S. S., Korfhage, B. A., & Zimmerman, R. S. (2004). Correlates of high-risk sexual behavior among young men who have sex with men. *AIDS Education and Prevention, 16*, 328-340.

Edwards, G. L., & Barber, B. L. (2010). The relationship between rejection sensitivity and compliant condom use. *Archives of Sexual Behavior, 39*, 1381-1388.

Elizur, Y., & Mintzer, A. (2001). A framework for the formation of gay male identity: Processes associated with adult attachment style and support from family and friends. *Archives of Sexual Behavior, 30*, 143-167.

Feeney, B. C., & Kirkpatrick, L. A. (1996). Effects of adult attachment and presence of romantic partners on physiological responses to stress. *Journal of Personality and Social Psychology, 70*, 255-270.

Feeney, J. A. (1999). Issues of closeness and distance in dating relationships: Effects of sex and attachment style. *Journal of Social and Personal Relationships, 16*, 571-590.

Feeney, J. A. (2000). Implications of attachment style for patterns of health and illness. *Child Care Health and Development, 26*, 277-288.

Feeney, J. A. (2002). Attachment, marital interaction, and relationship satisfaction: A diary study. *Personal Relationships, 9*, 39-55.

Feeney, J. A. (2008). Adult romantic attachment: Developments in the study of couple relationships. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 456-481). New York, NY: Guilford Press.

Feeney, J. A., Kelly, L., Gallois, C., Peterson, C., & Terry, D. J. (1999). Attachment style, assertive communication, and safer-sex behavior. *Journal of Applied Social Psychology, 29*, 1964-1983.

Feeney, J. A., & Noller, P. (1991). Attachment style and verbal descriptions of romantic partners. *Journal of Social and Personal Relationships, 8*, 187-215.

Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in adults: Clinical and developmental perspectives* (pp. 128-152). New York, NY: Guilford Press.

Feeney, J. A., Noller, P., & Patty, J. (1993). Adolescents' interactions with the opposite sex: Influence of attachment style and gender. *Journal of Adolescence, 16*, 169-186.

Feeney, J. A., Peterson, C., Gallois, C., & Terry, D. J. (2000). Attachment style as a piedictor of sexual attitudes and behavior in late Adolescence. *Psychology & Health, 14*, 1105-1122.

Feeney, J. A., & Raphael, B. (1992). Adults attachments and sexuality: Implications for understanding risk behviors for HIV-Infection. *Australian and New Zealand Journal of Psychiatry, 26*, 399-407.

Feeney, J. A., & Ryan, S. M. (1994). Attachment style and affect regulation: Relationships with health behavior and family experiences of illness in a student sample. *Health Psychology, 13*, 334-345.

Feldman, M. B. (2010). A critical literature review to identify possible causes of higher rates of HIV infection among young black and Latino men who have sex with men. *Journal of the National Medical Association, 102*, 1206-1221.

Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health, 26*, 399-419.

Fevens, A., Spinner, B., & Ditommaso, E. (1994). The relationship between adult attachment style and mental health. *Canadian Psychology-Psychologie Canadienne, 35*, 153-153.

Fields, E. L., Bogart, L. M., Galvan, F. H., Wagner, G. J., Klein, D. J., & Schuster, M. A. (2013). Association of discrimination-related trauma with sexual risk among HIV-positive African American men who have sex with men. *American Journal of Public Health, 103*, 875-880.

Fraley, R. C. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review, 6*, 123-151.

Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology, 4*, 132-154.

Fraley, R. C., Vicary, A. M., Brumbaugh, C. C., & Roisman, G. I. (2011). Patterns of stability in adult attachment: An empirical test of two models of continuity and change. *Journal of Personality and Social Psychology, 101*, 974-992.

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*, 350-365.

Freeman, E. W., DeRubeis, R. J., & Rickels, K. (1996). Reliability and validity of a daily diary for premenstrual syndrome. *Psychiatry Research, 65*, 97-106.

Fydrich, T., Dowdall, D., & Chambless, D. L. (1992). Reliability and validity of the Beck Anxiety Inventory. *Journal of Anxiety Disorders, 6*, 55-61.

Gable, S. L., Reis, H. T., & Elliot, A. J. (2000). Behavioral activation and inhibition in everyday life. *Journal of Personality and Social Psychology, 78*, 1135-1149.

Gentzler, A. L., & Kerns, K. A. (2004). Association between insecure attachment and sexual experiences. *Personal Relationships, 11*, 249-265.

George, C., Kaplan, N., & Main, M. (1985). *Adult attachment interview (AAI)*. Unpublished manuscript, university of California at Berkeley.

Gilman, S. E., Cochran, S. D., Mays, V. M., Hughes, M., Ostrow, D., & Kessler, R. C. (2001). Risk of psychiatric disorders among individuals reporting same-sex sexual partners in the National Comorbidity Survey. *American Journal of Public Health, 91*, 933-939.

Glick, S. N., Winer, R. L., & Golden, M. R. (2012). Web-based sex diaries and young adult men who have sex with men: Assessing feasibility, reactivity, and data agreement. *Archives of Sexual Behavior*, 1-9.

Gormley, B., & Lopez, F. G. (2010). Psychological abuse perpetration in college dating relationships contributions of gender, stress, and adult attachment orientations. *Journal of Interpersonal Violence, 25*, 204-218.

Graham, C. A., Catania, J. A., Brand, R., Duong, T. U., & Canchola, J. A. (2003). Recalling sexual behavior: A methodological analysis of memory recall bias via interview using the diary as the gold standard. *Journal of Sex Research, 40*, 325-332.

Griffin, D. W., & Bartholomew, K. (1994). The metaphysics of measurement: The case of adult attachment. *Advances in Personal Relationships, 5*, 17-52.

Grossman, K. E., Grossman, K., & Waters, E. (2005). *Attachment from infancy to adulthood*. New York, NY: Guilford.

Halkitis, P. N., Brockwell, S., Siconolfi, D. E., Moeller, R. W., Sussman, R. D., Mourgues, P. J., . . . Sweeney, M. M. (2011). Sexual behaviors of adolescent emerging and young adult men who have sex with men ages 13-29 in New York City. *Journal of Acquired Immune Deficiency Syndromes, 56*, 285-291.

Halkitis, P. N., Moeller, R. W., Siconolfi, D. E., Storholm, E. D., Solomon, T. M., & Bub, K. L. (2012). Measurement model exploring a syndemic in emerging adult Gay and Bisexual men. *AIDS and Behavior*, 1-12.

Halkitis, P. N., Wolitski, R. J., & Millett, G. A. (2013). A holistic approach to addressing HIV infection disparities in Gay, Bisexual, and other men who have sex with men. *American Psychologist, 68*, 261-273.

Hamilton, C. E. (2000). Continuity and discontinuity of attachment from infancy through adolescence. *Child Development, 71*, 690-694.

Harawa, N. T., Williams, J. K., Ramamurthi, H. C., Manago, C., Avina, S., & Jones, M. (2008). Sexual behavior, sexual identity, and substance abuse among low-income Bisexual and non-Gay-identifying African American men who have sex with men. *Archives of Sexual Behavior, 37*, 748-762.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualization as an attachment process. *Journal of Personality and Social Psychology 52*(3), 511-524.

Hazan, C., & Shaver, R. P. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5*, 1-22.

Hazan, C., Zeifman, D., & Middleton, K. (1994a, July). *Adult romantic attachment, affection, and sex*. In 7th International Conference on Personal Relationships, Groningen, The Netherlands.

Hazan, C., Zeifman, D., & Middleton, K. (1994b). *Adult romantic attachment, affection, and sex.* Paper presented at the 7th International Conference on Personal Relationships, Groningen, The Netherlands.

Hill, W. A., & McNeely, C. (2011). HIV/AIDS disparity between African-American and Caucasian men who have sex with men: Intervention strategies for the Black church. *Journal of Religion and Health*, 1-13.

Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *Stata Journal, 7*, 281-312.

Horvath, K. J., Beadnell, B., & Bowen, A. M. (2007). A daily web diary of the sexual experiences of men who have sex with men: Comparisons with a retrospective recall survey. *Aids and Behavior, 11*, 537-548.

Hsieh, H., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*, 1277-1288.

Ivarsson, B., Lindström, L., Malm, U., & Norlander, T. (2011). The self-assessment perceived global distress scale: Reliability and construct validity. *Psychology, 2*, 283-290.

Jellison, W. A., & McConnell, A. R. (2004). The mediating effects of attitudes toward homosexuality between secure attachment and disclosure outcomes among Gay men. *Journal of Homosexuality, 46*, 159-177.

Jones, D. J., Lewis, T., Litrownik, A., Thompson, R., Proctor, L. J., Isbell, P., . . . Nagin, D. (2013). Linking childhood sexual abuse and early adolescent risk behavior: The intervening role of internalizing and externalizing problems. *Journal of Abnormal Child Psychology*, *41*, 139-150.

Kalichman, S. C., Roffman, R. A., Picciano, J. F., & Bolan, M. (1998). Risk for HIV infection among Bisexual men seeking HIV-prevention services and risks posed to their female partners. *Health Psychology, 17*, 320-327.

Kamen, C., Etter, D., Flores, S. A., Sharp, S., Lee, S., & Gore-Felton, C. (2013). Sexual risk behaviors by relationship type and trauma history among HIV-positive men who have sex with men. *Archives of Sexual Behavior, 42*, 257-265.

Kershaw, T. S., Milan, S., Westdahl, C., Lewis, J., Rising, S. S., Fletcher, R., & Ickovics, J. (2007). Avoidance, anxiety, and sex: the influence of romantic attachment on HIV-risk among pregnant women. *AIDS and Behavior, 11*, 299-311.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*, 959-976.

Kidd, B., Martin, M., & Martin, D. (2012). A qualitative study of the role of friendship in late adolescent and young adult Heterosexual romantic relationships. *Interpersona: An International Journal on Personal Relationships, 6*, 54-74.

King, M., McKeown, E., Warner, J., Ramsay, A., Johnson, K., Cort, C., . . . Davidson, O. (2003). Mental health and quality of life of Gay men and Lesbians in England and Wales Controlled, cross-sectional study. *The British Journal of Psychiatry, 183*, 552-558.

King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in Lesbian, Gay and Bisexual people. *BMC Psychiatry, 8*, 70-87.

Kipke, M. D., Kubicek, K., Weiss, G., Wong, C., Lopez, D., Iverson, E., & Ford, W. L. (2007). The health and health behaviors of young men who have sex with men. *Journal of Adolescent Health, 40*, 342-350.

Kirkpatrick, L. A., & Hazan, C. (1994). Attachment styles and close relationships: A four-year prospective study. *Personal Relationships, 1*, 123-142.

