

ABSTRACT

Title of Document: LINKS BETWEEN PARENTAL RESPONSES TO ADOLESCENT DISTRESS AND ADOLESCENT RISK BEHAVIOR: THE MEDIATING ROLE OF THOUGHT/EMOTION SUPPRESSION

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The rates of substance use and unsafe sexual practices among America's youth are a major public health concern. The goal of this study was to examine novel inter- and intrapersonal predictors of adolescent risk behavior. Aim 1 of this study was to examine how supportive and unsupportive parental responses to adolescents' negative emotions relate to adolescent substance use and sexual behavior, and to test whether the tendency to suppress unwanted thoughts and emotions mediates this link. Aim 2 was to further explore the putative link between suppression and adolescent risk behavior by testing whether physiological arousal when viewing negative emotional stimuli mediates this link. Participants included 115 adolescents (mean age = 17.19 years, $SD = 1.27$; 48% female) and 109 mothers. Aim 1 analyses revealed limited support for the hypothesized links: (a) adolescent-reported unsupportive maternal responses were associated with greater self-reported suppression (but not the

other two measures of suppression), which in turn was related to more frequent sexual behavior in the past year and (b) adolescent-reported supportive maternal responses were negatively associated with adolescent substance use in the past year. Aim 2 analyses did not support any links between suppression and physiological arousal or between physiological arousal and adolescent risk behavior. Overall, these results suggest some potential links among parents' responses to their adolescents' negative emotions, suppression, and adolescent risk behavior. However, the hypothesized links that were significant in the path models were between variables measured by adolescent self-reports; therefore, the findings should be viewed as preliminary. I discuss these findings in the context of the available literature on parental emotion socialization, suppression, and adolescent risk behavior, and suggest directions for future research that could move this area of inquiry forward.

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Chapter 1: Introduction

Adolescence is a time of increasing engagement in risk-taking and health comprising behavior (e.g., substance use and unsafe sexual practices). According to the most recent data from the Youth Risk Behavior Survey (Kann et al., 2014), a nationwide study of health risk behaviors among high school students in the United States, 66% of adolescents reported ever consuming alcohol, 41% reported ever using marijuana, and 41% reported ever smoking a cigarette. Percentages of adolescents using these substances in the 30 days prior to the survey were 35%, 23%, and 16% for alcohol, marijuana, and cigarettes, respectively. Further, Kann et al. found that a substantial minority of teenagers reported episodes of heavy drinking: Nearly one-quarter (21%) of adolescents reported consuming five or more alcoholic beverages within in a short period of time during the month prior to the survey. With respect to sexual behavior, nearly half (47%) of the sample reported having ever had sexual intercourse, and 15% reported having intercourse with more than four partners in their lifetime. Among sexually active adolescents, a striking 41% reported that they did not use a condom the last time they had sexual intercourse.

Evidence suggests that engagement in these types of risky behaviors continues and, in fact, increases in the years after high school. Longitudinal studies of the developmental trajectories of risk behavior suggest that substance use and sexual risk-taking increase steadily across adolescence, peak in the early to mid-twenties, and subsequently decline (Chen & Jacobson, 2012; Fergus, Zimmerman, & Caldwell, 2007). In an epidemiological study of undergraduate substance use in the US, O'Malley and Johnston (2002) reported a high 30-day prevalence rate of alcohol use

(70%), and found that 40% of college students could be categorized as episodic heavy drinkers. In addition, a substantial proportion of US college students reported having casual sex or “hooking up,” having sex while under the influence of alcohol or drugs, and having sex without using a condom (Armstrong, England, & Fogarty, 2012; Cooper, 2002; Douglas et al., 1997; Monto & Carey, 2014).

Clearly, adolescents are engaging in behaviors that place them at increased risk for both immediate and future negative outcomes (e.g., health problems, sexually transmitted diseases, poorer academic performance, legal troubles). In addition, the financial burden associated with substance abuse alone is estimated to exceed \$500 billion per year in the United States (National Institute on Drug Abuse, 2008). Thus, advancing knowledge about the predictors and correlates of problematic substance use and risky sexual behavior in adolescence is important and has potential implications for public health.

Although researchers studying the predictors of adolescent risk behavior have focused on many aspects of the individual and his/her environment, ranging from broad sociodemographic factors to the developmental trajectories of specific brain structures, (e.g., Boyer, 2006; Petraitis, Flay, & Miller, 1995; Steinberg, 2008), a frequent focus of research in this area has been on the importance of parenting and the parent–adolescent relationship (e.g., Perrino, González-Soldevilla, Pantin, & Szapocznik, 2000; Bahr, Hoffmann, & Yan, 2005; Wills & Yaeger, 2003). A substantial body of literature indicates that various facets of parenting are associated with adolescent risk behavior (see below). However, one aspect of parenting that has not received adequate attention in the risk behavior literature is emotion socialization

during adolescence. Thus, the goal of the present study is to address this gap in the literature by examining how a specific aspect of emotion socialization – parents’ responses to their adolescents’ negative emotions – relates to adolescent substance use and sexual behavior. Furthermore, I test a cognitive-emotional mechanism (i.e., the suppression of unwanted thoughts and emotions) through which parental responses to adolescent distress may exert their influence on adolescent risk behavior.

Below, I begin by briefly reviewing the literature on how aspects of parenting and the parent–adolescent relationship relate to adolescent risk behavior. Second, I describe research on parents’ responses to their children’s negative emotions and discuss why this aspect of parenting may predict adolescent risk behavior. Third, I propose that the link between parents’ responses to their adolescents’ negative emotions and adolescent risk behavior may be mediated by adolescents’ tendency to suppress unwanted thoughts and emotions. Fourth, I provide an overview of the present study and outline study hypotheses. Fifth, I describe the methods used in the present study. Sixth, I present study results. Finally, I discuss the study results, outline study limitations, and suggest directions for future research.

The Parent–Adolescent Relationship and Adolescent Risk Behavior

Researchers have consistently found that constructs reflecting better overall quality of the parent–adolescent relationship (e.g., higher warmth and connectedness, secure attachment, open communication, less conflict) are negatively associated with adolescent risk behavior (e.g., Branstetter, Furman, & Cottrell, 2009; Cernkovich & Giordano, 1987; Cohen, Richardson, & LaBree, 1994; Jaccard, Dittus, & Gordon, 1998; Leenaars, Dane, & Marini, 2008; Resnick et al., 1997; van der Vorst, Engels,

Meeus, Dekovic, & Vermulst, 2006; Wills & Yaeger, 2003). In addition to these broader relationship constructs, researchers have examined how more specific parenting practices relate to adolescent risk behavior. For example, the extent to which parents are able to acquire knowledge about their adolescents' whereabouts, companions, and activities – referred to as parental monitoring or parental knowledge – has consistently been found to be a strong predictor of adolescent risk behavior (e.g., Branstetter et al., 2009; DiClemente et al., 2001; Fletcher, Steinberg, & Williams-Wheeler, 2004; Stattin & Kerr, 2000; see Racz & McMahon, 2011, for a review). In addition, greater parental control or limit-setting is associated with less adolescent risk behavior (Fletcher et al., 2004; Stattin & Kerr, 2000; van der Vorst et al., 2006). However, there is some evidence suggesting that too much parental control predicts more adolescent risk behavior (Mason, Cauce, Gonzales, & Hiraga, 1996). Researchers examining specific parenting styles have found that more authoritative parenting practices (characterized by warmth as well as demandingness) are negatively associated with adolescent risk behavior (e.g., Baumrind, 1991; Bahr & Hoffmann, 2010). By contrast, both harsh (i.e., authoritarian) and overly permissive parenting practices are associated with greater adolescent risk behavior (Cohen & Rice, 1997; Weiss & Schwarz, 1996). In sum, there is compelling empirical support for a link between parenting and adolescent risk behavior.

Parents' Responses to their Adolescents' Negative Emotions and Adolescent Risk Behavior

The manner in which parents respond to their children's expressions of negative emotions is a key aspect of the socialization of emotion that has been linked

to a wide variety of important developmental outcomes (see Eisenberg, Cumberland, & Spinrad, 1998, for a review). For example, insensitive and unsupportive responses to children's negative emotions are associated with a decreased likelihood of secure attachment, lower social competence, poorer emotion regulation and coping abilities, lower effortful control, and more internalizing and externalizing symptoms (Ainsworth, Blehar, Waters, & Wall, 1978; Eisenberg et al., 1998; Eisenberg, Fabes, & Murphy, 1996; Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999; Leerkes, Blankson, & O'Brien, 2009; Spinrad et al., 2007). Of note, almost all of the research on parents' responses to children's negative emotions has been conducted with parents (mostly mothers) of young children. Researchers have devoted less attention to parents' responses to their *adolescents'* negative emotions, which is surprising considering the evidence for an increase in negative emotionality during adolescence (e.g., Larson & Asmussen, 1991). However, consistent with the literature on young children, the sparse literature on emotion socialization in adolescence suggests that the ways in which parents respond to their adolescents' negative emotions has important implications for adolescent adjustment. For example, several researchers have reported links between less supportive parental responses to adolescents' negative emotions and more internalizing and externalizing problems (Katz & Hunter, 2007; Klimes-Dougan et al., 2007; Stocker, Richmond, Rhoades, & Kiang, 2007). In addition, the ways mothers teach their adolescents to cope with stress is associated with adolescents' stress responses and externalizing symptoms (Abaied & Rudolph, 2010, 2011).

Despite the growing evidence for links between parental responses to distress and adolescents' emotional and behavioral problems, researchers know almost nothing about how parents' responses to their adolescents' distress relate to adolescent risk behavior (e.g., substance use and sexual behavior). To my knowledge, only one study has provided insight into this link. Using a sample of 65 parent-adolescent dyads (94% mothers), Hersh and Hussong (2009) coded parental responses to adolescent negative emotion during a structured laboratory interaction task in which the adolescent discussed a personal stressor with his or her parent. The authors then examined how parental responses to distress related to adolescents' substance use over the course of the following three weeks. Results revealed that overall parental sensitivity/responsiveness during the conversation as well as parental problem-focused responses were negatively correlated with overall adolescent substance use during the subsequent three-week period. These results, along with the consistent finding that unsupportive parental responses to adolescent distress are associated with adolescent externalizing problems, provide a basis for expecting an association between parents' responses to their adolescents' distress and adolescent risk behavior. Further, I propose that the expected link between parents' responses to their adolescents' distress and adolescent risk behavior may be mediated by adolescents' tendency to suppress or inhibit unwanted thoughts and emotions as a means of coping with distress.

Parents' Responses to their Adolescents' Negative Emotions and the Tendency to Suppress Unwanted Thoughts and Emotions

Decades of theory and research indicate that the way individuals learn to cope with distress and regulate their emotions develops in the context of the parent–child relationship (Bowlby, 1969/1982; Calkins & Leerkes, 2011; Cassidy, 1994; Thompson & Meyer, 2007). Individuals exposed to an early caregiving environment in which the expression of negative emotion was acknowledged, accepted, and responded to sensitively, are thought to develop positive attitudes about the utility of emotional expression, openness to the experience and expression of both positive and negative emotions, and the capacity to appropriately regulate their emotions. By contrast, individuals whose negative emotional expressions were punished, rebuffed, or minimized by caregivers early in life may develop the tendency to suppress or inhibit the experience and expression of emotion (Buck, 1984; Cassidy, 1994; Eisenberg et al., 1996; Wenzlaff & A. Eisenberg, 1998).