Kirkpatrick, L. A., & Shaver, P. R. (1992). An attachment-theoretical approach to romantic love and religious belief. *Personality and Social Psychology Bulletin, 18*, 266-275.

Koblin, B. A., Husnik, M. J., Colfax, G., Huang, Y., Madison, M., Mayer, K. H., . . . Buchbinder, S. (2006). Risk factors for HIV infection among men who have sex with men. *AIDS, 20*, 731-739.

Kraft, J. M., Beeker, C., Stokes, J. P., & Peterson, J. L. (2000). Finding the "community" in community-level HIV/AIDS interventions: Formative research with young African American men who have sex with men. *Health Education & Behavior, 27*, 430-441.

Kurtz, S. P., Buttram, M. E., Surratt, H. L., & Stall, R. D. (2012). Resilience, syndemic factors, and serosorting behaviors among HIV-positive and HIV-negative substance-using MSM. *AIDS Education and Prevention, 24*, 193-205.

Latkin, C., Yang, C., Tobin, K., Roebuck, G., Spikes, P., & Patterson, J. (2012). Social network predictors of disclosure of MSM behavior and HIV-positive serostatus among African American MSM in Baltimore, Maryland. *AIDS and Behavior, 16*, 535-542.

Lazarus, R. S. (2000). Toward better research on stress and coping. *American Psychologist, 55*, 665-673.

Leech, N. L., & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality & Quantity, 43*, 265-275.

Lelutiu-Weinberger, C., Pachankis, J. E., Golub, S. A., Ja'Nina, J. W., Bamonte, A. J., & Parsons, J. T. (2013). Age cohort differences in the effects of Gay-related stigma, anxiety and identification with the Gay community on sexual risk and substance use. *AIDS and Behavior, 17*, 340-349.

Levy, M. B., & Davis, K. E. (1988). Lovestyles and attachment styles compared: Their relations to each other and to various relationship characteristics. *Journal of Social and Personal Relationships, 5*, 439-471.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, 66-104.

Maulsby, C., Millett, G. A., Lindsey, K., Kelley, R., Johnson, K., Montoya, D., & Holtgrave, D. (2013). HIV among Black men who have sex with men (MSM) in the United States: A review of the literature. *AIDS and Behavior*, 1-16.

Mays, V. M., & Cochran, S. D. (2001). Mental health correlates of perceived discrimination among Lesbian, Gay, and Bisexual adults in the United States. *American Journal of Public Health, 91*, 1869-1876.

McKirnan, D. J., Ostrow, D. G., & Hope, B. (1996). Sex, drugs and escape: A psychological model of HIV-risk sexual behaviours. *AIDS Care, 8*, 655-670.

McKirnan, D. J., Vanable, P. A., Ostrow, D. G., & Hope, B. (2001). Expectancies of sexual "escape" and sexual risk among drug-and alcohol-involved Gay and Bisexual men. *Journal of Substance Abuse, 13*, 137-154.

McNair, P. M., Lorr, M., & Droppleman, L. F. (1981). Profile of Moods Scale (POMS) manual. San Diego, CA: Educational and Industrial Testing Service.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in Lesbian, Gay, and Bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*, 674-697.

Meyer, I. H., Dietrich, J., & Schwartz, S. (2008). Lifetime prevalence of mental disorders and suicide attempts in diverse Lesbian, Gay, and Bisexual populations. *American Journal of Public Health, 98*, 1004-1006.

Meyer, I. H., Schwartz, S., & Frost, D. M. (2008). Social patterning of stress and coping: Does disadvantaged social statuses confer more stress and fewer coping resources? *Social Science & Medicine, 67*, 368-379.

Mikulincer, M., & Florian, V. (1998). The relationship between adult attachment styles and emotional and cognitive reactions to stressful events. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 143-165). New York, NY: Guilford.

Mikulincer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the Gulf War in Israel. *Journal of Personality and Social Psychology, 64*, 817-826.

Mikulincer, M., & Orbach, I. (1995). Attachment styles and repressive defensiveness: The accessibility and architecture of affective memories. *Journal of Personality and Social Psychology, 68*, 917-925.

Mikulincer, M., & Shaver, P. R. (2007). *Adult attachment: Structure, dynamics, and change*. New York: Guilford.

Miller, L. C., & Fishkin, S. A. (1997). On the dynamics of human bonding and reproductive success: Seeking windows on the adapted-for human–environmental interface. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 97-236). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Miller, R. L., Reed, S. J., McNall, M. A., & Forney, J. C. (2013). The effect of trauma on recent inconsistent condom use among young Black Gay and Bisexual men. *Journal of HIV/AIDS & Social Services, 12*, 349-367.

Millett, G. A., Flores, S. A., Peterson, J. L., & Bakeman, R. (2007). Explaining disparities in HIV infection among Black and White men who have sex with men: A meta-analysis of HIV risk behaviors. *AIDS Care, 1*, 2083-2091.

Millett, G. A., Jeffries, W. L., Peterson, J. L., Malebranche, D. J., Lane, T., Flores, S. A., . . . Heilig, C. M. (2012). Common roots: A contextual review of HIV epidemics in **lack** men who have sex with men across the African diaspora. *The Lancet,380*, 411-423.

Millett, G. A., Peterson, J. L., Flores, S. A., Hart, T. A., Jeffries, W. L., Wilson, P. A., . . . Fenton, K. A. (2012). Comparisons of disparities and risks of HIV infection in Black and other men who have sex with men in Canada, UK, and USA: A meta-analysis. *The Lancet, 380*, 341-348.

Mohr, J. J. (1999). Same-sex romantic attachment. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 378-394). New York, NY: Guilford Press.

Mohr, J. J., & Fassinger, R. E. (2003). Self-acceptance and self-disclosure of sexual orientation in Lesbian, Gay, and Bisexual adults: An attachment perspective. *Journal of Counseling Psychology, 50*, 482-495.

Murphy, B., & Bates, G. W. (1997). Adult attachment style and vulnerability to depression. *Personality and Individual Differences, 22*, 835-844.

Mustanski, B. (2007). The influence of state and trait affect on HIV risk behaviors: A daily diary study of MSM. *Health Psychology, 26*, 618-626.

Mustanski, B., Lyons, T., & Garcia, S. C. (2011). Internet use and sexual health of young men who have sex with men: A mixed-methods study. *Archives of Sexual Behavior, 40*, 289-300.

Mutchler, M. G., Bogart, L. M., Elliott, M. N., McKay, T., Suttorp, M. J., & Schuster, M. A. (2008). Psychosocial correlates of unprotected sex without disclosure of HIV-positivity

among African-American, Latino, and White men who have sex with men and women. *Archives of Sexual Behavior, 37*, 736-747.

Nelson, W. A., & Clum, G. A. (2002). Assessment of panic frequency: Reliability and validity of a time-line follow-back method. *Journal of Psychopathology and Behavioral Assessment, 24*, 47-54.

Newcomb, M. E., & Mustanski, B. (2011). Moderators of the relationship between internalized homophobia and risky sexual behavior in men who have sex with men: A meta-analysis. *Archives of Sexual Behavior, 40*, 189-199.

Newcomb, M. E., & Mustanski, B. (2013). Racial differences in same-race partnering and the effects of sexual partnership characteristics on HIV risk in MSM: A prospective sexual diary study. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 62*, 329-333.

Okami, P. (2002). *Dear diary: A useful but imperfect method*. In M.W. Weiderman & B. E. Whitley (Eds.), *Handbook for conducting research on human sexuality* (pp. 195-207). Mahwah, NJ: Erlbaum.

Oster, A. M., Wiegand, R. E., Sionean, C., Miles, I. J., Thomas, P. E., Melendez-Morales, L., . . . Millett, G. A. (2011). Understanding disparities in HIV infection between Black and White MSM in the United States. *AIDS, 25*, 1103-1112.

Perdue, T., Hagan, H., Thiede, H., & Valleroy, L. (2003). Depression and HIV risk behavior among Seattle-area injection drug users and young men who have sex with men. *AIDS Education and Prevention, 15*, 81-92.

Peterson, J. L., Folkman, S., & Bakeman, R. (1996). Stress, coping, HIV status, psychosocial resources, and depressive mood in African American Gay, Bisexual, and Heterosexual men. *American Journal of Community Psychology, 24*, 461-487.

Pitt, R. N. (2010). "Killing the messenger": Religious Black Gay men's neutralization of anti‐gay religious messages. *Journal for the Scientific Study of Religion, 49*, 56-72.

Polek, E., van Oudenhoven, J. P., & ten Berge, J. M. (2008). Attachment styles and demographic factors as predictors of sociocultural and psychological adjustment of Eastern European immigrants in the Netherlands. *International Journal of Psychology, 43*, 919-928.

Radcliffe, J., Beidas, R., Hawkins, L., & Doty, N. (2011). Trauma and sexual risk among sexual minority African American HIV-positive young adults. *Traumatology, 17*, 24-33.

Ravitz, P., Maunder, R., Hunter, J., Sthankiya, B., & Lancee, W. (2010). Adult attachment measures: A 25-year review. *Journal of Psychosomatic Research, 69*, 419-432.

Rea, L. M., & Parker, R. A. (2012). *Designing and conducting survey research: A comprehensive guide* (3rd ed.). Hoboken, NJ: Jossey-Bass.

Reese-Weber, M., & Marchand, J. F. (2002). Family and individual predictors of late adolescents' romantic relationships. *Journal of Youth and Adolescence, 31*, 197-206.

Reisner, S. L., Mimiaga, M. J., Safren, S. A., & Mayer, K. H. (2009). Stressful or traumatic life events, post-traumatic stress disorder (PTSD) symptoms, and HIV sexual risk taking among men who have sex with men. *AIDS Care, 21*, 1481-1489.

Reisner, S. L., Mimiaga, M. J., Skeer, M., Bright, D., Cranston, K., Isenberg, D., . . . Mayer, K. H. (2009). Clinically significant depressive symptoms as a risk factor for HIV infection among Black MSM in Massachusetts. *AIDS and Behavior, 13*, 798-810.

Rholes, W. S., & Simpson, J. A. (2006). *Adult attachment: Theory, research, and clinical implications*. New York, NY: Guilford Press.

Ridge, S. R., & Feeney, J. A. (1998). Relationship history and relationship attitudes in gay males and lesbians: Attachment style and gender differences. *Australian and New Zealand Journal of Psychiatry, 32*, 848-859.

Ridley, C., Ogolsky, B., Payne, P., Totenhagen, C., & Cate, R. (2008). Sexual expression: Its emotional context in Heterosexual, Gay, and Lesbian couples. *Journal of Sex Research, 45*, 305-314.

Roisman, G. I., Holland, A., Fortuna, K., Fraley, R. C., Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology, 92*, 678-697.

Rothman, E. F., Sullivan, M., Keyes, S., & Boehmer, U. (2012). Parents' supportive reactions to sexual orientation disclosure associated with better health: Results from a population-based survey of LGB adults in Massachusetts. *Journal of Homosexuality, 59*, 186-200.

Sable, P. (2007). What is adult attachment? *Clinical Social Work Journal, 36*, 21-30.

Salomon, E. A., Mimiaga, M. J., Husnik, M. J., Welles, S. L., Manseau, M. W., Montenegro, A. B., . . . Mayer, K. H. (2009). Depressive symptoms, utilization of mental health care, substance use and sexual risk among young men who have sex with men in EXPLORE: Implications for age-specific interventions. *AIDS and Behavior, 13*, 811-821.

Sandfort, T. G., de Graaf, R., & Bijl, R. V. (2003). Same-sex sexuality and quality of life: Findings from the Netherlands Mental Health Survey and Incidence Study. *Archives of Sexual Behavior, 32*, 15-22.

Schachner, D. A., & Shaver, P. R. (2004). Attachment dimensions and sexual motives. *Personal Relationships, 11*, 179-195.

Shaver, P. R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment & Human Development, 4*, 133-161.

Sibley, C. G., & Liu, J. H. (2004). Short-term temporal stability and factor structure of the revised experiences in close relationships (ECR-R) measure of adult attachment. *Personality and Individual Differences, 36*, 969-975.

Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology, 59*, 971-980.

Simpson, J. A., Collins, W. A., Tran, S., & Haydon, K. C. (2007). Attachment and the experience and expression of emotions in romantic relationships: A developmental perspective. *Journal of Personality and Social Psychology, 92*, 355-367.

Simpson, J. A., & Gangestad, S. W. (1991). Individual differences in sociosexuality: evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology, 60*, 870-883.

Simpson, J. A., & Rholes, W. S. (1998). *Attachment theory and close relationships*. New York, NY: Guilford Press.

Simpson, J. A., & Rholes, W. S. (2010). Attachment and relationships: Milestones and future directions. *Journal of Social and Personal Relationships, 27*, 173-180.

Simpson, S. M., Krishna, L. L., Kunik, M. E., & Ruiz, P. (2006). Racial disparities in diagnosis and treatment of depression: A literature review. *Psychiatric Quarterly, 78*, 3-14.

Snowden, J. M., Raymond, H. F., & McFarland, W. (2009). Prevalence of seroadaptive behaviours of men who have sex with men, San Francisco, 2004. *Sexually Transmitted Infections, 85*, 469-476.

Stall, R., Mills, T. C., Williamson, J., Hart, T. A., Greenwood, G., Paul, J., . . . Catania, J. A. (2003). Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American Journal of Public Health, 93*, 939-942.

Stefanou, C., & McCabe, M. P. (2012). Adult attachment and sexual functioning: A review of past research. *Journal of Sexual Medicine, 9*, 2499-2507.

Strachman, A., Impett, E. A., Henson, J. M., & Pentz, M. A. (2009). Early adolescent alcohol use and sexual experience by emerging adulthood: A 10-year longitudinal investigation. *Journal of Adolescent Health, 45*, 478-482.

Sullivan, P. S., Salazar, L. F., Buchbinder, S., & Sanchez, T. H. (2009). Estimating the proportion of HIV transmissions from main sex partners among men who have sex with men in five US cities. *AIDS, 23*, 1153-1162.

van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (1996). Attachment representations in mothers, fathers, adolescents, and clinical groups: A meta-analytic search for normative data. *Journal of Consulting and Clinical Psychology, 64*, 8-21.

Waters, E., Merrick, S., Treboux, D., Crowell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A twenty-year longitudinal study. *Child Development, 71*, 684-689.

Waters, E., Weinfield, N. S., & Hamilton, C. E. (2000). The stability of attachment security from infancy to adolescence and early adulthood: General discussion. *Child Development, 71*, 703-706.

Wei, M., Russell, D. W., & Zakalik, R. A. (2005). Adult attachment, social self-efficacy, self-disclosure, loneliness, and subsequent depression for freshman college students: A longitudinal study. *Journal of Counseling Psychology, 52*, 602-614.

Weinfield, N. S., Sroufe, L. A., & Egeland, B. (2000). Attachment from infancy to early adulthood in a high−risk sample: Continuity, discontinuity, and their correlates. *Child Development, 71*, 695-702.

Williams, M. L., Elwood, W. N., & Bowen, A. M. (2000). Escape from risk: A qualitative exploration of relapse to unprotected anal sex among men who have sex with men. *Journal of Psychology & Human Sexuality, 11*, 25-49.

Wilson, P. A., Cook, S. H., McGaskey, J., Rowe, M., & Dennis, N. (2008). Situational predictors of sexual risk episodes among men with HIV who have sex with men. *Sexually Transmitted Infections, 84*, 506-508.

Wilson, P. A., Wittlin, N. M., Muñoz-Laboy, M., & Parker, R. A. (2011). Ideologies of Black churches in New York City and the public health crisis of HIV among Black men who have sex with men. *Global Public Health, 6*, S227-S242.

Wohl, A. R., Galvan, F. H., Myers, H. F., Garland, W., George, S., Witt, M., . . . Carpio, F. (2010). Social support, stress and social network characteristics among HIV-positive Latino and African American women and men who have sex with men. *AIDS and Behavior, 14*, 1149-1158.

Yates, T. M., Egeland, B., & Sroufe, A. (2003). Rethinking resilience: A developmental process perspective. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 243-256). New York, NY: Cambridge University Press.

Yeun, E. J., & Shin Park, K. K. (2006). Verification of the profile of mood states brief: Cross cultural analysis. *Journal of Clinical Psychology, 62*, 1173-1180.

Zakalik, R. A., & Wei, M. (2006). Adult attachment, perceived discrimination based on sexual orientation, and depression in Gay males: Examining the mediation and moderation effects. *Journal of Counseling Psychology, 53*, 302-313.

Zeger, S. L., & Liang, K. (1986). Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*, *42*, 121-130.

Zuroff, D. C., & Fitzpatrick, D. K. (1995). Depressive personality styles: Implications for adult attachment. *Personality and Individual Differences, 18*, 253-265.

# APPENDIX A

## DISSERTATION TABLES

Table 1

*A Summary of Findings on Attachment Orientation and Depression in Nonclinical Samples*

| Study | Attachment scale | Depression scale | Main findings |
|---|---|---|---|
| *Studies assessing attachment types* | | | |
| Kobak et al. (1991)* | AAI | DPI | Secure < Insecure |
| Mikulincer et al. (1993) | HS types | SCL-90 | Secure < Anxious |
| Person et al. (1993) | AAI | CES-D | Secure < Insecure |
| Radecki-Bush et al. (1993) | HS types | BDI | Secure < Anxious, Avoidant |
| Pearson et al. (1994) | AAI | CES-D | Secure < Insecure |
| Kobak & Ferenz-Gillies (1995) | AAI | DPI | Secure < Anxious |
| Priel & Shamai (1995) | HS types | BDI | Secure < Anxious, Avoidant |
| Cole-Detke & Kobak (1996) | AAI | CES-D | Secure < Anxious |
| Salzman (1996) | Interview | CES-D | Secure < Anxious |
| Cooper et al. (1998) | HS types | SCL-90 | Secure < Avoidant < Anxious |
| Torquanti & Vazsonyi (1999) | AAS | BDI | Secure < Insecure |
| Bosquet & Egeland (2001) | AAI | CES-D | Ns differences |
| Muris et al. (2001) | HS types | CDI | Secure < Anxious |
| Ciechanowski, Walker, et al. (2002) | RSQ | MHI | Secure < Anxious, Avoidant, Fearful |
| Riggs & Jacabvitz (2002) | AAI | CES-D | Secure > Avoidant for W but not for M |
| E. K. Adam et al. (2004) | AAI | BSI | Ns differences |
| Dickstein et al. (2004) | AAI | BDI | Secure < Insecure |
| Treboux et al. (2004) | AAI, CRI | BDI | Secure < Insecure |
| DeOliveria et al. (2005) | AAI | CES-D | Secure < Avoidant, Unresolved |
| Tarabulsy et al. (2005) | AAI | CES-D | No significant differences |
| *Studies assessing attachment style ratings* | | | |
| J. E. Roberts et al. (1996, study 1) | HS ratings | IDD | Secure (-), Anxious (+), Avoidant (+) |
| Mickelson et al. (1997) | HS ratings | BDI | Secure (-), Anxious (+), Avoidant (ns), Fearful (+) |
| Murphy & Bates (1997) | RQ | BDI | Secure (-), Anxious (+), Avoidant (+) |
| Shapiro & Levendosky (1999) | AAS | CDI | Secure (-), Anxious (+), Avoidant (+) |
| Davila (2001, Study 2)* | Interview | SCID-Interview | Secure (-), Anxious (+), Fearful (+) |
| Onishi et al. (2001) | ECR | GBI | Secure (-), Anxious (+), Avoidant (ns), Fearful (+) |
| Haaga et al. (2002, Study 1) | RQ | BDI | Secure (-), Anxious (+), Avoidant (ns), Fearful (ns) |
| R. L. Scott & Cordova (2002) | HS ratings | BDI | Secure (-), Anxious (+), Avoidant (ns) for W<br>Secure (-), Anxious (+), Avoidant (+) for M |