Even researchers outside of developmental and clinical psychology predict an association between unsupportive parental responses to child distress and the suppression of unwanted thoughts and emotions. Daniel Wegner, the social psychologist who pioneered the scientific study of thought suppression, noted, “There are some indications that this tendency to rely on thought suppression may have its origins in childhood, where certain parental practices are apt to promote avoidant coping” (Wenzlaff & Wegner, 2000, p. 73; see also Wenzlaff & A. Eisenberg, 1998). Consistent with this notion, children whose parents tend to respond in an inhibiting or unsupportive manner to their distress display higher levels of avoidant coping, more escape behavior in emotional situations, and decreased emotional expressivity (Eisenberg & Fabes, 1994; Eisenberg et al., 1996; Fabes, Poulin, Eisenberg, &

Madden-Derdich, 2002). Thus, adolescents with a developmental history of having their negative emotions restricted by parents (e.g., through punitive or minimizing responses) may develop the tendency to suppress unwanted thoughts and emotions as a means of coping. By contrast, adolescents whose parents accept and encourage emotional expression may be less likely to suppress unwanted thoughts and emotions.

The Tendency to Suppress Unwanted Thoughts and Emotions and Adolescent Risk Behavior

The link between suppression and risk behavior (e.g., substance use and sexual behavior) has not been frequently tested. However, there are compelling reasons to expect such an association. First, the suppression of unwanted thoughts and emotions is part of an avoidant coping strategy, which has been linked to greater alcohol use, smoking, and risky sexual behavior in adolescents and young adults (Fromme & Rivet, 1994; Frone & Windle, 1997; Merrill, Guimond, Thomsen, & Milner, 2003). Second, using suppression as a coping strategy is ineffective and often has the ironic effect of increasing the precise negative thoughts and feelings one is trying to avoid (e.g., Wenzlaff, Wegner, & Roper, 1988). Thus, adolescents who have learned to chronically inhibit negative thoughts and emotions may actually experience a heightened frequency of negative thoughts and feelings and may turn to substances or sex as a way of coping.

The few researchers who have examined the link between suppression and substance use have reported significant associations. Toll, Sobell, Wagner, and Sobell (2001) found that current smokers scored significantly higher on a self-report measure of thought suppression compared to ex-smokers. Also, in a study in which

thought suppression was experimentally manipulated, participants instructed to suppress thoughts of smoking for one week smoked significantly more cigarettes the following week compared to participants instructed to express smoking-related thoughts and control participants (Erskine, Georgiou, & Kvavilashvili, 2010). Thus, the available evidence provides a basis for expecting a direct link between suppression and risk behavior. In addition, theory and research suggest that the association between suppression and risk behavior may be mediated by physiological arousal.

The potential mediating role of physiological arousal in the link between suppression and risk behavior. Buck (1984) theorized that children who learn to inhibit the expression of emotion experience heightened arousal in emotional situations. Expanding on Buck's thinking, Eisenberg and colleagues further proposed that this heightened arousal increases the likelihood of "engaging in dysregulated or nonconstructive behavior" (Eisenberg et al., 1998, p. 248). Although Eisenberg and colleagues were writing about young children and thus were probably not thinking about substance use or sexual behavior under the category of "dysregulated and nonconstructive behavior," the notion that heightened arousal leads to dysregulated behavior can be extended to adolescent risk behavior. In support of these ideas, there is compelling evidence for an association between suppression or emotional inhibition and physiological arousal and for an association between physiological arousal and risk behavior.

Researchers who experimentally manipulated suppression found that suppressing thoughts and emotions is associated with increased physiological arousal

(i.e., elevated skin conductance and heart rate) as well as greater subjective reports of anxiety (Gross & Levenson, 1993, 1997; Hofmann, Heering, Sawyer, & Asnaani, 2009; Wegner, Short, Blake, & Page, 1990). In addition, the suppression of negative emotions has been linked to elevated blood pressure (e.g., Dimsdale et al., 1986). Research indicates that one frequent motivation for using substances or having sex is to reduce aversive affect states (e.g., tension, anxiety, or overarousal; Baker et al., 2004; Cooper, Frone, Russell, & Mudar, 1995; Cooper, Shapiro, & Powers, 1998; Wills & Shiffman, 1985). Further, Derefinko et al. (2014) found that heightened skin conductance responses to negative affective stimuli (i.e., pictures from the International Affective Picture System; IAPS) predicted greater sexual risk-taking. Therefore, it is possible that adolescents who tend to suppress unwanted thoughts and emotions—and, therefore, may experience increased physiological arousal when viewing emotional stimuli—will engage in risky behavior to reduce or escape this negative affect state.

The Present Study

The rates of substance use and risky sexual practices among America's youth are a major public health concern. In this study, I examine novel inter- and intrapersonal predictors of adolescent risk behavior with the hope of advancing knowledge on factors that contribute to risk-taking in adolescence. The theory and empirical evidence reviewed above indicate a potential link between parents' responses to their adolescents' negative emotions and adolescent risk behavior. Further, the literature suggests that adolescents' tendency to suppress unwanted thoughts and emotions may mediate this link, and that the link between suppression

and risk behavior may be mediated by physiological arousal. However, to my knowledge, researchers have yet to examine these mediational models. Therefore, in the present study, I use a multi-method, multi-informant study design to address this gap in the literature.

Study aims.

Aim 1. The first aim of the present study was to examine how parental responses to adolescent distress relate to adolescent risk behavior and to test whether this association is mediated by adolescents’ tendency to suppress unwanted thoughts and emotions (see Figures 1 and 2 below). There are several possible models I could test to address this study aim. I carefully considered the advantages and disadvantages of various modeling strategies and ultimately decided to focus specifically on mother and adolescent reports of maternal responses to adolescent negative emotions. See Appendix A for a discussion of the alternative modeling strategies and the reasoning behind my decision to focus on maternal responses to adolescent distress.

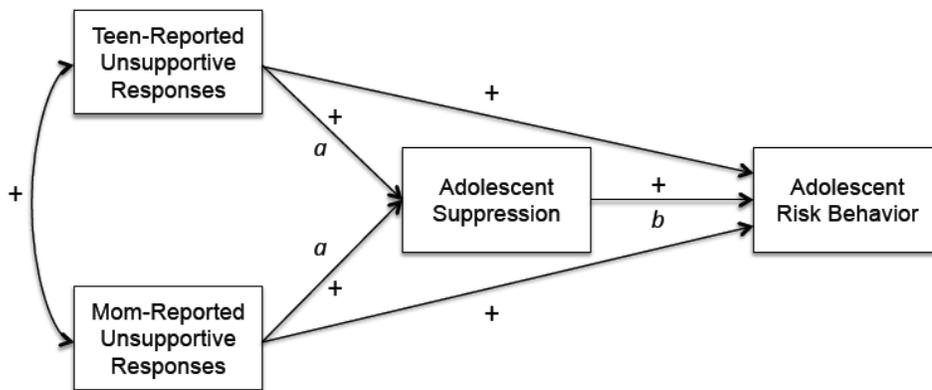


Figure 1. Mediational model of associations among maternal unsupportive responses to adolescent negative emotion, adolescent suppression, and adolescent risk behavior. *Notes.* + and – correspond to the hypothesized directions of the path coefficients. The paths marked *a* and *b* indicate the paths used to calculate the indirect effects.

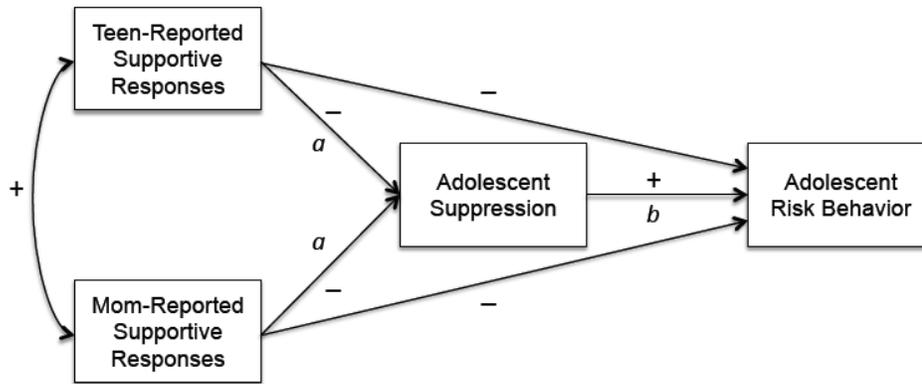


Figure 2. Mediation model of associations among maternal supportive responses to adolescent negative emotion, adolescent suppression, and adolescent risk behavior. *Notes.* + and – correspond to the hypothesized directions of the path coefficients. The paths marked *a* and *b* indicate the paths used to calculate the indirect effects.

To investigate Aim 1, I asked mothers and their adolescents to complete a self-report measure that assesses how each respondent thinks the mother would respond in various hypothetical scenarios in which the adolescent is expressing negative emotion (e.g., “My teenager gets sad because his or her feelings were hurt by a friend.”). The measure of parental responses to distress taps both supportive (e.g., encouragement of emotional expression) and unsupportive (e.g., minimizing) responses.

The most common approach to assessing the general tendency to suppress unwanted thoughts and emotions is via self-report methods. In addition to having adolescents complete a widely used and well validated self-report measure of thought suppression, I measured suppression with two laboratory tasks that have been used in prior research on suppression. In the first task, adolescents reported the frequency of negative thought intrusions related to a painful social event during a stream of consciousness writing task (e.g., Kelly & Kahn, 1994; Fraley & Shaver, 1997). A lower frequency of thought intrusions will be interpreted as reflecting greater

suppression. The second task measures adolescents' reaction times to negative, interpersonally themed emotion words during a computerized emotional Stroop task (e.g., Edelstein & Gillath, 2008).

For many years, researchers have discussed the interpretative difficulties associated with reaction times on the emotional Stroop task (e.g., de Ruiter & Brosschot, 1994; Mogg et al., 2000). Consistent with the interpretations of several other researchers (e.g., Edelstein & Gillath, 2008; Mikulincer Dolev, & Shaver, 2004), in the present study I suggest that faster reaction times (i.e., less Stroop interference) are indicative of suppression. In other words, adolescents who are high in the tendency to suppress unwanted thoughts and feelings react more quickly to limit attention to and avoid fully processing the negative emotion words. In support of this notion, Edelstein and Gillath (2008) found that avoidantly attached individuals – who report a preference for inhibiting emotional expression – demonstrated faster Stroop reaction times (i.e., less interference) to attachment-related words (which theory and research suggests are perceived as threatening to avoidant individuals) relative to neutral words. Similarly, Mogg et al. (2000) found that individuals characterized by high defensiveness demonstrated faster reaction times to social threat words relative to neutral words. Thus, there is empirical support for the interpretation of the Stroop reaction times that I use in the present study.

A note on instructed versus “spontaneous” suppression. Much of the research on thought suppression has involved experimentally manipulating suppression by instructing participants to suppress or express certain thoughts or mental images (e.g., “don’t think about a white bear”; Wegner, Schneider, Carter, &

White, 1987). However, there are individual differences in the general tendency to suppress unwanted thoughts and feelings in the absence of direct instructions to do so (Wegner & Zanakos, 1994). This self-initiated, “spontaneous” suppression has been demonstrated in several empirical studies (see Wenzlaff & Wegner, 2000, for a review). In the present study, I focus on spontaneous rather than instructed suppression.

Finally, using a measure designed by the Centers for Disease Control and Prevention (2001) to assess adolescent health risk behavior, adolescents reported on their recent alcohol, marijuana, and tobacco use. I chose these three substances because they are the most commonly used substances among adolescents (Kann et al., 2014). In addition to substance use, adolescents will report on their recent engagement in oral sex, intercourse, and unprotected sex.

I predict that unsupportive maternal responses to adolescent distress will be associated with greater adolescent risk behavior and that this link will be mediated by a heightened tendency to suppress unwanted thoughts and emotions. By contrast, I predict that supportive maternal responses to adolescent distress will be associated with less adolescent risk behavior and that this link will be mediated by a decreased tendency to suppress unwanted thoughts and emotions.

Aim 2. The second goal of the present study was to further explore the putative link between suppression and adolescent risk behavior by testing physiological arousal as a mechanism underlying this link (see Figure 3 below).

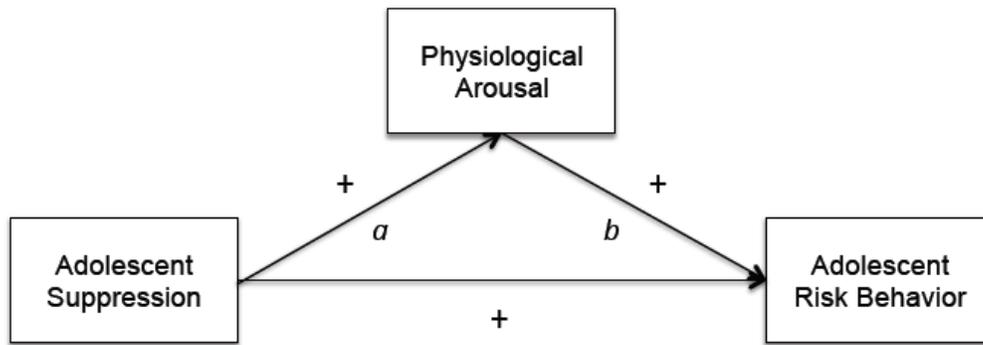


Figure 3. Mediation model of associations among adolescent suppression, physiological arousal in response to emotional stimuli, and adolescent risk behavior. *Notes.* + and – correspond to the hypothesized directions of the path coefficients. The paths marked *a* and *b* indicate the paths used to calculate the indirect effects.

Given the experimental evidence that suppression and emotional inhibition are associated with heightened physiological arousal (Gross & Levenson, 1993, 1997; Hofmann et al., 2009; Wegner et al., 1990), adolescents who tend to suppress unwanted thoughts and emotions may experience heightened physiological arousal in response to emotional stimuli. To examine this possibility, I measured adolescents’ physiological arousal (i.e., electrodermal activity) when viewing negative emotional stimuli presented during the emotional Stroop task. Further, given prior evidence that physiological arousal and aversive affect states are associated with greater substance use and sexual risk-taking (e.g., Cooper et al., 1995; Derefinko et al., 2014), I tested the association between physiological arousal and adolescent risk behavior. I predict that a greater tendency to suppress unwanted thoughts and emotions will be associated with heightened physiological arousal when viewing negative emotional stimuli in the emotional Stroop task, which in turn will be associated with more adolescent risk behavior.

Consideration of adolescent gender. In addition to testing the path models depicted in Figures 1-3, I also explored the potential role of adolescent gender in the various paths in the models. Gender differences in emotional expression/suppression and the ways parents respond to boys' and girls' negative emotions are complicated, and the empirical findings are mixed. Chaplin and Aldao (2013) meta-analyzed data from over 21,000 participants and found no gender differences in overall negative emotion expression. However, these authors reported very small, but significant, gender differences in the expression of specific types of negative emotion, with girls expressing more internalizing emotions (e.g., sadness) than boys and boys expressing more externalizing emotions (e.g., anger) than girls. The nature and magnitude of these gender differences varied across child ages and interpersonal contexts. The limited research on gender differences in suppression suggests that women self-report more thought suppression than men (Blumberg, 2000; Robichaud, Dugas, & Conway, 2003; Wegner & Zanakos, 1994). However, when researchers used an emotional Stroop reaction time task to measure suppression, no gender differences emerged (Edelstein & Gillath, 2008).

Research on mothers' responses to their sons' and daughters' negative emotions has also yielded mixed findings. Several researchers found that mothers did not differ in how they responded to negative emotional expressions from sons versus daughters (e.g., Chaplin, Cole, & Zahn-Waxler, 2005; Eisenberg & Fabes, 1994; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002; Katz & Hunter, 2007). Similarly, researchers have not found differences in parental emotion coaching as a function of child gender (e.g., Lunkenheimer, Shields, & Cortina, 2007). However,

other researchers have reported significant differences in how mothers respond to the negative emotions of their sons and daughters (e.g., Cassano, Perry-Parrish, & Zeman, 2007; Eisenberg et al., 1996; Kennedy Root & Rubin, 2010). Given these mixed findings and the limited research on emotion socialization in adolescence, my examination of the role of adolescent gender in the present study was exploratory.

Table 1

Summary of Study Aims and Hypotheses

Aim 1: Examine the association between maternal responses to adolescent distress and adolescent risk behavior, and test whether adolescent suppression mediates this link.

H1: Direct effect of unsupportive maternal responses on adolescent risk behavior: Unsupportive maternal responses to adolescent distress will be associated with greater adolescent risk behavior.

H2: Indirect effect of unsupportive maternal responses on adolescent risk behavior via suppression: Unsupportive maternal responses to adolescent distress will be positively associated with adolescents' tendency to suppress unwanted thoughts and emotions, which in turn will be positively associated with adolescent risk behavior.

H3: Direct effect of supportive maternal responses on adolescent risk behavior: Supportive maternal responses to adolescent distress will be associated with less adolescent risk behavior.

H4: Indirect effect of supportive maternal responses on adolescent risk behavior via suppression: Supportive maternal responses to adolescent distress will be negatively associated with adolescents' tendency to suppress unwanted thoughts and emotions, which in turn will be positively associated with adolescent risk behavior.

Aim 2: Examine whether physiological arousal when viewing negative emotional stimuli mediates the link between adolescent suppression and adolescent risk behavior.

H5: A greater tendency to suppress unwanted thoughts and emotions will be associated with heightened physiological arousal when viewing emotional stimuli in the emotional Stroop task, which in turn will be associated with more adolescent risk behavior.

Chapter 2: Method

Participants

Participants included a community sample of adolescents and their mothers who have been participating in an ongoing longitudinal study of adolescent risk behavior. The original (Time 1) sample of 277 adolescents and one or both parents was recruited from the Washington, DC area using media and print advertisements sent to community centers, schools, and libraries. Families with a child in the 5th or 6th grade and who were proficient in English were eligible to participate in the Time 1 laboratory assessment. Following the initial visit, families returned to the laboratory each year for an annual assessment. The present study will utilize data from a subsample of 115 adolescents (48% female) who agreed to participate in a supplemental study following their Time 7 ($n = 96$) or Time 8 ($n = 19$) laboratory visit. If parents attended the Time 7 or Time 8 visit with their adolescent, they were invited to participate as well. By Time 7, some of the adolescents were over 18 years old and came to the laboratory visit without their parents. Although both fathers and mothers were invited to participate in the larger longitudinal study and the supplement study, the sample size of fathers was too small to include in the present study ($n = 53$). Thus, the analyses in the present study will include data from 115 adolescents and 109 mothers. (See Appendix B for supplemental analyses that include adolescent-reported father responses to distress.)

The racial/ethnic distribution of the adolescents who participated at Time 7 or Time 8 is as follows: 50% White, 35% African America, 2% Hispanic, 13% other ethnicity. The ages of the adolescents who participated at Time 7 ranged from 14 to

19 years with a mean age of 16.91 years ($SD = 1.10$). The ages of the adolescents who participated at Time 8 ranged from 17 to 22 years with a mean of 18.58 years ($SD = 1.12$). The mean age of the combined sample is 17.19 years ($SD = 1.27$). Although this sample includes a large age range, the majority of the adolescents (78%) were between 16 and 18 years old (see Table 2 for distribution of adolescent ages). Mean household income at Time 7 and Time 8 was \$104,363 ($SD = \$62,080$) and \$105,754 ($SD = \$84,057$), respectively. The majority of mothers (73%) in the present study were married. The subsample that participated in this study did not differ significantly from the larger study sample in terms of adolescent age, adolescent gender, household income, or ethnic minority status (all $ps > .05$).

Table 2

Distribution of Adolescent Ages

Age	N	%
14	2	2
15	7	6
16	23	20
17	35	31
18	30	27
19	15	13
22	1	1

Procedure

Adolescents and their parents participated in a yearly laboratory visit during which they completed a variety of questionnaires and computerized laboratory tasks. At the end of the annual visit (either Time 7 or Time 8) adolescents and their parent(s) were invited to remain in the laboratory and participate in an optional 30-45 minute supplemental study. Adolescents over the age of 18 and parents provided written informed consent. Parents provided written consent for adolescents under the

age of 18 and minors provided written assent (see Appendix E for consent/assent forms). During the supplemental study, adolescents and parents completed questionnaires, a computerized emotional Stroop task, and a stream of consciousness writing task. Adolescents' electrodermal activity (EDA) was recorded during the laboratory tasks. Families earned an additional \$30 for participating in the supplemental study (\$15 for the adolescent and \$15 for one or both parents).

Measures (see Appendices F-K for all measures)

Mothers' responses to their adolescents' negative emotions. Mothers' responses to their adolescents' negative emotions were assessed with the Coping with Children's Negative Emotions Scale – Adolescent Version (CCNES-A; Fabes & Eisenberg, 1998). Mothers completed this measure during their regular annual visit. Adolescents completed this measure during the supplemental study.

Respondents were presented with nine hypothetical scenarios in which the adolescent is expressing negative emotion (e.g., “My teenager gets down because he/she has had a bad day”). Minor wording changes were made to the version completed by adolescents (e.g., “When I get down because I've had a bad day”). Each scenario includes six different maternal responses to the adolescent's distress. Mothers and teens were asked to indicate how likely the mother would be to respond in each of the six ways from 1 (*very unlikely*) to 7 (*very likely*). The CCNES-A yields scores on six subscales: three supportive subscales and three unsupportive subscales. The supportive subscales include: problem-focused responses (e.g., “help him/her think of things to do to get his/her problem solved”), emotion-focused responses (e.g., “try to get him/her to think of good things that happened”), and expressive

encouragement (e.g., “listen to him/her talk about his/her feelings”). The unsupportive subscales include: punitive responses (e.g., “tell him/her to straighten up and stop sulking around the house”), minimization responses (e.g., “tell him/her that he/she really has nothing to be sad about”), and distress responses (e.g., “become obviously uncomfortable when I see he/she is feeling down”). I averaged the subscales to create composite variables representing supportive and unsupportive maternal responses to adolescent distress. The data in the present study support this two factor structure. A principal components analysis (PCA) with varimax rotation using all six adolescent-reported maternal response subscales yielded two factors that accounted for 84% of the variance among the variables. The first factor has an eigenvalue of 3.02 and includes the three supportive subscales. The rotated factor loadings were .96, .94, and .92 for emotion-focused responses, problem-focused response, and expressive encouragement, respectively. The second factor had an eigenvalue of 2.00 and included the three unsupportive subscales. The rotated factor loadings were .89, .86, and .75 for punitive responses, distress responses, and minimization responses, respectively.

The PCA with mother-reported responses also yielded two factors that accounted for 75% of the variance among the variables. The first factor had an eigenvalue of 2.50 and included the three supportive subscales. The rotated factor loadings were .89, .83, and .78 for problem-focused responses, emotion-focused responses, and expressive encouragement, respectively. The second factor had an eigenvalue of 2.05 and included the three unsupportive subscales. The rotated factor

loadings were .92, .85, and .74 for punitive responses, distress responses, and minimization responses, respectively.

Although relatively few studies have used the adolescent version of the CCNES, the child version of the CCNES has been widely used and has demonstrated strong psychometric properties (e.g., Eisenberg et al., 1996; Fabes et al. 2002). Multiple studies have reported that the subscales of the adolescent version are internally consistent (Daughters, Gorka, Rutherford, & Mayes, 2014; Ehrlich, Cassidy, Gorka, Lejuez, & Daughters, 2013; Ehrlich, Cassidy, Lejuez, & Daughters, 2014; Jones, Brett, Ehrlich, Lejuez, & Cassidy, 2014; Mazursky-Horowitz et al., 2014). Similarly, in the present study, all subscales were highly internally consistent (α s ranged from .82 to .91 for adolescent-reported responses and from .81 to .91 for mother-reported responses).