Table 1 (cont'd)

| Study | Attachment scale | Depression scale | Main findings |
|---|---|---|---|
| Wayment & Vierhaler (2002) | ASQ | SCL-90 | Secure (-), Anxious (+), Avoidant (+) |
| Davila et al. (2004, study 1) | RQ | SCL-90 | Secure (ns), Anxious (+), Avoidant (ns), Fearful (ns) |
| Davila et al. (2004, study 2)* | Interview | IDD | Secure (-), Anxious (+), Avoidant (ns), Fearful (ns) |
| S. Reis & Grenyer (2004, Study 2) | RQ | BDI | Secure (-), Anxious (+), Avoidant (ns), Fearful (-) |
| Heene et al. (2005) | AAS | SCL-90 | Secure (-), Anxious (+), Avoidant (+) |
| Irons & Gilbert (2005) | HS ratings | CDI | Secure (-), Anxious (+), Avoidant (+) |
| Irons et al. (2006) | RQ | CES-D | Secure (-), Anxious (+), Avoidant (ns), Fearful (-) |
| Permuy et al. (2010) | RQ | BDI | Secure (ns), Anxious (+), Avoidant (ns), Fearful (+) |
| Surcinelli et al. (2010) | RQ | BDI | Secure (-), Anxious (+), Avoidant (+), Fearful (+) |
| *Studies assessing attachment dimensions* | | | |
| Carnelley et al. (2004, Study 1)* | RQ | CES-D | Anxiety (+), Avoidance (+) |
| Hammen et al. (1995)* | AAS | SCID-Interview | Anxiety (+), Avoidance (+) |
| Whisman & McGarvey (1995) | INVAA | BDI | Anxiety (+), Avoidance (ns) |
| J. E. Roberts al. (1996, Study 2)* | AAS | IDD | Anxiety (+), Avoidance (+) |
| J. E. Roberts al. (1996, Study 3)* | AAS | IDD | Anxiety (+), Avoidance (+) |
| Burge et al. (1997) | AAS | SCID-Interview | Anxiety (+), Avoidance (ns) |
| West et al. (1998) | RAQ | CES-D | Anxiety (+) |
| Torquati & Vazsonyi (1999) | AAS | BDI | Anxiety (+), Avoidance (+) |
| Whiffen et al. (1999) | AAS | BDI | Anxiety (+), Avoidance (+) |
| Davila (2001, Study 1)* | AAS, RQ | BDI | Anxiety (+), Avoidance (+) |
| R. DeFronzo et al. (2001) | RSQ-avoidance | BDI | Avoidance (+) |
| Lopez et al. (2001) | ECR | DACL | Anxiety (+), Avoidance (ns) |
| Reese-Weber & Marchand (2002) | AAS-anxiety | CES-D | Anxiety (+) |
| Williamson et al. (2002) | RQ | CES-D | Anxiety (+), Avoidance (+) |
| Besser& Priel (2003) | RQ | CES-D | Anxiety (+), Avoidance (+) |
| Simpson et al. (2003) | AAQ | CES-D | Anxiety (+), Avoidance (+) |
| Strodl & Noller (2003) | ASQ | BDI | Anxiety (+), Avoidance (+) |
| Wei et al. (2003) | AAS | BDI | |
| Bifulco et al. (2004) | ASI | SCID-Interview | Anxiety (+), Avoidance (+) |
| Marchand (2004) | AAS | CES-D | Anxiety (+), Avoidance (ns) for W<br>Anxiety (+), Avoidance (+) for M |
| Marchand et al. (2004) | AAS | CES-D | Anxiety (+), Avoidance (ns) for W<br>Anxiety (+), Avoidance (+) for M |
| Pesonen et al. (2004) | AAS, RQ | CES-D | Anxiety (+), Avoidance (+) |
| Safford et al. (2004) | AAS | BDI | Anxiety (+), Avoidance (+) |
| Treboux et al. (2004) | ECR | BDI | Anxiety (+), Avoidance (+) |
| Wei, Russel , et al. (2004) | ECR | DASS | Anxiety (+), Avoidance (+) |

Table 1 (cont'd)

| Study | Attachment scale | Depression scale | Main findings |
|---|---|---|---|
| Williams & Riskind (2004) | ECR | BDI | Anxiety (+), Avoidance (+) |
| Besser & Priel (2005) | RQ | CES-D | Anxiety (+), Avoidance (ns) |
| Carmichael & Reis (2005) | ECR | CES-D | Anxiety (+), Avoidance (+) for W<br>Anxiety (+), Avoidance (ns) for M |
| Gamble & Roberts (2005) | AAS | IDD | Anxiety (+), Avoidance (+) |
| Hankin et al. (2005, Study 1)* | AAS | IDD | Anxiety (+), Avoidance (+) |
| Hankin et al. (2005, Study 2)* | AAS | IDD | Anxiety (+), Avoidance (+) |
| Hankin et al. (2005, Study 3)* | AAS | IDD | Anxiety (+), Avoidance (+) |
| Maunder et al. (2005)* | ECR | CES-D | Anxiety (+), Avoidance (+) |
| Picardi, Mazzoti, et al. (2005)* | ECR | ZDS | Anxiety (+), Avoidance (+) |
| Shaver et al. (2005, Study 1) | ECR | CES-D | Anxiety (+), Avoidance (ns) |
| Shaver et al. (2005, Study 2) | ECR | CES-D | Anxiety (+), Avoidance (ns) |
| Wei, Mallinckrodt, et al. (2005) | ECR | CES-D | Anxiety (+), Avoidance (+) |
| Wei, Russell, & Zakalic (2005)* | ECR | CES-D | Anxiety (+), Avoidance (ns) |
| Wei, Shaffer, et al. (2005) | ECR | ZDS, CES-D | Anxiety (+), Avoidance (+) |
| Whiffen (2005)* | ECR | CES-D | Anxiety (+), Avoidance (+) |
| Rholes et al. (2006) | AAQ | CES-D | Anxiety (+), Avoidance (+) |
| Wei, Heppner, et al. (2006) | ECR | CES-D | Anxiety (+), Avoidance (+) |
| Riggs & Kaminski (2010) | ECR | HSCL | Anxious (+), Avoidance (+) |

*Note.* * longitudinal design; (-), significant inverse correlation; (+), significant positive correlation; (ns) nonsignificant effects; M, men; W women; BDI, Beck Depression Inventory; BSI, Brief Symptoms Inventory; CDI, Children's Depression Inventory; CES-D, Center for Epidemiological Studies—Depression Inventory; DACL, Depression Adjectives Checklist; DASS, Depression, Anxiety, and Stress Scales; DISC-C, Diagnostic Interview Schedule for Children; DML, Depressive Mood List; DPI, Depression Personality Inventory; GBI, General Behavior Inventory; HS, Hazan and Shaver, HSCL, Hopkins Symptom Checklist, IDD, Inventory to Diagnose Depression; MHI, Mental Health Inventory; SCL-90, Symptom Checklist-90; ZDS, Zung Depression Scale.

Table 2

*Summary of Findings on Attachment Orientations and Measures of Different Kinds of Anxiety*

| Study | Attachment Scale | Anxiety Scale | Main Findings |
|---|---|---|---|
| *Studies assessing attachment types* | | | |
| Mikulincer et al. (1993) | HS types | SCL-90 | Secure < Anxious |
| Priel & Shamai (1995) | HS types | STAI | Secure < Anxious < Avoidant |
| Cooper et al. (1998) | AAS | SCL-90 | Secure < Anxious, Avoidant |
| Torquanti & Vazsonyi (1999) | AAS | STAI | Secure < Insecure |
| Muris et al. (2001) | HS types | SCAS | Secure < Anxious, Avoidant |
| Muris & Meesters (2002) | HS types | SCAS | Secure < Anxious, Avoidant |
| E. K. Adam et al. (2004) | AAI | IPAT | Secure < Anxious |
| *Studies based on attachment style ratings or dimensions* | | | |
| Doi & Thelen (1993) | AAS | STAI | Anxious (+), Avoidant (+) |
| Burge et al. (1997)* | AAS | SCID-Interview | Anxious (+), Avoidant (+) |
| Mickelson et al. (1997) | HS ratings | SCID-Interview | Secure (-), Anxious (+), Avoidant (ns), Fearful (ns) |
| Sheehan & Noller (2002) | ASQ | STAI | Anxious (+), Avoidant (ns) |
| Weems et al. (2003) | ECR | SCL-90 | Anxious (+), Avoidant (+) |
| Strodl & Noller (2003) | ASQ | MIA | Anxious (+), Avoidant (ns) |
| Wei et al. (2003) | AAS | STAI | Anxious (+), Avoidant (+) |
| Stafford et al. (2004) | AAS | BAI | Anxious (+), Avoidant (+) |
| Sonnby-Borgstrom & Jonsson (2004) | RSQ | STAI | Anxious (+), Avoidant (ns) |
| Wei, Russel, et al. (2004) | ECR | DASS | Anxious (+), Avoidant (+) |
| Williams & Riskind (2004) | ECR | BAI | Anxious (+), Avoidant (+) |
| Costa & Weems (2005) | ECR | SCL-90 | Anxious (+), Avoidant (ns) |
| Hankin et al. (2005, Study 1)* | AAS | STAI | Anxious (+), Avoidant (+) |
| Hankin et al. (2005, Study 2)* | AAS | STAI | Anxious (+), Avoidant (+) |
| Hankin et al. (2005, Study 3)* | AAQ | STAI | Anxious (+), Avoidant (+) |
| Irons & Gilbert (2005) | HS ratings | SCAS | Secure (-), Anxious (+), Avoidant (+) |
| Picardi, Mazzoti, et al. (2005)* | ECR | STAI | Anxious (+), Avoidant (ns) |
| Watt et al. (2005) | ECR | ASI | Anxious (+), Avoidant (ns) |
| Surcinelli et al. (2010) | RQ | BDI | Secure (-), Anxious (+), Avoidant (+), Fearful (+) |

*Note.* * longitudinal design; (-), significant inverse correlation; (+), significant positive correlation; (ns) non-significant effects; M, men; W women; ASI, Affective Status Index, BAI, Beck Anxiety Inventory; CMAS, Children's Manifest Anxiety Scale; DASS, Depression, Anxiety, and Stress Scales; DISC-C, Diagnostic Interview Schedule for Children; HS, Hazan and Shaver; HSCL, Hopkins Symptom Checklist; IPAT, Institute for Personality and Ability Testing; KAS, Kaiser Anxiety Scale; MASQ, Mood and Anxiety Symptoms Questionnaire; MIA, Mobility Inventory for Agoraphobia; SCAS, Spence Children's Anxiety Scale; SCL-90, Symptom Checklist-90; STAI, State-Trait Anxiety Inventory.

Table 3

*Cross-sectional Demographic and Covariate Characteristics of Young Black Men who Have Sex with Men in New York City (n = 228)*

| | N/% or M/SD |
|---|---|
| Age[a] | 24.6 (4.5) |
| Race[b] | |
| African-American/Black | 137 (61.7) |
| Black Hispanic/Latino | 43 (19.4) |
| Afro-Caribbean/West Indian | 14 (6.3) |
| Mixed-race | 28 (12.6) |
| Education | |
| Less than HS diploma | 19 (8.3) |
| HS Diploma/GED | 157 (68.9) |
| Some College | 47 (20.6) |
| College or Graduate Degree | 5 (2.2) |
| Employment[c] | |
| Working | 79 (36.9) |
| Student | 51 (23.8) |
| Unemployed | 84 (39.3) |
| HIV Status | |
| HIV negative | 169 (74.1) |
| HIV positive | 59 (25.9) |
| Relationship Status | |
| Married/Have a boyfriend of girlfriend | 61 (27.8) |
| Single | 166 (73.2) |

[a] Missing data for 1 participant.
[b] Missing data for 6 participants.
[c] Missing data for 14 participants.