There is also evidence that maternal reports on the CCNES-A are associated with related social and emotional constructs in theoretically consistent ways. Specifically, Jones et al. (2014) found that maternal attachment insecurity and emotion regulation difficulties predicted more unsupportive and less supportive responses to adolescent distress. In addition, the CCNES-A has been linked to adolescent outcomes. Specifically, Ehrlich et al. (2013) found that mother-reported unsupportive responses to adolescent distress were associated with poorer adolescent friendship quality in adolescents low in distress tolerance. Thus, the available evidence suggests that the CCNES-A is a reliable and valid measure.

Adolescent suppression of unwanted thoughts and emotions. Adolescent suppression was measured in three ways. First, adolescents completed the White Bear

Suppression Inventory (WBSI; Wegner & Zanakos, 1994). The WBSI is a widely used 15-item self-report measure designed to assess the general tendency to suppress unwanted thoughts. Sample items include, “I have thoughts that I try to avoid” and “I often do things to distract myself from my thoughts.” Adolescents indicated on a 5-point Likert scale the extent to which they agree with each statement from 1 (*strongly disagree*) to 5 (*strongly agree*). Per the scoring manual (Wegner & Zanakos, 1994), I averaged all 15 items to create an overall suppression score. The WBSI has demonstrated strong psychometric properties including internal consistency, test-retest reliability, construct validity, and discriminant validity. In addition, WBSI scores are positively associated with symptoms of various forms of psychopathology, emotional vulnerability, interpersonal difficulties, and perceived parental criticism (Cheavens et al., 2005; Muris, Merckelbach, & Horselenberg, 1996; Wegner & Zanakos, 1994; see Wenzlaff & Wegner, 2000, for a review). In the present study, the internal consistency of the WBSI was high, $\alpha = .92$.

Second, adolescents completed a stream of consciousness (SOC) writing task adapted from Kelly and Kahn (1994) that has been used in previous studies of thought suppression (e.g., Fraley & Shaver, 1997; Mikulincer et al., 2004). The experimenter explained to adolescents what stream of consciousness writing entails and gave the participants 2 minutes to practice SOC writing. Then, the adolescents were instructed to identify a hurtful social event that they had experienced and to briefly describe the event. The instructions were as follows: “Identify a time when someone close to you rejected you or hurt your feelings badly, or a time when you felt excluded in a social situation. Please take a moment to recall this event or experience.” After identifying

the painful social experience, the adolescents were instructed to resume SOC writing for an additional 5 minutes. During the 5-minute SOC writing task, the adolescents were instructed to place a checkmark in the margin of the page each time they had a thought or feeling related to the hurtful event they identified. The frequency of thought intrusions during the SOC task will be used as an indicator of the tendency to suppress painful thoughts and emotions. A low number (or absence) of check marks will be interpreted as indicating that the adolescent is suppressing the unpleasant thoughts and feelings associated with the hurtful social event.

Third, adolescents completed a computerized emotional Stroop task that was designed and administered with DirectRT software (Jarvis, 2008). In this task, adolescents saw words presented in four colors (red, blue, yellow, and green) in the center of the computer screen. Adolescents were instructed to press the color-coded button on the keyboard that matched the color in which the words were presented as quickly and accurately as possible. Adolescents first completed 12 practice trials that included neutral words (e.g., lobby, poster) that were not included in the test trials. Then, adolescents were presented with a total of 100 test trials (5 word blocks, 10 words per block, each block presented twice). The words used in the present study are the same as those used by Edelstein and Gillath (2008). The words in the 5 blocks corresponded to the following five categories: (a) neutral, (b) general positive emotion, (c) general negative emotion, (d) social-relevant positive emotion, and (e) social-relevant negative emotion (see Appendix H for full list of words). The order in which the word blocks were presented was randomized across participants. The words used in the present study were matched for length and number of syllables. The

emotional Stroop task was administered using a Dell D620 laptop with a 14-inch LCD screen.

In the present study, I focused on the social-relevant negative emotion words (e.g., lonely, abandon, reject). One reason for focusing on social-relevant negative emotion words is consistency across suppression tasks. The focus of the SOC writing task is on the suppression of thoughts and feelings related to a hurtful social event. A second reason is that “social pain” is thought to be particularly aversive and distressing (e.g., MacDonald & Leary, 2005). Thus, stimuli related to social pain are likely to elicit a suppression response in individuals who tend to suppress unwanted thoughts and emotions. Consistent with this idea, prior research with the emotional Stroop has found that social threat words are more likely to elicit a cognitive avoidance (i.e., suppression) response from participants high in defensiveness compared to physical threat words (Mogg et al., 2000).

The DirectRT software automatically records the participants’ reaction times (i.e., latency to respond) for each trial in milliseconds. Following common practice (e.g., Dresler, Mériaux, Heekeren, & van der Meer, 2009), I excluded reaction times associated with incorrect responses on the emotional Stroop from the analyses. Across all participants, error rates were 3.0% of the social-relevant negative emotion word trials and 2.7% of the neutral word trials. I calculated average reaction time scores for the social-relevant negative emotion words ($M = 764.18\text{ms}$, $SD = 138.99\text{ms}$) and neutral words ($M = 776.93\text{ms}$, $SD = 128.22\text{ms}$). Then, I created “interference” scores by subtracting the mean reaction time for the neutral word category from the mean reaction time for the social-relevant negative word category.

Positive scores indicate more interference (i.e., longer reaction time) on the social-relevant negative emotion words relative to the neutral words.

Physiological arousal. Adolescents' electrodermal activity (EDA) was recorded during the supplemental study using Biopac MP100 equipment and Acqknowledge software. EDA provides a non-invasive indicator of general sympathetic arousal and is commonly used in psychological studies (see Figner & Murphy, 2010, for a review). EDA was sampled at a rate of 200 Hz (Figner & Murphy, 2011). The raw EDA data was amplified using a Biopac GSR100C amplifier. Word blocks in the emotional Stroop task were separated by a 10 second pause to allow time for skin conductance levels (SCL) to return to baseline in between word blocks (Figner & Murphy, 2010).

At the beginning of the study, silver chloride electrodes were attached to the palmar surfaces of the index and middle fingers of the adolescents' non-dominant hand and secured with Velcro straps. Adolescents were instructed to keep their hand flat on the desk and to refrain from moving their hand or body throughout the study. After completing the questionnaires and before beginning the laboratory tasks, adolescents were instructed to relax and remain still for 5 minutes to establish baseline SCL. The measure of physiological arousal used in the present study was the mean SCL during the social-relevant negative emotion word blocks ($M = 1.95$, $SD = .96$), after subtracting the mean SCL recorded during the baseline period ($M = 1.40$, $SD = .92$; e.g., Fraley & Shaver, 1997; Raby, Roisman, Simpson, Collins, & Steele, 2015; Roisman, 2007). Positive scores indicate greater physiological arousal during

the presentation of the social-relevant negative emotion words relative to the baseline period.

Adolescent risk behavior. Adolescents completed a modified version of the CDC Youth Risk Behavior Survey during their regular annual visit (YRBS; Centers for Disease Control and Prevention, 2001). This measure assesses lifetime and past year engagement in a variety of risky behaviors (e.g., theft, physical fights, substance use, sexual practices). In the present study, I focused on substance use and sexual behavior. Specifically, I examined the use of three substances in the past year: alcohol, marijuana, and cigarettes (e.g., “In the past year, how many times have you had a drink of alcohol (even a sip)?”). Adolescents indicated frequency of use in the past year on a 6-point scale from 0 (*zero*) to 5 (*almost every day or more*). I will also examine adolescents’ engagement in three sexual behaviors: oral sex (given or received), intercourse, and intercourse without a condom (e.g., “In the past year, how many times have you had intercourse with no condom?”). Adolescents indicated frequency of engagement in each of these behaviors in the past year on a 6-point scale from 0 (*zero*) to 5 (*almost every day or more*). The YRBS has been shown to be a reliable measure of youth risk behaviors (Brener, Collins, Kann, Warren, & Williams, 1995; Brener et al., 2002).

There is no gold standard approach to statistically operationalizing risk behavior. Some researchers have argued that risk behaviors (i.e., delinquency, sexual behavior, substance use) can be modeled as a single higher-order factor (e.g., Cooper, Wood, Orcutt, & Albino, 2003). Other researchers have noted the modest correlations among these different domains of behavior and advocate keeping substance use and

sexual behavior separate in analyses (e.g., Marsh, McFarland, Allen, McElhany, & Land, 2003).

In this study, I used a data-driven approach to determine the best way to operationalize risky behavior. Specifically, I performed a PCA with varimax rotation on all six risk behavior variables. The results of the PCA support a two-factor solution that accounts for 71% of the variance among the variables. The first factor has an eigenvalue of 3.23 and includes the three sexual behavior variables. The rotated factor loadings were .92, .90, and .83 for past year intercourse, intercourse without a condom, and oral sex, respectively. The second factor has an eigenvalue of 1.03 and includes the three substance use variables. The rotated factor loadings were .79, .71, and .70 for marijuana, alcohol, and cigarettes, respectively. Given these results, I modeled substance use and sexual behavior as separate variables in the path models and allowed them to covary.

Demographic information. At each yearly assessment, parents provide demographic information about themselves and their adolescent (e.g., age, gender, ethnicity, household income).

Chapter 3: Results

Data Analysis Overview

First, I performed preliminary analyses to examine missing data, descriptive statistics, potential demographic covariates, and the role of adolescent gender. Second, I used measured variable path analysis to test the study aims. To evaluate the proposed hypotheses, I examined overall data-model fit as well as the statistical significance of individual path coefficients. I used the following indices and cut-off criteria to evaluate overall model fit: a non-significant chi-square test, standardized root mean square residual ($SRMR \leq .08$), comparative fit index ($CFI \geq .95$), and root mean square error of approximation ($RMSEA \leq .06$; Hu & Bentler, 1999). To test the predicted indirect effects, I used resampling methods (i.e., bootstrapping) to generate bias-corrected confidence intervals and then used those confidence intervals to determine whether the indirect effects were statistically significant. A 95% confidence interval that does not include 0 indicates a significant indirect effect. Traditional approaches to testing the significance of mediated effects assume that the indirect effect (product of path a X path b) follows a normal distribution. This assumption is often incorrect and using a test that assumes a normal distribution of the indirect effect can reduce power to detect mediated effects. Bootstrapping methods do not require distributional assumptions about indirect effects, provide a more powerful test of the indirect effect, and are better for testing mediation with smaller sample sizes (MacKinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002). All principal analyses were performed with Mplus statistical software Version 7 (Muthén & Muthén, 1998-2012).

Preliminary Analyses

Missing data. Missingness was minimal for questionnaire and laboratory task data. Data were missing on less than 5% of the adolescent variables (i.e., adolescent-reported maternal responses to distress, suppression, and risk behavior). Data on mother-reported responses to adolescent distress were missing for six (5.2%) mothers. EDA data were missing for 16 adolescents (13.9%). Fifteen of the missing EDA data cases were due technical difficulties; one adolescent refused to have her EDA recorded during the study. To further evaluate missingness, I performed Little's (1988) missing completely at random (MCAR) test. The test yielded a non-significant chi-square value, suggesting that the data are MCAR, $\chi^2(100) = 119.42, p = .07$. Therefore, I used full information maximum likelihood estimation (FIML) to handle missing data in the path models (Graham, 2009).

Descriptive statistics. Examination of descriptive statistics and histograms did not reveal any violations of statistical assumptions related to the analyses performed in the present study. As noted in my proposal, observations greater than three standard deviations from the mean were treated as outliers and excluded from the main analyses. Five observations met this criterion (2 adolescent reports of maternal unsupportive responses and 3 adolescent reports of thought intrusions during the stream of consciousness writing task). To ensure that the results are not being driven by the inclusion or exclusion of these extreme observations, I also tested the models without excluding these outliers. Including these outliers in the analyses did not substantively change the results or the overall conclusions derived from the

results. Means, standard deviations, ranges, and correlations among key study variables are presented in Table 3.