Table 4

*Structured Diary Demographic and Covariate Characteristics of Young Black Men who Have Sex with Men in New York City at week 1 (n = 153)*

| | n/% or M/SD |
|---|---|
| Age | 24.6 (4.2) |
| Race[a] | |
| African-American/Black | 89 (59.3) |
| Black Hispanic/Latino | 32 (21.3) |
| Afro-Caribbean/West Indian | 9 (6.0) |
| Mixed-Race | 20 (13.3) |
| Education | |
| Less than HS diploma | 10 (6.5) |
| HS Diploma/GED | 110 (71.9) |
| Some College | 30(19.6) |
| College or Graduate Degree | 3 (1.96) |
| Employment[b] | |
| Working | 50 (34.5) |
| Student | 38 (26.2) |
| Unemployed | 57 (39.3) |
| HIV Status | |
| HIV Negative | 117 (76.5) |
| HIV Positive | 36 (23.5) |
| Relationship Status | |
| Married/Have a boyfriend | 30 (19.6) |
| Single | 123 (80.4) |

[a]3 participants had missing data.
[b]8 participants had missing data.

Table 5

*Semi-Structured Interview Demographic Characteristics of Young Black Men who Have Sex with Men in New York City (n = 30)**

| | n/% or M/SD |
|---|---|
| Age | 25.6 (3.9) |
| Race | |
| African-American/Black | 16 (59.3) |
| Black Hispanic/Latino | 6 (22.2) |
| Afro-Caribbean/West Indian | 2 (7.4) |
| Mixed-race | 3 (11.1) |
| Missing | |
| Education | |
| Less than HS diploma | 1 (3.7) |
| HS Diploma | 20 (74.1) |
| Some College | 6 (22.2) |
| College or Graduate Degree | - |
| Employment [a] | |
| Working | 10 (38.5) |
| Student | 5 (19.2) |
| Unemployed | 11 (42.3) |
| HIV Status | |
| HIV Negative | 20 (74.1) |
| HIV Positive | 7 (25.9) |
| Relationship Status | |
| Married/Have a boyfriend | 3 (11.1) |
| Single | 24 (88.9) |

* Descriptive information was only provided for 25 participants, though 30 participants were interviewed

[a] One participant did not report his employment status.

Table 6

*Dependent and Independent Variables Coding*

| Variable | Coding |
|---|---|
| *Cross-sectional* | |
| Attachment avoidance [a] | Continuous; mean score |
| Attachment anxiety [a] | Continuous; mean score |
| Unprotected Anal Intercourse (UAI) | Dichotomous; coded as 0 = no encounters; 1 = yes, at least one encounter |
| Serodiscordant Unprotected Anal Intercourse | Dichotomous; coded as 0 = no encounters; 1 = yes, at least one encounter |
| Kessler-10 | Continuous; mean score |
| BSI Depression subscale | Continuous; mean score |
| BSI Anxiety subscale | Continuous; mean score |
| | |
| *Structured Diary (8-weeks)* | |
| Unprotected Anal Intercourse (UAI) | Dichotomous; coded as 0 = no encounters; 1 = yes, at least one encounter |
| Serodiscordant Unprotected Anal Intercourse | Dichotomous; coded as 0 = no encounters; 1 = yes, at least one encounter |
| Kessler-10 | Continuous; mean score |
| POMS depression subscale | Continuous; mean score |
| POMS tension-anxiety subscale | Continuous; mean score |

[a] Measure used in both the cross-sectional and structured diary component.

Table 7

*Reliability Information for Continuous Study Measures*

| Variable | Study reliability | Validation Study Reliability | Citation |
|---|---|---|---|
| *Cross-sectional* | | | |
| Attachment avoidance [a] | α = .82 | α = .93 | Sibley & Liu (2004) |
| Attachment anxiety [a] | α = .83 | α = .95 | Sibley & Liu (2004) |
| Kessler-10 [a] | α = .92 | α = .84 | Arnaud (2010) |
| BSI Depression subscale | α = .82 | α = .85 | Derogatis & Melisaratos (1983) |
| BSI Anxiety subscale | α = .79 | α = .81 | Derogatis & Melisaratos (1983) |
| *Structured Diary (eight-weeks)* | | | |
| POMS Depression subscale | α = .86 | α = .82 | Yeun & Shin Park (2006) |
| POMS Tension-Anxiety subscale | α = .77 | α = .82 | Yeun & Shin Park (2006) |

[a] Measure used in both the cross-sectional and structured diary component.

Table 8

*Cross-sectional Independent and Dependent Study Variables of Young Black Men who Have Sex with Men in New York City (N = 228)*

| | M (SD) / N (%) | (Max, Min) |
|---|---|---|
| Adult Attachment Insecurity | | |
| Attachment Anxiety | 3.68 (1.60) | (0.57, 7.00) |
| Attachment Avoidance | 2.78 (1.62) | (0.60, 7.00) |
| Psychological Distress | | |
| K10 | 1.72 (0.76) | (1, 5) |
| BSI Depression | 0.73 (0.80) | (0, 4) |
| BSI Anxiety | 0.72 (0.78) | (0, 3.2) |
| Sexual Risk Behavior | | |
| UAI | 150 (65.79) | - |
| Serodiscordant UAI | 67 (29.39) | - |

Table 9

*Diary Independent and Dependent Study Variables of Young Black Men who Have Sex with Men in New York City (N = 153)*

| | M (SD) /N (%) | (Max, Min) |
|---|---|---|
| Attachment Insecurity | | |
| Attachment Anxiety | 3.70 (1.69) | (1, 7) |
| Attachment Avoidance | 2.78 (1.63) | (1, 7) |
| Psychological Distress | | |
| K10 | 1.57 (0.71) | (1, 4) |
| POMS Depression | 2.00 (0.88) | (1, 4.5) |
| POMS Anxiety | 2.14 (0.93) | (1, 4.5) |
| Sexual Risk Behavior* | | |
| UAI[a] | 172 (36.60) | - |
| Serodiscordant UAI[b] | 62 (13.57) | - |

* These variable over the eight-week period and not only week one.

[a] *n* = 128, 470 total sexual encounters

[b] *n* = 124, 457 total sexual encounters

Table 10

*Qualitative Interview Independent and Dependent Study Variables of Young Black Men who Have Sex with Men in New York City (N = 30[*])*

| | M (SD) | (Max, Min) |
|---|---|---|
| Adult Attachment Insecurity | | |
| Attachment Anxiety | 3.94 (1.80) | (1, 7) |
| Attachment Avoidance | 2.89 (1.70) | (1, 6) |
| Psychological Distress | | |
| K10 | 1.9 (0.97) | (1, 3.9) |
| BSI Depression | 0.97 (1.06) | (0, 4) |
| BSI Anxiety | 0.90 (1.04) | (0, 3) |
| Sexual Risk Behavior | | |
| UAI | 14 (51.85) | - |
| Serodiscordant UAI | 5 (18.52) | - |

*Note.* Information only presented for 27 participants in table due to missing data

Table 11

*Bivariate Correlations for the Relationship between Attachment Anxiety, Attachment Avoidance, Psychological Distress, Depression, and Anxiety Among YBMSM in New York City (n = 228)*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Attachment Anxiety | - | | | | | | | |
| Attachment Avoidance | .58*** | - | | | | | | |
| K10 | .47*** | .38*** | - | | | | | |
| BSI-Depress | .49*** | .38*** | .77*** | - | | | | |
| BSI-Anxiety | .46*** | .40*** | .68*** | .80*** | - | | | |
| Age | .04 | .004 | .10 | -.01 | -.04 | - | | |
| HIV Status | .09 | .11 | .09 | .04 | .03 | .31*** | - | |
| Relationship Status | .01 | .09 | -.06 | .02 | .06 | .17* | .05 | - |

*** $p < .001$, * $p < .05$

Table 12

*Multiple Regression Analyses for Adult Attachment Insecurity Predicting Psychological Distress, Depression, and Anxiety among YBMSM in New York City (n = 227)*

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| Variable | K10 | | BSI Depression | | BSI Anxiety | |
| | β | *SE.* | β | *SE.* | β | *SE* |
| Attachment Anxiety | 0.17*** | 0.03 | 0.20*** | 0.04 | 0.83*** | 0.03 |
| Attachment Avoidance | 0.08* | 0.03 | 0.36* | 0.04 | 0.48** | 0.03 |
| Age | 0.02* | 0.01 | 0.002 | 0.01 | -0.005 | 0.01 |
| Single | -0.18 t | 0.10 | 0.002 | 0.11 | 0.08 | 0.11 |
| HIV neg. | -0.009 | 0.11 | -0.04 | 0.11 | -0.03 | 0.11 |
| $R^2$ | .26 | | .25 | | .24 | |

*** $p < .001$, ** $p < .01$, * $p < .05$, $p < .10^t$

Table 13

*GEE Analyses for Adult Attachment Insecurity Predicting Psychological Distress, Depression, and Anxiety among YBMSM in New York City (n = 153)*

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| Variable | K10 | | POMS Depression | | POMS Anxiety | |
| | β | *SE.* | β | *SE.* | β | *SE* |
| Attachment Anxiety | 0.07* | 0.03 | 0.11** | 0.04 | 0.08t | 0.05 |
| Attachment Avoidance | 0.12** | 0.04 | 0.11* | 0.05 | 0.12* | 0.05 |
| Age | 0.02t | 0.01 | -0.01 | 0.01 | 0.005 | 0.02 |
| Single | -0.26 * | 0.11 | 0.003 | 0.13 | -0.14 | 0.15 |
| HIV neg. | -0.07 | 0.11 | -0.06 | 0.13 | 0.01 | 0.17 |
| Wald $X^2$ | 51.37 | | 47.92 | | 30.30 | |

** $p < .01$, * $p < .05$, $p < .10^t$

Table 14

*Bivariate Correlations for the Relationship between Attachment Anxiety, Attachment Avoidance, Psychological Distress, Depression, and Anxiety Among YBMSM in New York City (n = 228)*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Attachment Anxiety | - | | | | | | |
| Attachment Avoidance | .58*** | - | | | | | |
| UAI | .02 | -.009 | - | | | | |
| Serodiscordant UAI | .07 | .002 | .42*** | - | | | |
| Age | -.04 | -.02 | .06 | .03 | - | | |
| HIV status | .09 | .11 | .09 | .13$^{t}$ | .33*** | - | |
| Relationship Status | .01 | .09 | -.08 | .02** | .05 | .31*** | - |