Table 3

Means, Standard Deviations, Ranges, and Correlations Among Key Study Variables

	1	2	3	4	5	6	7	8	9	10
1. Unsupp AR	-									
2. Supp AR	-.07	-								
3. Unsupp MR	.24*	-.07	-							
4. Supp MR	.03	-.00	.21*	-						
5. WBSI	.26*	-.07	.07	.10	-					
6. Checks	.06	.10	-.08	-.04	.16	-				
7. Stroop	.02	-.15	.13	.14	.06	-.12	-			
8. SCL	-.09	-.02	.23*	-.08	.01	-.07	-.01	-		
9. Drugs	-.02	-.22*	-.08	-.08	.15	.11	.06	.05	-	
10. Sex	.01	.00	-.21*	-.04	.21*	-.00	-.10	.04	.48*	-
Mean (SD)	2.38 (.85)	4.72 (1.31)	2.26 (.95)	5.85 (.75)	3.13 (.77)	2.49 (2.01)	12.75 (79.60)	.55 (.37)	1.10 (.96)	1.16 (1.34)
Range	1.04 – 5.37	1.07 – 7.00	1.00 – 4.85	3.67 – 7.00	1.13 – 4.60	0 – 9	-215 – 270	-.03 – 1.71	0 – 4	0 – 5

Notes * $p < .05$. Unsupp = unsupportive maternal responses to adolescent distress. Supp = supportive maternal responses to adolescent distress. AR = adolescent report. MR = mother report. WBSI = self-report thought suppression. Checks = number of thought intrusions during stream of consciousness writing task. Stroop = interference score during emotional Stroop task (higher score = more interference). SCL = mean SCL level during social-relevant negative emotion word blocks after adjusting for baseline. Drugs = composite of tobacco, alcohol, and marijuana. Sex = composite of oral sex, intercourse, and intercourse without a condom.

Covariates. Household income, mother marital status, and adolescent ethnicity were unrelated to any of the outcome variables in the present study and thus are not considered further. Adolescent age was significantly correlated with the sexual behavior composite ($r = .19, p < .05$) and marginally correlated with the

substance use composite ($r = .17, p = .08$), but was unrelated to any of the suppression variables. Because some adolescents participated in the present study at Wave 7 and others at Wave 8, and because, as expected, age is positively associated with the risk behavior composites, adolescent age was included as a covariate in all path models. (Excluding the one 22 year old from the analyses did not change the overall pattern of results.)

Adolescent gender. No significant gender differences emerged with regard to reports of maternal responses to distress, adolescent risk behavior, or any of the suppression variables. However, males and females did differ in physiological arousal during the emotional Stroop task: males had significantly higher SCLs than females, $t(97) = 2.25, p < .05$.

To further explore potential role of adolescent gender, I conducted a series of hierarchical regressions to see if gender moderated any of the proposed links in the present study. On Step 1, I entered the predictor variable and adolescent gender. On Step 2, I entered the interaction term. Following Aiken and West (1991), continuous predictors were mean-centered when testing interactions. No evidence for moderation by adolescent gender emerged. In addition, adding adolescent gender to the physiological arousal models did not change the overall pattern of results. Therefore, adolescent gender is not included in subsequent analyses.

Principal Analyses

Aim 1. In this section, I first present the results related to unsupportive maternal responses to adolescent distress followed by the results related to supportive maternal responses to adolescent distress. For both supportive and unsupportive

responses, I tested three separate path models: one for each measure of adolescent suppression (i.e., self-reported suppression on the WBSI, number of thought intrusions during SOC task, and interference scores during the emotional Stroop task). Sexual behavior and substance use were included as separate variables in each model and allowed to covary.

Unsupportive maternal responses to adolescent distress, adolescent suppression, and adolescent risk behavior. All three models yielded good data-model fit (see Table 4 for fit indices). Across all three models, adolescent-reported unsupportive maternal responses were unrelated to adolescent substance use or sexual behavior. Mother-reported unsupportive responses were significantly associated with adolescent sexual behavior, but unrelated to adolescent substance use, across all three models. However, the direction of this effect was contrary to my expectation: Mother-reported unsupportive responses were negatively related to adolescent sexual behavior.

Only one link emerged between maternal responses to adolescent distress and adolescent suppression: Adolescent-reported unsupportive maternal responses were positively associated with self-reported suppression on the WBSI. Further, only self-reported suppression on the WBSI was associated with adolescent risk behavior: Greater self-reported suppression was significantly associated with a higher frequency of sexual behavior in the past year and marginally associated with more substance use in the past year ($p = .07$). Finally, only one significant indirect effect emerged across the three models: Adolescent-reported unsupportive maternal responses were associated with greater self-reported suppression on the WBSI, which

in turn was associated with a higher frequency of sexual behavior (indirect effect = .10; 95% CI [.01, .24]). (See Figures 4-6 below). Adolescent age (not included in the figures) was positively associated with adolescent sexual behavior across all three models (*bs* ranged from .19 to .23, *ps* < .05). Adolescent age was significantly associated with adolescent substance use only in the model with self-reported thought suppression (*b* = .19, *p* < .05).

Table 4

Fit Indices and Variance Explained for Aim 1 Models

Model	$\chi^2(df)$	<i>p</i>	SRMR	CFI	RMSEA (90% CI)	<i>R</i> ² Suppress	<i>R</i> ² Drugs	<i>R</i> ² Sex
Mother Unsupportive								
WBSI	3.01(3)	.39	.03	1.00	.01 (.00, .16)	.06	.08	.16
Checks	.38(3)	.94	.01	1.00	.00 (.00, .03)	.01	.04	.08
Stroop	.21(3)	.98	.01	1.00	.00 (.00, .00)	.01	.04	.08
Mother Supportive								
WBSI	6.92(3)	.07	.06	.91	.11 (.00, .22)	.02	.18	.13
Checks	4.70(3)	.19	.04	.95	.07 (.00, .19)	.01	.15	.05
Stroop	4.74(3)	.19	.04	.96	.07 (.00, .19)	.04	.14	.05

Notes. SRMR = standardized root mean square residual. CFI = comparative fit index. RMSEA = root mean square error of approximation.

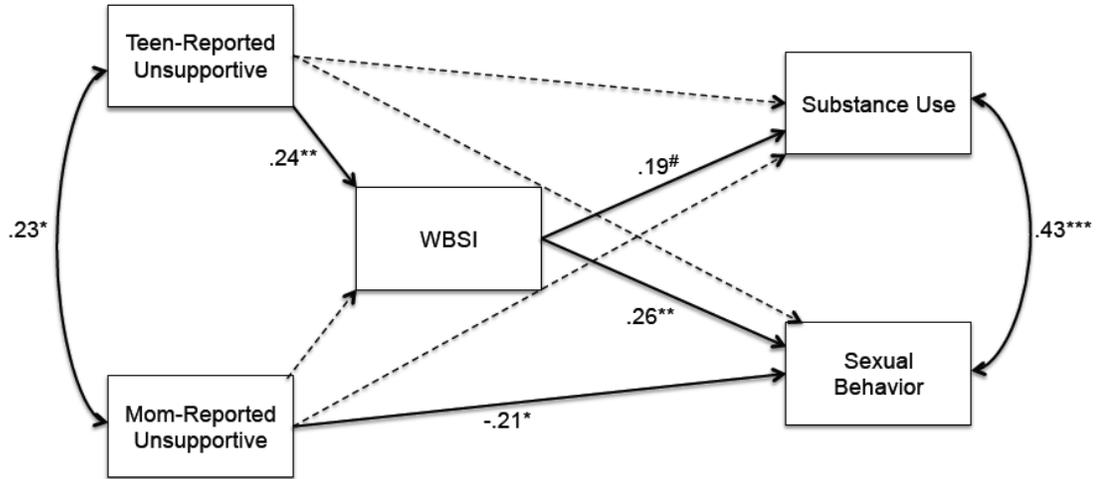


Figure 4. Unsupportive Model with Self-reported Thought Suppression on the WBSI
 Notes. Solid lines indicate significant paths. Dashed lines indicate non-significant paths. Numbers are standardized path coefficients.
[#] $p < .10$. * $p < .05$. ** $p < .01$ *** $p < .001$

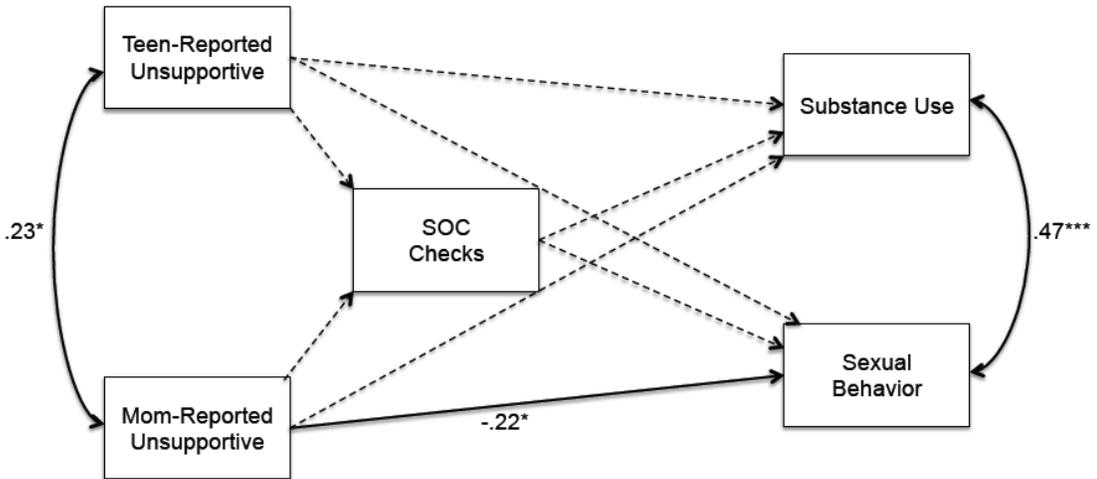


Figure 5. Unsupportive Model with Thought Intrusions During Stream of Consciousness Writing Task
 Notes. Solid lines indicate significant paths. Dashed lines indicate non-significant paths. Numbers are standardized path coefficients.
 * $p < .05$. *** $p < .001$

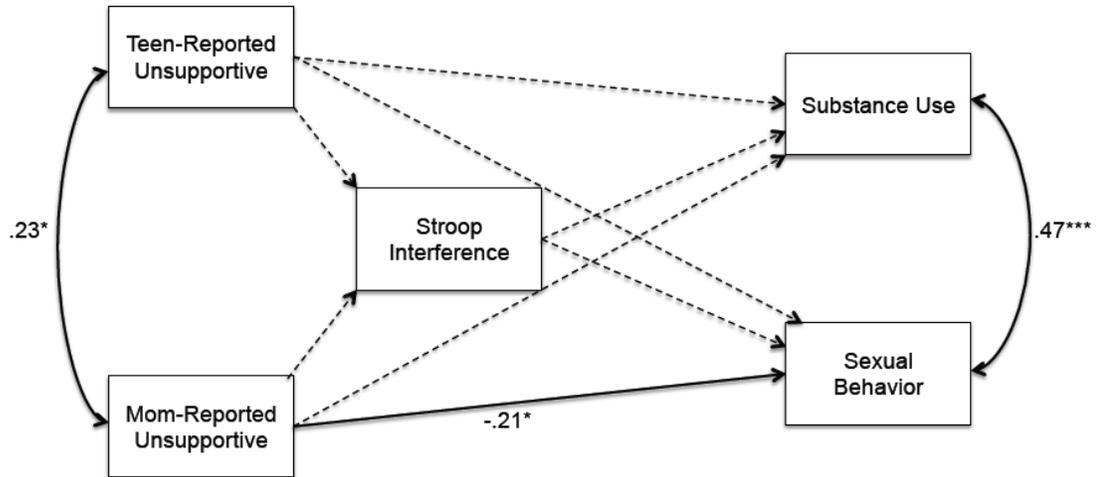


Figure 6. Unsupportive Model with Stroop Interference

Notes. Solid lines indicate significant paths. Dashed lines indicate non-significant paths. Numbers are standardized path coefficients.

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

Supportive maternal responses to adolescent distress, adolescent

suppression, and adolescent risk behavior. All three models yielded non-significant chi-square tests, indicating adequate data-model fit (see Table 4 for fit indices).

However, for the model with self-reported suppression, CFI was below the acceptable value and RMSEA was above the acceptable value for adequate data-model fit.

Across all three models, adolescent-reported supportive maternal responses were negatively associated with adolescent substance use, but not sexual behavior. Mother-reported supportive responses were unrelated to adolescent substance use or sexual behavior across all three models. Across both reporters, maternal supportive responses were unrelated to any of the adolescent suppression variables. Self-reported suppression on the WBSI, but not the other two measures of suppression, was associated with adolescent risk behavior: Greater self-reported suppression was significantly associated with a higher frequency of sexual behavior in the past year and marginally associated with more substance use in the past year ($p = .06$). No

significant indirect effects emerged. (See figures 7-9 below). Adolescent age (not included in the figures) was positively associated with adolescent sexual behavior and adolescent substance use across all three models (*bs* ranged from .20 to .24, *ps* < .05).

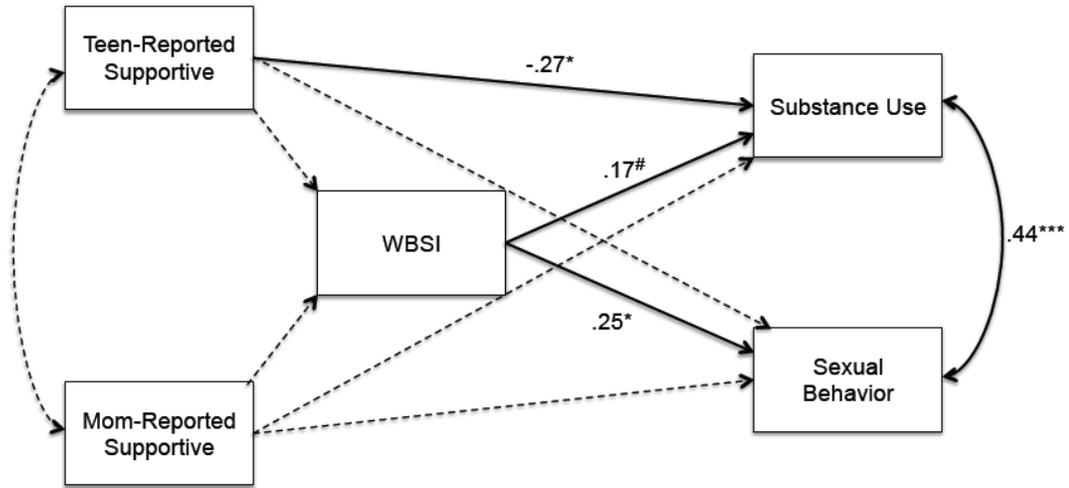


Figure 7. Supportive Model with Self-reported Thought Suppression on the WBSI
Notes. Solid lines indicate significant paths. Dashed lines indicate non-significant paths. Numbers are standardized path coefficients.
[#] *p* < .10. * *p* < .05. *** *p* < .001

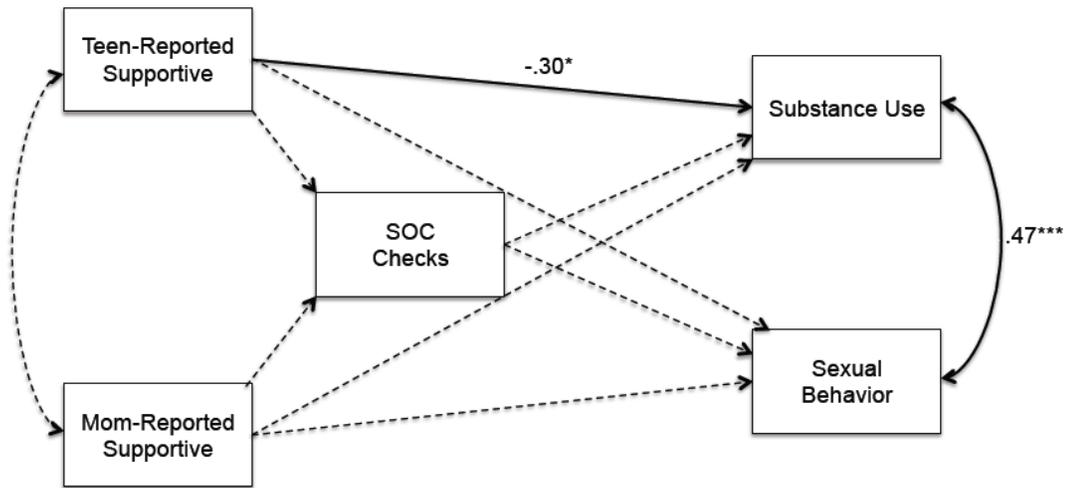


Figure 8. Supportive Model with Thought Intrusions During Stream of Consciousness Writing Task
Notes. Solid lines indicate significant paths. Dashed lines indicate non-significant paths. Numbers are standardized path coefficients.
* *p* < .05. *** *p* < .001

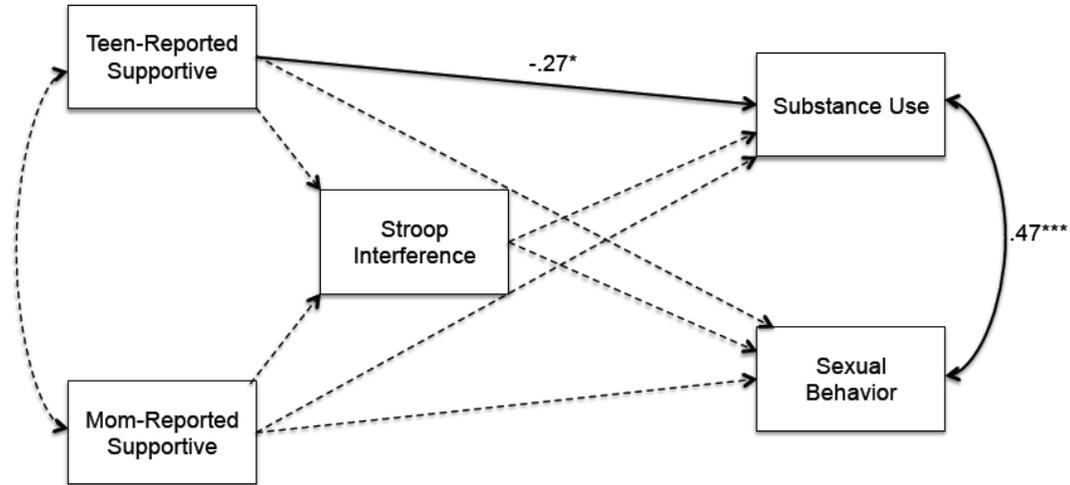


Figure 9. Supportive Model with Stroop Interference

Notes. Solid lines indicate significant paths. Dashed lines indicate non-significant paths. Numbers are standardized path coefficients.

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

Aim 2.

Suppression, Physiological Arousal, and Adolescent Risk Behavior. I tested three separate path models, one for each measure of adolescent suppression. Across all three models, the results revealed adequate data-model fit (see Table 5). However, no significant paths emerged between any of the suppression variables and physiological arousal during the emotional Stroop task, and no significant links emerged between physiological arousal and adolescent risk behavior.

Table 5

Fit Indices and Variance Explained for Aim 2 Models

Model	$\chi^2(df)$	p	SRMR	CFI	RMSEA (90% CI)	R^2 Physio	R^2 Drugs	R^2 Sex
WBSI	3.37(2)	.19	.04	.96	.08 (.00, .22)	.00	.07	.11
Checks	1.10(2)	.58	.03	1.00	.00 (.00, .16)	.00	.04	.04
Stroop	.94(2)	.63	.02	1.00	.00 (.00, .15)	.00	.04	.05

Notes. SRMR = standardized root mean square residual. CFI = comparative fit index. RMSEA = root mean square error of approximation.

Chapter 4: Discussion

The goal of the present study was to examine novel inter- and intrapersonal predictors of adolescent risk behavior. Specifically, I tested whether an understudied aspect of parenting during adolescence – parents’ responses to their adolescents’ distress – relates to adolescent substance use and sexual behavior. Further, I tested whether this link between parental response to distress and adolescent risk behavior was mediated by adolescents’ tendency to suppress unwanted thoughts and emotions. Finally, to further explore the putative link between adolescent suppression and adolescent risk behavior, I tested whether this link was mediated by heightened physiological arousal when viewing negative emotional stimuli. Below, I discuss the results in relation to the study aims and hypotheses. I also discuss issues related to including multiple reporters of parental responses to adolescent distress and the findings related to adolescent gender. Finally, I conclude by describing study limitations and outlining important directions for future research.

Aim 1: Examine the Association Between Maternal Responses to Adolescent Distress and Adolescent Risk Behavior, and Test Whether Adolescent Suppression Mediates This Link

Hypotheses 1 and 3: Direct effects. I predicted that unsupportive maternal responses to adolescent distress would be positively associated with adolescent risk behavior and that supportive maternal responses to adolescent distress would be negatively associated with adolescent risk behavior.

In the present study, I found minimal support for these hypotheses. Adolescent-reported supportive maternal responses were negatively associated with

adolescent substance use in the past year, but were not significantly associated with adolescent sexual behavior. Mother-reported supportive responses were not significantly associated with adolescent risk behavior. Unexpectedly, mother-reported unsupportive responses to adolescent distress were *negatively* associated with adolescent sexual behavior (opposite to the direction I predicted), but were not related to adolescent substance use. Adolescent-reported unsupportive maternal responses were not directly associated with adolescent risk behavior.

These findings are somewhat consistent with the results of the only other study to explore links between parental response to distress and adolescent substance use: Hersh and Hussong (2009) found that observed supportive parental responses to adolescent distress (i.e., sensitive, problem-focused responses) were negatively correlated with adolescent substance use. In addition, the present results add to the existing literature demonstrating an inverse relationship between supportive parental responses to distress and adolescent externalizing/problem behaviors (e.g., Barbot, Heinz, & Luthar, 2014; Shortt, Stoolmiller, Smith-Shine, Eddy, & Sheeber, 2010). Given the substantial empirical evidence for links between supportive parental responses to distress and positive social and emotional outcomes in childhood (e.g., Eisenberg et al., 1998), it is possible that supportive parental responses during adolescence continue to confer social and emotional benefits (e.g., better emotion regulation and social skills), which may decrease the likelihood that adolescents will use substances to regulate their mood or succumb to peer pressure.

The results related to adolescent sexual behavior are more difficult to interpret. The only significant direct effect was in an unexpected direction – mother-

reported unsupportive responses were related to less frequent sexual behavior. Given that, to my knowledge, this is the first study to test links between maternal responses to distress and adolescent sexual behavior, it is difficult to explain this counter-intuitive finding. Although entirely speculative, one possibility stems from the notion that risk-taking behavior often occurs in a social context in the company of friends or peers. Considering the well documented link between unsupportive parental responses to distress and poorer social functioning in childhood (e.g., Eisenberg et al., 1996, 1999), it is possible that adolescents of unsupportive parents have poorer social skills and therefore may be less likely to go out on dates or be in attendance at social gatherings where they might have the opportunity to engage in sexual behavior. Future studies including measures of adolescent social functioning could test this possibility.

Hypotheses 2 and 4: Indirect effects. I predicted that unsupportive maternal responses to adolescent distress would be positively associated with adolescent suppression, which in turn would be positively associated with adolescent risk behavior. I also predicted that supportive maternal responses to adolescent distress would be negatively associated with adolescent suppression, which in turn would be positively associated with adolescent risk behavior.