*** $p < .001$, ** $p < .01$, $^{t}p < .10$

Table 15

*Logistic Regression Analyses for Adult Attachment Insecurity Predicting UAI and Serodiscordant UAI among YBMSM in New York City (n = 228)*

| | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | UAI | | Serodiscordant UAI | |
| Variable | β | *SE.* | β | *SE* |
| Attachment Anxiety | 0.02 | 0.11 | 0.14 | 0.11 |
| Attachment Avoidance | -0.01 | 0.11 | -0.10 | 0.11 |
| Age | 0.007 | 0.03 | -0.004 | 0.03 |
| Single | -0.45 | 0.34 | 0.14 | 0.35 |
| HIV neg. | 0.45 | 0.35 | - | - |

Table 16

*GEE Analyses for Adult Attachment Insecurity Predicting UAI and Serodiscordant UAI among YBMSM in New York City*

| | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | UAI ($n$ = 128) | | Serodiscordant UAI ($n$ = 124) | |
| Variable | OR | Robust SE | OR | Robust SE |
| Attachment Anxiety | 1.03 | 0.11 | 1.24 | 0.21 |
| Attachment Avoidance | 1.17[t] | 0.11 | 0.98 | 0.19 |
| Age | 1.04 | 0.37 | 0.96 | 0.04 |
| Single | 0.38[*] | -0.13 | 0.70 | 0.35 |
| HIV neg. | 0.22 | 0.22 | - | - |

[*] $p < .05$, $p < .10$[t]

Table 17

*Frequency of UAI and Serodiscordant UAI by Week among YBMSM in New York City*

| Serodiscordant UAI | | UAI | |
|---|---|---|---|
| Week (n) | n (%) | Week (n) | n (%) |
| Week 1 (87) | 13 (14.9) | Week 1 (153) | 29 (18.9) |
| Week 2 (66) | 11 (16.7) | Week 2 (130 | 25 (19.2) |
| Week 3 (56) | 6 (10.7) | Week 3 (119) | 20 (16.8) |
| Week 4 (58) | 5 (8.6) | Week 4 (114) | 23 (20.2) |
| Week 5 (47) | 5 (10.6) | Week 5 (112) | 17 (15.2) |
| Week 6 (50) | 5 (10.0) | Week 6 (114) | 17 (14.9) |
| Week 7 (44) | 9 (20.4) | Week 7 (115) | 18 (15.7) |
| Week 8 (49) | 8 (16.3) | Week 8 (115) | 23 (20.0) |

*Note.* Only men who reported having sex in a given week were reported here.

Table 18

*Logistic Regression Analyses for Psychological Distress Predicting UAI among YBMSM in New York City (n =128)*

| | | UAI | |
|---|---|---|---|
| | Variables | *OR* | *SE* |
| Model 1 | K10 | 1.26 | 0.32 |
| | Age | 1.03 | 0.06 |
| | Single | 0.27** | 0.13 |
| | HIV neg. | 2.06 | 0.98 |
| Model 2 | | | |
| | POMS Depression | 1.40 | 0.11 |
| | Age | 1.04 | 0.06 |
| | Single | 0.25** | 0.13 |
| | HIV neg. | 2.07 | 1.01 |
| Model 3 | | | |
| | POMS Anxiety | 0.86 | 0.16 |
| | Age | 1.03 | 0.06 |
| | Single | 0.24** | 0.13 |
| | HIV neg. | 2.11 | 1.05 |

**$p < .01$

Table 19

*Logistic Regression Analyses for Psychological Distress Predicting Serodiscordant UAI among YBMSM in New York City (n = 227)*

| | | Serodiscordant UAI | |
|---|---|---|---|
| | Variables | *OR* | *SE* |
| Model 1 | K10 | 2.22** | 0.65 |
| | Age | 1.03 | 0.06 |
| | Single | 0.27 | 0.13 |
| Model 2 | | | |
| | POMS Depression | 2.36** | 0.64 |
| | Age | 0.94 | 0.07 |
| | Single | 0.66 | 0.42 |
| Model 3 | | | |
| | POMS Anxiety | 1.25 | 0.28 |
| | Age | 0.93 | 0.06 |
| | Single | 0.68 | 0.41 |

**$p < .01$

Table 20

*General Estimating Equation Analyses for Psychological Distress Predicting UAI among YBMSM in New York City (n = 128)*

| | | UAI | |
|---|---|---|---|
| | Variables | *OR* | *Robust SE* |
| Model 1 | K10 | 1.15 | 0.22 |
| | Age | 1.03 | 0.04 |
| | Single | 0.39** | 0.14 |
| | HIV neg. | 1.64 | 0.98 |
| Model 2 | | | |
| | POMS Depression | 1.25 t | 0.16 |
| | Age | 1.03 | 0.04 |
| | Single | 0.38** | 0.13 |
| | HIV neg. | 1.63 | 0.56 |
| Model 3 | | | |
| | POMS Anxiety | 0.90 | 0.12 |
| | Age | 1.03 | 0.04 |
| | Single | 0.38** | 0.13 |
| | HIV neg. | 1.63 | 0.50 |

**$p < .01$, $^{t}p < .10$

Table 21

*General Estimating Equation Analyses for Psychological Distress Predicting Serodiscordant UAI among YBMSM in New York City (n = 124)*

| | | Serodiscordant UAI | |
|---|---|---|---|
| | Variables | OR | Robust SE |
| Model 1 | K10 | 1.77* | 0. 41 |
| | Age | 0.95 | 0.04 |
| | Single | 0.71 | 0.32 |
| Model 2 | | | |
| | POMS Depression | 1.87* | 0.36 |
| | Age | 0.97 | 0.04 |
| | Single | 0.61 | 0.30 |
| Model 3 | | | |
| | POMS Anxiety | 1.16 | 0.25 |
| | Age | 0.96 | 0.31 |
| | Single | 0.39 | 0.38 |

*$p < .05$

Table 22

*General Estimating Equation Analyses for Adult Attachment Insecurity as a Moderator of the Relationship between Depression and UAI among YBMSM in New York City (n = 128)*

| | | UAI | |
|---|---|---|---|
| | Variables | OR | Robust SE |
| Model 1 | POMS Depression (PD) | 1.25 | 0.52 |
| | Attachment Anxiety (Anx) | 1.13 | 0.20 |
| | PDXAnx | 0.99 | 0.08 |
| | Age | 1.04 | 0.04 |
| | Single | 0.39** | 0.14 |
| | HIV neg. | 1.57 | 0.55 |
| Model 2 | | | |
| | POMS Depression | 0.92 | 0.29 |
| | Attachment Avoidance (Avd) | 1.02 | 0.17 |
| | PDXAvd | 1.07 | 0.08 |
| | Age | 1.04 | 0.04 |
| | Single | 0.38** | 0.13 |
| | HIV neg. | 1.55 | 0.54 |

**$p < .01$

Table 23

*General Estimating Equation Analyses for Adult Attachment Insecurity as a Moderator of the Relationship between Depression and Serodiscordant UAI among YBMSM in New York City (n = 124)*

| | | UAI | |
|---|---|---|---|
| | Variables | OR | Robust SE |
| Model 1 | K10 | 2.03 | 1.45 |
| | Attachment Anxiety (Anx) | 1.21 | 0.29 |
| | K10XAnx | 0.96 | 0.14 |
| | Age | 0.95 | 0.04 |
| | Single | 0.72 | 0.32 |
| Model 2 | | | |
| | K10 | 2.06 | 1.25 |
| | Attachment Avoidance (Avd) | 1.08 | 0.28 |
| | K10XAvd | 0.96 | 0.12 |
| | Age | 0.95 | 0.04 |
| | Single | 0.71 | 0.32 |
| Model 3 | | | |
| | POMS Depression (PD) | 1.95 | 1.08 |
| | Attachment Anxiety (Anx) | 1.14 | 0.29 |
| | PDXAnx | 0.98 | 0.12 |
| | Age | 0.97 | 0.04 |
| | Single | 0.63 | 0.31 |
| Model 4 | | | |
| | POMS Depression | 2.04 [t] | 0.81 |
| | Attachment Avoidance (Avd) | 1.04 | 0.26 |
| | PDXAvd | 0.98 | 0.09 |
| | Age | 0.97 | 0.04 |
| | Single | 0.61 | 0.30 |

[t] $p < .10$

Table 24

*General Estimating Equation Analyses for the Stratified Adult Attachment Insecurity Models for Depression Predicting UAI among YBMSM in New York City*

| | | UAI | |
|---|---|---|---|
| | Variables | *OR* | *SE* |
| Model 1 – High Attachment Anxiety | POMS Depression | 1.32 | 0.23 |
| | Age | 1.06 | 0.06 |
| | Single | 0.37 | 0.19 |
| | HIV neg. | 0.88 | 0.50 |
| Model 2 – Low Attachment Anxiety | | | |
| | POMS Depression | 1.06 | 0.23 |
| | Age | 1.02 | 0.05 |
| | Single | 0.39* | 0.18 |
| | HIV neg. | 2.02t | 0.85 |
| Model 3 – High Attachment Avoidance | | | |
| | POMS Depression | 1.29 | 0.25 |
| | Age | 1.14 t | 0.09 |
| | Single | 0.23* | 0.16 |
| | HIV neg. | 0.58 | 0.41 |
| Model 4 – Low Attachment Avoidance | | | |
| | POMS Depression | 1.06 | 0.22 |
| | Age | 1.02 | 0.04 |
| | Single | 0.44 | 0.17 |
| | HIV neg. | 1.86 | 0.75 |

* $p < .05$, t $p < .10$

Table 25

*General Estimating Equation Analyses for the Stratified Adult Attachment Insecurity Models for Psychological Distress Predicting Serodiscordant UAI among YBMSM in New York City*

| | | Serodiscordant UAI | |
|---|---|---|---|
| | Variables | OR | SE |
| Model 1 – High Attachment Anxiety | K10 | 1.79 | 0.55 |
| | Age | 0.96 | 0.05 |
| | Single | 0.75 | 0.40 |
| Model 2 – Low Attachment Anxiety | | | |
| | K10 | 1.36 | 0.64 |
| | Age | 0.96 | 0.06 |
| | Single | 0.80 | 0.62 |
| Model 3 – High Attachment Avoidance | | | |
| | K10 | 1.88 [t] | 0.55 |
| | Age | 0.94 | 0.06 |
| | Single | 0.28 [t] | 0.21 |
| Model 4 – Low Attachment Avoidance | | | |
| | K10 | 1.96 | 0.82 |
| | Age | 0.95 | 0.05 |
| | Single | 1.26 | 0.65 |

[t] $p < .10$

Table 26

*General Estimating Equation Analyses for the Stratified Adult Attachment Insecurity Models for Depression Predicting Serodiscordant UAI among YBMSM in New York City*

| | | Serodiscordant UAI | |
|---|---|---|---|
| | Variables | *OR* | *SE* |
| Model 1 – High Attachment Anxiety | POMS Depression | 1.02 | 0.53 |
| | Age | 0.96 | 0.05 |
| | Single | 0.61 | 0.35 |
| Model 2 – Low Attachment Anxiety | | | |
| | POMS Depression | 1.86* | 0.47 |
| | Age | 0.98 | 0.06 |
| | Single | 0.88 | 0.75 |
| Model 3 – High Attachment Avoidance | | | |
| | POMS Depression | 2.03* | 0.55 |
| | Age | 0.95 | 0.06 |
| | Single | 0.23 t | 0.20 |
| Model 4 – Low Attachment Avoidance | | | |
| | POMS Depression | 1.82 | 0.54 |
| | Age | 0.97 | 0.05 |
| | Single | 1.14 | 0.65 |

* $p < .05$, t $p < .10$

Table 27

*Summary of Dissertation Findings*

| Results | Quantitative | Hypothesis Supported (Y/N) | Qualitative |
|---|---|---|---|
| Chapter 4 | • Higher levels of attachment anxiety and avoidance associated with higher levels of psychological distress<br>• Higher levels of attachment anxiety and avoidance associated with higher levels of depression<br>• Higher levels of attachment anxiety and avoidance associated with higher levels of anxiety | Y | • Insecure men reported many familial problems which affected their mental health in young adulthood<br>• Secure men reported challenging familial situations in childhood but seemed to have better mental health than insecure men<br>• Sexual orientation disclosure, traumatic life events, and religion were common themes that seemed to influence the mental health of insecure men more negatively than secure men |
| Chapter 5 | • Attachment anxiety and avoidance not associated with UAI<br>• Attachment anxiety and avoidance not associated with serodiscordant UAI | N | • Insecure men reported having more casual sex partners than secure men<br>• Insecure men often reported participating in potentially risky sexual behaviors in order to establish an emotional bond<br>• Secure men more often reported being in a committed relationship than men who were insecure<br>• Secure men often reported using sex as a means to reinforce an emotional bond with a committed partner |
| Chapter 6 | • Higher levels of psychological distress were associated with an increased likelihood of having a serodiscordant UAI encounter<br>• Higher levels of depression were associated with an increased likelihood of having a serodiscordant UAI encounter | Y | • Men reported acute instances of distress and subsequently had a sexual encounter<br>• Men reported general distress and reported have sex frequently in response to their distress |
| Chapter 7 | • Attachment anxiety or avoidance did not moderate the relationship between psychological distress and sexual risk (UAI or Serodiscordant UAI)<br>• Attachment anxiety or avoidance did not moderate the relationship between depression and sexual risk (UAI or Serodiscordant UAI)<br>• Attachment anxiety or avoidance did not moderate the relationship between anxiety and sexual risk (UAI or Serodiscordant UAI) | N | • Secure men reported better mental health and healthier sexual relationships<br>• Insecure men reported having overall higher levels of distress<br>• Insecure men reported having stressful relationships<br>• Insecure men reported having sex as a means to alleviate distress more often than secure me |

# APPENDIX B

# QUALITATIVE DATA DISPLAY

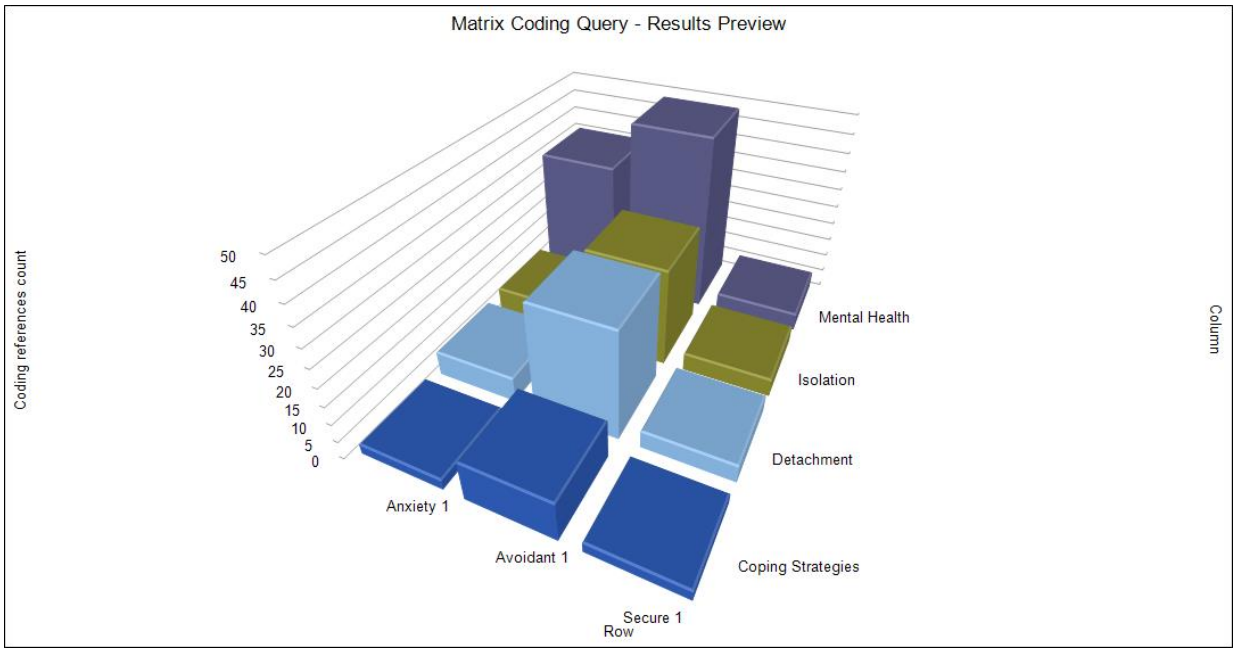


*Figure 5 Data Display for Childhood Attachment Style and Mental Health*

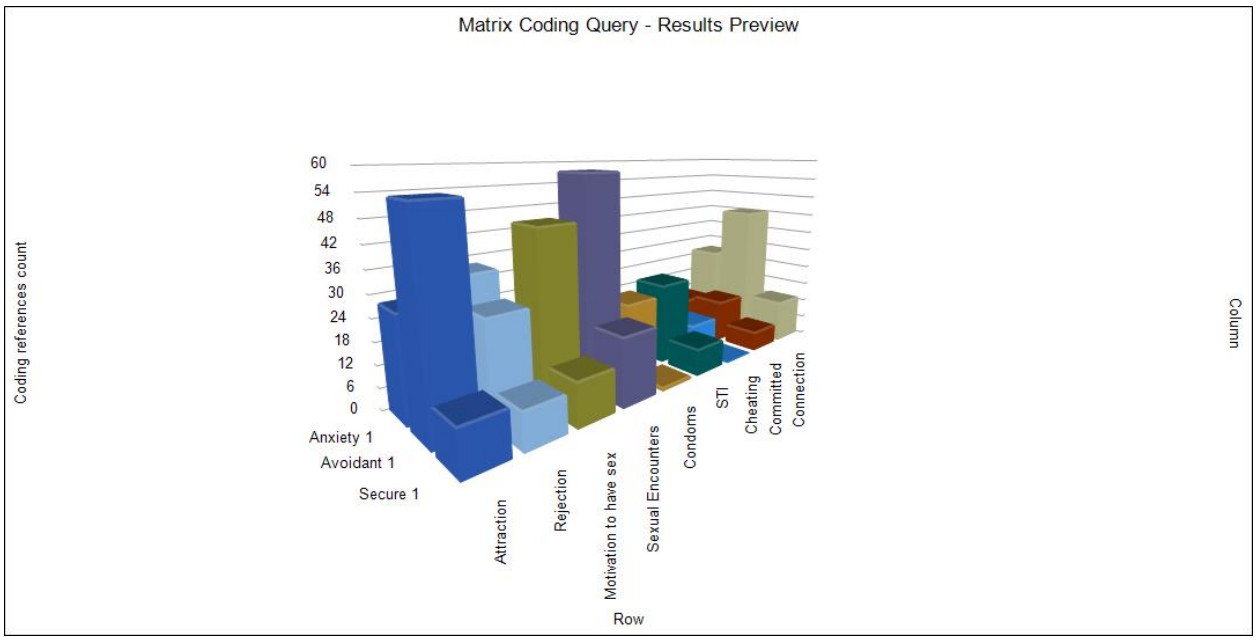


*Figure 6 Data Display for Childhood Attachment Style and Sexual Behavior*

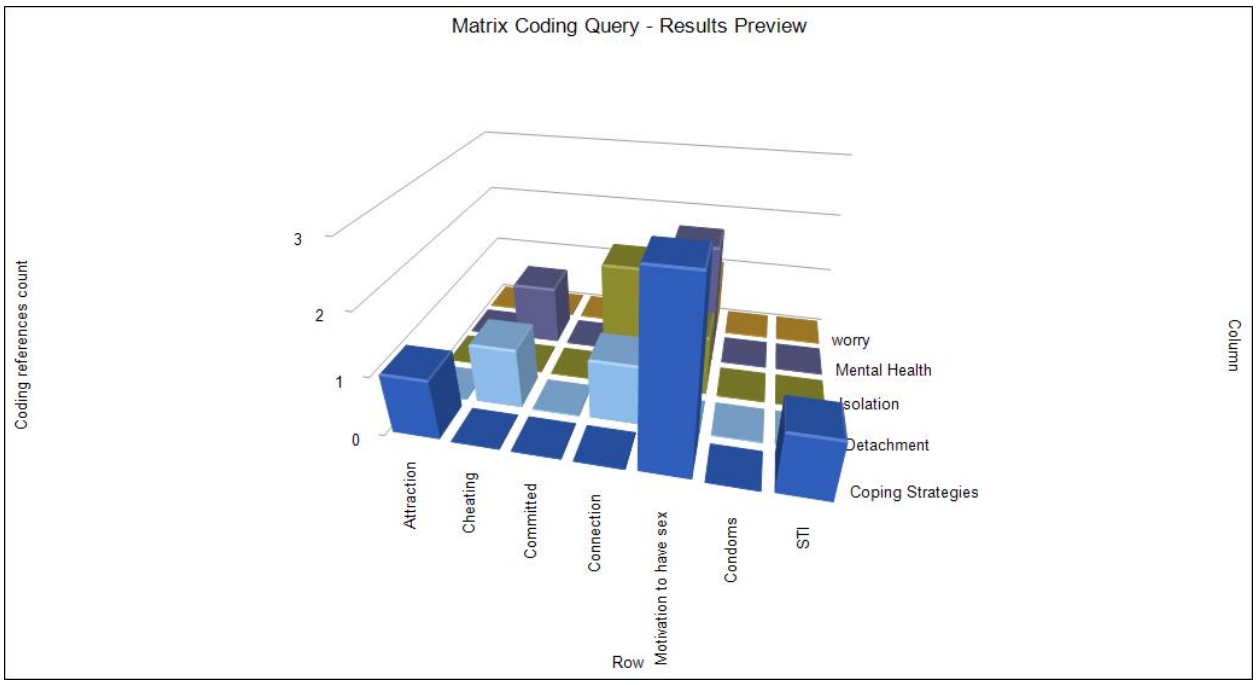


*Figure 7 Data Display for Mental Health and Sexual Behavior*

# APPENDIX C

**BCS: Interview Protocol**

**Introduction**

Thank you for taking the time to participate in this interview. I am going to ask you some questions about your relationship with your family as a child and how you think these relationships have impacted your life today. In addition, I am going to ask you some questions about sexual relationships you had with partners in the past and how those relationships have affected you today. I will also ask you about your health and experiences with health care providers. Many of the questions might be a little uncomfortable; however, I would ask that you answer as frankly as possible. Your identity and responses will be kept private. The interview should take about an hour.