In the present study, I found minimal support for these hypotheses. Only self-reported thought suppression on the WBSI was significantly associated with maternal responses to adolescent distress and to adolescent risk behavior. Specifically, adolescent-reported unsupportive maternal responses to distress were associated with greater self-reported thought suppression. Self-reported thought suppression, in turn,

was significantly associated with more frequent sexual behavior and marginally associated with more frequent substance use. Only one significant indirect effect emerged: Adolescents who reported more unsupportive maternal responses to distress reported greater thought suppression on the WBSI, which in turn predicted more frequent sexual behavior. However, given the lack of a significant direct association between adolescent-reported unsupportive maternal responses to distress and adolescent sexual behavior, there is insufficient evidence to conclude that suppression is a *mediator* of this link (see Hayes, 2009, and Mathieu & Taylor, 2006, for information on the distinction between mediators and indirect effects).

This pattern of findings raises the question of why links only emerged in relation to self-reported thought suppression. I propose three possibilities. First, the significant links that emerged among maternal responses to distress, adolescent suppression, and adolescent risk behavior were all based on adolescent self-reports (with the exception of the unexpected negative association between mother-reported supportive responses and adolescent sexual behavior). Therefore, it is possible that there are actually no meaningful associations among maternal responses to distress, adolescent suppression, and adolescent risk behavior, and the significant paths that emerged could instead be an artifact of common method variance.

A second possibility is that three measures of suppression are actually not measuring the same construct. The WBSI assesses individuals' self-reported general tendency to suppress unwanted and intrusive thoughts. By contrast, the stream of consciousness writing task assesses the frequency of thought intrusions related to a self-identified painful social event during the 5-minute writing period. Finally,

reaction times on the emotional Stroop task reflect individuals' unconscious cognitive avoidance of social-relevant negative emotion words relative to neutral words. Each of these measures may be tapping a different aspect of suppression or cognitive avoidance rather than a single global suppression construct. The weak and non-significant correlations among the three suppression measures suggest that they may be measuring different constructs. If this is in fact the case, then the observed pattern of results suggests that only the self-reported general tendency to suppress unwanted and intrusive thoughts (but not the other two indices of suppression) is linked to unsupportive maternal responses to distress and adolescent risk behavior.

A third possibility is that the two laboratory tasks did not elicit the intended "spontaneous" suppression response. Although spontaneous suppression has been observed in prior studies (e.g., Wenzlaff & Wegner, 2000), much of the work on suppression has involved explicitly instructing participants to suppress certain thoughts or mental images (e.g., "don't think about a white bear"; Wegner et al., 1987). In the present study, I employed tasks with stimuli related to "social pain" with the hope that these stimuli would be aversive enough to elicit a spontaneous suppression response. However, it is possible that identifying a hurtful social event or seeing words related to social pain (e.g., reject, abandon) on the computer screen was not sufficient to elicit a spontaneous suppression response. If this is in fact the case, then perhaps only the self-report suppression measure was able to accurately capture participants' tendency to use suppression as a coping strategy.

Aim 2: Examine Whether Physiological Arousal When Viewing Negative Emotional Stimuli Mediates the Link Between Adolescent Suppression and Adolescent Risk Behavior

Hypothesis 5. I predicted that a greater tendency to suppress unwanted thoughts and emotions would be positively associated with physiological arousal during the emotional Stroop task, which in turn would be associated with more adolescent risk behavior. Although self-reported thought suppression on the WBSI was significantly associated with more frequent sexual behavior and marginally associated with more frequent substance use, I found no evidence to support this mediation hypothesis: Suppression was unrelated to physiological arousal and physiological arousal was unrelated to adolescent risk behavior.

Related to possibility three described directly above, if the social-relevant negative emotion words presented during the emotional Stroop task were not sufficiently aversive to elicit a spontaneous suppression response, it is possible that they did not elicit a physiological response either. Although mean SCLs were higher during the presentations of the social-relevant negative emotion words relative to mean SCLs during the baseline period, suggesting some effect of the words on arousal, this difference was small. It is possible that this difference was too small to capture meaningful variability in physiological arousal.

In a recent study, Derefinko et al. (2014) reported links between physiological arousal when viewing negative affective stimuli and sexual risk-taking behavior. However, the stimuli used by these authors were much more jarring than those used in the present study (e.g., pictures of mutilation, a pointed gun, snakes). It is possible

that using more graphic social pain stimuli, such as pictures or videos of rejection or hurt feelings instead of words on a computer screen, would be more effective in eliciting spontaneous suppression and, in turn, physiological arousal.

Another possibility is that mild physiological arousal measured in the laboratory under very specific circumstances is not strongly associated with the frequency of adolescent risk behavior over the past year. Instead, this suppression-induced physiological arousal may be a better predictor of more proximal measures of risk-taking. For example, it is possible that physiological arousal in response to social-relevant negative words would more strongly predict adolescents' performance on laboratory measures of impulsivity and/or risk taking (e.g., the Balloon Analog Risk Task (BART); Lejuez et al., 2002) than the frequency of risk behavior engagement over the past year.

In sum, the results of the present study suggest some potential links among mothers' responses to their adolescents' negative emotions, the suppression of unwanted thoughts, and adolescent risk behavior. However, the hypothesized links that were significant in the path models were between variables measured with adolescent self-reports. In addition, none of the hypothesized links emerged in relation to physiological arousal. Therefore, the present findings should be viewed as preliminary until future studies replicate the associations observed in the present study.

Multiple Reporters of Maternal Responses to Adolescent Distress

The present study highlights the importance of utilizing multiple informants when studying parental responses to adolescent distress. In the only other study to

compare parent and adolescent reports on the CCNES-A (the measure of maternal responses to adolescent distress used in the present study), Ehrlich et al. (2013) found modest correlations ($r < .30$) between reporters. Similarly, in the present study, I found a small, but significant, correlation between mother and adolescent reports of maternal unsupportive responses ($r = .24$). Interestingly, mother and adolescent reports of maternal supportive responses were not significantly correlated in this sample ($r = -.001$). Examination of mean differences revealed that mothers rated themselves as significantly more supportive than their adolescents perceived them to be. Mothers and adolescents did not significantly differ in their reports of unsupportive maternal responses.

The findings of these two studies are consistent with a much larger literature on informant discrepancies suggesting that parents and children/adolescents often do not agree when reporting on various aspects of child adjustment or the parent–child relationship (e.g., De Los Reyes & Kazdin, 2005; Reynolds, MacPherson, Matusiewicz, Schreiber, & Lejuez, 2011). Further, when reports from multiple informants are included in the analyses, different patterns of associations among the variables often emerge as a function of informant (e.g., Cottrell et al., 2003; Jones, Ehrlich, Lejuez & Cassidy, in press; Maurizi, Gershoff, & Aber, 2012). This was also the case in the present study: Support for the hypothesized links only emerged with respect to adolescent reports of maternal responses distress. One interpretation of this pattern of findings is that regardless of which reporter is “right” (i.e., provides the most objectively accurate picture of how the mother actually responds to adolescent distress), the adolescent’s *perception* of how his/her mother responds is what is most

important for predicting adolescent outcomes. Alternatively, it is possible that the magnitude and/or direction of the discrepancy between parent and adolescents reports is a stronger predictor of adolescent suppression or risk behavior than is either individual report. In future studies, researchers should examine how discrepancies in parent and adolescent reports of parental responses to adolescent distress relate to adolescent suppression and risk behavior.

Findings Related to Adolescent Gender

As noted in the Introduction, the literature on emotional expression/suppression and parental responses to child negative emotions is inconsistent with regard to child gender differences. In the present study, no gender differences emerged with respect to adolescent suppression or reports of maternal responses to distress. Further, gender did not moderate any of the proposed paths in the models tested.

In three prior studies, researchers found that females self-reported more thought suppression than males (Blumberg, 2000; Robichaud, Dugas, & Conway, 2003; Wegner & Zanakos, 1994). However, the authors of these studies noted that the magnitude of this gender differences was small. In addition, the samples in each of these studies included hundreds of undergraduates or adults (*n* ranged from 317 to 935). It is possible that in my smaller community sample of adolescents (55 females and 60 males), power was insufficient to detect this small gender difference in self-reported thought suppression.

Consistent with some prior research, I found no gender differences in mother or adolescent reports of maternal responses to adolescent distress (e.g., Eisenberg &

Fabes, 1994; Fabes, et al., 2002; Katz & Hunter, 2007). However, the CCNES-A was designed to measure parents' responses to their children's *global* negative emotions. It was not designed to measure responses to specific types of negative emotions (e.g., anger versus sadness versus anxiety). Some research indicates that, although parents may not respond to their sons' and daughters' negative emotions differently when the different types of negative emotions are grouped together, gender differences may emerge when discrete negative emotions are examined individually, particularly with respect to fathers' responses (Chaplin et al., 2005; Kennedy Root & Rubin, 2010). For example, Chaplin et al. reported that fathers were more attentive to sad and anxious emotional expressions from their daughters compared to their sons. Relatedly, Kennedy Root and Rubin found that fathers of sons reported being more surprised by their child's display of anxiety compared to fathers of daughters. These gender differences are thought to reflect cultural norms regarding the femininity or masculinity of certain emotions. Parents may be more accepting of stereotypically gender-consistent emotional displays from their children (i.e., externalizing emotions from sons and internalizing emotions from daughters) and may be less accepting of gender-inconsistent emotional displays. It is possible that this gender-stereotyped pattern of parental responding increases in adolescence when secondary sex characteristics develop and gender differences become more salient. An important direction for future research is to examine these gender-typed parental responses to adolescents' discrete negative emotions, and test whether they are associated with adolescent suppression or risk behavior.

Study Limitations and Future Directions

The results of the present study should be interpreted in light of several study limitations that could be addressed in future studies. First, although adolescents reported on their perceptions of how their father (or father-figure) responds to their negative emotions (see supplemental analyses in Appendix B), the sample size of fathers was not sufficient to examine how father-reported responses to distress relate to adolescent suppression and risk behavior. Fathers clearly play an important role in child and adolescent development (see Bretherton, 2010, and Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000, for reviews), and there is evidence for differences in how mothers and fathers respond to their children's emotions (see Brand & Klimes-Dougan, 2010, for a review). For example, fathers engage in less emotion coaching with their children than mothers, and fathers are more likely than mothers to ignore or overlook their adolescents' negative emotion expressions (Gottman, Katz, & Hooven, 1997; Brand & Klimes-Dougan, 2010). Further, research using the child version of the CCNES found that fathers scored significantly lower than mothers on the three supportive subscales (problem-focused responses, emotion-focused responses, and expressive encouragement) and significantly higher than mothers on the punitive and minimizing responses subscales (Eisenberg et al., 1996).

Rather than interpreting these findings as indicators that fathers are “worse” than mothers at responding to their children's negative emotions, it is possible that fathers simply serve a different emotion socialization function for their children. Compared to mother–child interactions, father–child interactions are more physically stimulating, more unpredictable, and are characterized by greater arousal (Brand & Klimes-Dougan, 2010; Lewis & Lamb, 2003; Parke, 1996). In addition, to a greater

extent than mothers, fathers have been found to encourage child exploration and to sensitively challenge their children's emotional, social, and cognitive competencies during play (Grossmann et al., 2002). These unique characteristics of father-child interactions provide children with opportunities to learn about emotions and develop regulatory capacities that they may not be exposed to in interactions with mothers (at least to the same degree).

In addition to considering similarities and differences in how mothers and fathers respond to their adolescents' negative emotions, it may also be important to evaluate the level of concordance (or lack thereof) of parental responses within the same family. The few studies on this topic have yielded mixed results: Eisenberg et al. (1996) reported rather low levels of consistency within couples whereas McElwain, Halberstadt, and Volling (2007) found moderate concordance between parents' responses. Perhaps a more important question is how concordance or discordance in parental responses relates to child/adolescent outcomes. Cross-parent consistency in negative responding (i.e., both parents high in unsupportive responses) is associated with negative psychological outcomes in adolescents (Brand & Klimes-Dougan, 2010). However, it is less clear whether having two parents who respond supportively confers any developmental advantages over having just one supportive parent. Interestingly, McElwain et al. (2007) found support for a "divergence" hypothesis suggesting that children may benefit from having parents who differ in their emotion socialization strategies. Considering all of the above, it will be important to include both mothers and fathers in future research and to examine how

similarities, differences, and consistency in mothers' and fathers' responses to their adolescents' negative emotions relate to suppression and risk behavior.