**Part 1: Childhood relationship with parent(s)**

1. **Could you start by helping me get oriented to your early family situation and your living situation? If you could tell me where you were born, whether you moved around much, what your family did at various times for a living**?
   *[Prompts if necessary]: Who would you say raised you? Did you live with any brothers and sisters growing up? How many?*

2. **I'd like you to try to describe your relationship with your parents as a young child if you could start from as far back as you can remember?**
   *[Prompts if necessary]: What is the first birthday you remember?*

3. **I'd like to ask you to choose five adjectives or words that reflect your relationship with your mother (or primary caregiver) starting from as far back as you can remember in early childhood. I know this may take a bit of time, so go ahead and think for a minute…then I'd like to ask you why you chose them. I'll write each one down as you give them to me.**
   [*Prompts if necessary]: Think of a time when you may have been having a conversation with your mother (or primary care giver) or an event. (this may help trigger memories)*

3a. **Okay, so I have written down your adjectives, can you tell me about an event or experience with your mother (or primary caregiver) that made you think of [insert adjective here]?**

4. **In general, how do you think your overall experiences with your parents have affected your adult personality?**
   *[Prompts/follow up]: Are there any aspects to your early experiences that you feel were a set-back in your development? Are there any other aspects of your early experiences, that you think might have held your development back, or had a negative effect on the way you turned out?*

5. Generally, how would you describe your childhood?
   - Where did you grow up?
   - Describe your family situation. Who was/were your primary caregiver(s) when you were growing up?
   - Describe the neighborhood that you grew up in.

   Do you have any memorable experiences from your childhood? Would you say that overall you had a good, bad, or average childhood? Why?

   a. How open are you about your sexuality with your family?
      i. What does your family think about men having sex with men?
      ii. Do their perceptions affect you? How so?

b. Do you think that you are financially better off, worse off, or the same as when you were growing up? Why? What has or has not changed?

c. Were you ever exposed to alcohol or drug abuse when you were growing? If so, please tell me about this.
    i. When did this happen?
    ii. Who was involved?
    iii. Do you feel that it affected you as a child? How so?
    iv. Do you feel that it affects you now? How so?

d. Were you or any of your close family members ever the victim of a violent crime? If so, please tell me about this.
    i. When did this happen?
    ii. Who was involved?
    iii. Do you feel that it affected you as a child? How so?
    iv. Do you feel that it affects you now? How so?

e. Did you ever receive unwanted sexual advances when you were growing up?
    i. When did this happen?
    ii. Who was involved?
    iii. What specifically took place?
    iv. How long did this go on for?
    v. Do you feel that it affected you as a child? How so?
    vi. Do you feel that it affects you now? How so?

6. Tell me about your friends.
    a. Who do you consider as your friends? How do you know them?
    b. Do you feel like you get support from your friends? Please describe this support, or lack thereof.
    c. How open are you about your sexuality around your friends?
    d. Do your friends know that you have sex with men?
    e. How do your friends view homosexuality?
    f. Do your friends' perceptions of homosexuality affect you? How so?

**Part II: Motivation for sex with partner**

*Now we are going to switch gears a bit and talk about sex. I will mainly ask you questions about your motivations for sex with male and female partners. As I said before, please try to be as frank and honest as possible. Ask these questions and specifying the partner as "female" first, and then ask the questions again concerning "male" sexual partners.*

1. ***Thinking about your last sexual experience with your current or most recent committed female partner, how did you feel right before your sexual encounter?***
   *[Prompts/follow up]: Physical release or emotional bond reinforcement?*

2. ***What is the most important reason for you to have sex with any partner? Can you please give me a specific situation in which you felt this way?***
   *[Prompts/follow up]: emotional enjoyment or physical enjoyment? If both, explain*

3. ***Thinking about your current partner (or last partner was in a relationship with) what feelings come into play before you have sex?***

4. ***How do you feel after sex, typically?***
   *[Prompts/follow up]: do you feel emotional drained? Do you feel closer to your partner? Please explain.*

**Part III: Sexual Partnering and Sexual Behavior**

1. How do you normally meet a sex partner?
   - Is there a specific venue where you meet men? What is it about that venue that makes it an ideal place to meet men?

2. Drugs and alcohol are commonly used by some men who have sex with other men. Do you ever drink alcohol or use drugs? If so, please describe scenarios when you have used drugs and/or alcohol?
   - When did you first start drinking and/or using drugs? Who was the first person you drank/used drugs with?
   - When do you normally drink alcohol or use drugs? In what circumstances/situations?
   - Do you ever use alcohol or drugs during sex? If so, why? What does using alcohol or drugs during sex do for you?
   - Do you think that you are more likely to not use condoms when you use drugs or drink alcohol? Why or why not?

3. When you have sex, do you find it easy to talk with your sex partners about your feelings?
   - Do you talk to your sex partners about using condoms?
   - Do you talk to your sex partners about HIV or other STD's??
   - How important is it for you to know your partner's HIV status?
   - If you found out you tested positive for an STD how comfortable would you be talking about it with your sex partner?
     - For HIV?

**Part IV: Sexual and Racial Identity**

1. When were you first aware of your attraction for men?

2. What would you say were the major barriers to you accepting yourself as a Black man that has sex with men, or as a gay or bisexual man?

3. What are some of the day-to-day challenges you face in terms of your race and sexual identity?

4. How would you describe your relationship to the gay community? To the Black community as you define it? For example, how supported do you feel by these two communities as a whole?

5. Does your sexual identity as a gay or bisexual man change your sense of acceptance, or level of involvement, in the Black community?

**Part V: Barriers & Facilitators to HIV Prevention, Testing and Treatment**

1. Could you describe how your health has been today?
   - How frequently do you go to the doctor for regular check-ups?
   - What do you do if you're sick and need medical attention?
   - How easy is it for you to get medical care if you need it?

   - Do you engage in healthy activities (like going to the gym, eating well, etc.) on a frequent basis? Why or why not?
   - If there is something that concerns you about your health, do you make an appointment and ask your doctor or health care provider?

2. What are your perceptions of doctors and healthcare providers?
    - What are your barriers/facilitators of trying to find a doctor? (For example, health insurance, location, having a provider that you feel you can talk to.)
    - What types of support would you consider important for you to go to the doctor
    - Are you currently receiving any medical treatment or medication?
    - Is it stressful to go to the doctor?

3. What are your perceptions of HIV prevention and testing programs targeting men who have sex with men?
    - Would you ever participate in one of these programs? Why or why not?
    - Do you think your friends would participate in these programs? Why or why not?
    - Would you participate in HIV prevention or treatment programs targeting men who have sex with men? Targeting Black men generally? Targeting Black men who have sex with men? Why or why not?

**Closing:** Our discussion today is to help us understand more about your experiences as a BMSM living in New York City? Have we missed anything? Your story is so important, thank you so much for sharing your story with us.

*Qualitative Codebook and Definitions for Key Codes from Directed Content Analysis Approach*

| Code | Second Level | Third level | *Definition* |
|---|---|---|---|
| Affection | Care | | *display of affection, perceived, received or giving* |
| Attachment Styles | | | *Adult state of mind w/respect to attachment* |
| | Secure/Autonomous | | |
| | Dismissing | | |
| | Preoccupied | | |
| | Unresolved/ disorganized | | |
| Attraction | | | *references to appeal, lure, quality that provides pleasure* |
| | Same-sex attraction | Age of first same-sex attraction | |
| | Connection | | |
| Detachment | | | *act/condition of indifference, aloofness, disconnection* |
| Emotion/ Feelings | | | *reference to affective state or a feeling* |
| | Anger | Aggressiveness | |
| | Anxious | | |
| | Fear | | |
| | Sad | Crying | |
| | Empathy | | |
| | Love | Compassion | |
| | Feelings before sex | | |
| | Feelings after sex | | |
| Health Behaviors | | | *his health beliefs, act of maintaining health* |
| | Risky behaviors | | |
| Isolation | | | *state of being, closing off, or reclusiveness* |
| | Loneliness | | |
| Mental Health | | | *reference to psychological well-being* |
| | Outlook | Negative | |
| | | Positive | *optimism, pride* |
| | Perceived Mental Disorders | | |
| | Perceived Mood Disorders | | |
| Motivation | | | *references to desire, drive, interests* |
| Normal | | | *reference to usual, regular or typical* |

| *Qualitative Codebook and Definitions for Key Codes from Directed Content Analysis Approach (cont'd)* | | | |
|---|---|---|---|
| Partners | | | *reference to his partner, boyfriend or girlfriend* |
| | Committed | | |
| | Current Partner | | |
| | Cheating | | |
| | Connection | | |
| | Marriage | Divorce | |
| | Last Partner | | |
| | Gay Relationship | Openness and Trust | |
| | Monogamy | | |
| | Relationship | w/female | |
| | | w/male | |
| | Sexual Preference | Sexual Positions | |
| Passive/ Indifferent | | | *reference to "I don't know" or "I don't care"* |
| Rejection | | | *the act or state of being rebuffed* |
| Self Image | | | *the self through various meanings* |
| | Self-worth | | |
| | Self-Hate | | |
| | Self-sabotage | | |
| | Self-acceptance | | *include pride* |
| | Self-esteem | | |
| | Self-compassion | | |
| Sexual Behaviors | | | *references to sexual practices* |
| | Foreplay | Kissing | |
| | Masturbation | | |
| | Motivation to have sex | Reasons to have sex | |
| | Horny | | |
| | Oral Sex | | |
| | Sexual Encounters | | |
| | Sexual Positions | | *top, bottom, versatile* |