Second, the size of the sample used in the present study was relatively small. Although a sample of 115 adolescents satisfies the criterion of 5 observations per free parameter in the path models (Bentler & Chou, 1987), power may not have been sufficient to detect small effect sizes. Future studies with larger sample sizes may reveal more support for the hypotheses proposed in the present study.

Third, the cross-sectional nature of the data used in the present study precluded examination of how parental responses to distress and suppression relate to changes in risk behavior over time. Longitudinal studies of risk behavior suggest that, on average, substance use and sexual risk-taking increase steadily across adolescence, peak in young adulthood (i.e., early to mid-twenties), and subsequently decline (Chen & Jacobson, 2012; Fergus, Zimmerman, & Caldwell, 2007). However, there is also variability in trajectories of risk behavior characterized by differences in timing of onset and differences in amount or frequency of the behavior over time (e.g., Chassin, Flora, & King, 2004). An interesting and important question for future research is whether parental emotion socialization or adolescent suppression can predict these trajectories of risk behavior. For example, perhaps unsupportive parental responses to adolescent distress and/or suppression are associated with early initiation into substance use or sexual activity. If this turns out to be the case, then parental emotion socialization and/or adolescent suppression could emerge as important targets for intervention programs.

Relatedly, although the ages of the adolescents in the present study spanned a wide range (from 14 to 22 years), the vast majority of the adolescents (~80%) were between 16 and 18 years old. Therefore, I was unable to examine whether links among parental responses to distress, suppression, and risk behavior differ at different stages of adolescence. To the best of my knowledge, no study has examined longitudinal stability or change in parents' emotion socialization strategies across adolescence. The closest evidence comes from a study by Eisenberg et al. (1999). These authors reported considerable stability in parents' responses to their children's distress over a period of 6 years (from 4-6 years to 10-12 years old). It is unclear whether parents would continue to show stability in their responses as their children develop into adolescents and young adults. It is possible that the transition into early adolescence could prove particularly difficult for parents and parents may change their approach to emotion socialization during this time. The transition from childhood into adolescence is characterized by an increase in adolescent negative emotions, greater parent-adolescent conflict, and adolescent struggles for autonomy and distance from parents (Steinberg & Morris, 2001). These factors may make it particularly challenging for parents to respond sensitively and supportively to their adolescents' negative emotional expressions. However, perhaps it is precisely during this difficult time that it is most important for parents to be supportive. It is possible that the way parents respond to adolescent distress during early adolescence will have a lasting impact on adolescent coping strategies and risk behavior. Future studies that include roughly equal numbers of early, mid, and late adolescents are necessary to address these important questions.

Fourth, in the current community sample, adolescent engagement in substance use and sexual behavior was minimal. Out of possible range from 0 to 5, the mean score for substance use was 1.10 and the mean score for sexual behavior was 1.16. This limited variability in risk behavior engagement may have made it more difficult to detect meaningful differences in substance use and sexual behavior as a function of suppression or parent emotion socialization. The low frequency of substance use and sexual behavior in this sample also raises the issue of distinguishing between truly “risky” or problematic behavior and normative experimentation with drugs and sex during adolescence. A large proportion of adolescents and young adults reports using soft drugs occasionally and engaging in sexual behavior (Kann et al., 2014; O’Malley and Johnston, 2002). Therefore, if the average adolescent in the current sample reported engaging in these behaviors between *once in the past year* (1) and *a few times in the past year* (2), the measure may be mainly capturing normative adolescent behavior rather than risky or problematic behavior. However, whether this behavior should be viewed as problematic or not may differ as a function of adolescent age: a 14 year old engaging in these behaviors may be more of a cause for concern compared to a 19 year old engaging in these same behaviors. Future studies conducted with clinical or high-risk samples of adolescents could reveal whether parental emotion socialization and adolescent suppression predict variation in more problematic levels of substance use and sexual risk-taking in those samples.

A related direction for future research is to include more comprehensive assessments of adolescent risk-taking. For example, including measures related to the motivations behind risk behavior engagement (e.g., to cope with distress, in response

to peer pressure, to enhance experience) could help distinguish more problematic risk behavior from normative adolescent experimentation. In addition, including laboratory analogues of risk-taking, such as the BART, could shed light on how parental emotion socialization and suppression relate to more dispositional indices of risk-taking propensity.

Fifth, in the present study I modeled the associations between parenting and adolescent outcomes as unidirectional – that is, as parent emotion socialization influencing suppression and adolescent risk behavior. However, it has long been recognized that links between parent and child variables are often bidirectional (e.g., Bell, 1968). It is possible that adolescent suppression and/or risk behavior could influence the way a parent responds to his/her adolescent's negative emotions. For example, if an adolescent has a strong tendency to suppress their emotional expressions, a parent could respond to an expression of negative emotion by either (a) really encouraging the adolescent to express his/her feelings in an effort to encourage the adolescent to be more expressive or (b) becoming nervous and unsure of how to respond to the rare expression of emotion. Further, other characteristics of the adolescent not measured in the present study (e.g., temperament, affective intensity) could influence the way parents react to negative emotional displays (see Eisenberg and Fabes, 1994, for evidence of temperament influences on maternal responses to young child distress). The key task for future research is to better understand how parent and adolescent factors interact to predict parental responses to distress, adolescent suppression, and adolescent risk behavior.

Sixth, the lack of consideration of peer influences is a limitation of the present study. Although parents continue to be central to development during adolescence, adolescents spend an increasing amount of time away from their parents and more time with their peers (Steinberg & Morris, 2001). Further, a substantial body of research indicates that peers have a strong influence on adolescent risk behavior engagement (e.g., Gardner & Steinberg, 2005).

There are several ways peer relations could fit into the models tested in the present study. For example, studies have consistently found associations between unsupportive parental responses to distress and poorer child social competence (e.g., Eisenberg et al., 1996, 1999). Children and adolescents with poor social skills may experience rejection from their peers, which in turn may lead to associations with deviant peers and engagement in delinquent behaviors (see Lansford, Dodge, Fontaine, Bates, & Pettit, 2014, for empirical support). On the other hand, it is possible that adolescents with poor social skills actually show a delayed initiation into substance use and sexual behavior. Risk behavior engagement often takes place in a social context (i.e., at parties or with a peer group). Adolescents with poor social skills may be less likely to be invited to such social gatherings or may prefer not to attend, and therefore may be less likely than their more sociable peers to engage in risk behavior (see Collins & Read, 1990, and Feeney & Noller, 1990, for similar arguments).

Interestingly, there is some evidence showing that success in the peer domain may also be associated with risk behavior. For example, Allen and colleagues found that, although adolescent popularity was concurrently associated with markers of

positive adaptation, popularity predicted increases in substance use and delinquent behavior over time (Allen, Porter, McFarland, Marsh, & McElhaney, 2005). Thus, the positive social and emotional outcomes associated with supportive parental responses to child distress may not necessarily preclude adolescent engagement in risk behavior.

Another interesting question to consider is how the emotion socialization strategies of *peers'* parents relate to adolescent adjustment. One intriguing study by Fletcher and colleagues found that parental authoritativeness within the peer network (measured by at least three closest friends' reports of their own parents' degree of authoritativeness) was negatively associated with adolescent substance use and delinquency (Fletcher, Darling, Steinberg, & Dornbusch, 1995). Similarly, it is possible that supportive emotion socialization strategies within the peer network would be negatively associated with adolescent risk behavior. Future research with a greater emphasis on peer relations and peer networks could address these interesting possibilities.

In conclusion, the results of the present study provide the first insight into potential links among maternal responses to adolescent negative emotion, adolescent suppression, and adolescent risk behavior. Although preliminary, the findings provide initial support for associations between maternal responses to adolescent distress and adolescent substance use and sexual behavior. Further, the results suggest that the effects of unsupportive maternal responses on adolescent sexual behavior may be indirect through self-reported thought suppression. Additional studies are needed to replicate these associations and further explore how parental emotion socialization during adolescence relates to adolescent coping strategies and risk-taking behaviors.

Appendices

Appendix A: Rationale for Model Decisions

In this dissertation, I decided to focus specifically on how mother and adolescent reports of maternal responses to adolescent negative emotion relate to suppression and adolescent risk behavior (see Figures 1 and 2). Although fathers are important to adolescent development and certainly play a role in the emotion socialization process, the sample size of fathers was insufficient for the statistical models tested in this study ($n = 53$). However, the adolescents did report on how their fathers (as well as mothers) respond to their negative emotions. Given the available data and the size of my sample, I considered three analytic approaches:

1. Include all available data with a sufficient sample size (adolescent-reported responses of mothers, adolescent-reported responses of fathers, and mother self-reported responses). To include everything would require testing and reporting 15 separate path models. This approach has the advantage of being comprehensive, but testing 15 models seems excessive for a single study.
2. Focus only on adolescent reports of mother and father responses to distress. This approach reduces the number of models to nine and has the advantage of including both maternal and paternal influences on adolescent suppression and risk behavior. However, this approach also has the disadvantage of a single reporter of parental responses to distress. Given that the dependent variables and one of the measures of adolescent suppression are based on adolescent self-report, this

approach raises concerns about common method variance and increased measurement error (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

3. Focus only on adolescent and mother reports of maternal responses to adolescent distress. This approach reduces the number of models to nine and has the advantage of including multiple-reporters of maternal responses, thus reducing concerns about common method variance. However, this approach has the disadvantage of excluding consideration of paternal influences on adolescent suppression and risk behavior.

My decision to choose option 3 rests on my belief that excluding fathers is less of a study limitation than relying on a single reporter for the independent and dependent variables and one of the mediators. To avoid completely excluding paternal influences in this dissertation, I performed supplemental analyses examining how adolescent-reported paternal responses to distress relate to adolescent suppression and risk behavior. The results of these analyses are summarized in Appendix B. Further, I discuss the importance of devoting greater attention to paternal responses to distress in the future directions section.

Appendix B: Results of Supplemental Analyses Including Adolescent-Reported Paternal Responses to Distress

Although fathers were invited to participate in the larger longitudinal study and my dissertation study, the sample size of fathers was too small to include father-reported responses to adolescent distress in the present study ($n = 53$). However, adolescents reported on how their father, or a father figure (e.g., step-father, close uncle), responds to their negative emotions. Of the 115 adolescents who participated in the present study, 98 had a father or father figure in their life and could complete the father version of the CCNES-A. The models tested are the same as those tested for maternal responses to adolescent distress.

Adolescent-Reported Unsupportive Paternal Responses to Distress

The results of the models including adolescent-reported unsupportive paternal responses to distress were largely similar to the results of the models including maternal responses to adolescent distress. No direct effects of unsupportive paternal responses on adolescent risk behavior emerged. Consistent with the mother models, only self-reported suppression was associated with paternal responses to distress and adolescent risk behavior: Adolescent-reported unsupportive paternal responses to distress were associated with greater self-reported suppression on the WBSI ($b = .27$, $p < .01$). Self-reported suppression, in turn, was associated with a higher frequency of substance use ($b = .28$, $p < .05$) and sexual behavior ($b = .29$, $p < .01$). Finally, the indirect effects of unsupportive paternal responses on substance use and sexual behavior through self-reported suppression were significant (indirect effect on

substance use = .08, 95% CI [.04, .19]; indirect effect on sexual behavior = .12, 95% CI [.03, .29]).

Adolescent-Reported Supportive Paternal Responses to Distress

Unlike adolescent reports of supportive maternal responses, there were no direct effects of adolescent-reported supportive paternal responses on adolescent risk behavior. Only self-reported suppression was associated with paternal responses to distress and adolescent risk behavior: Adolescent-reported supportive paternal responses to distress were associated with less self-reported suppression on the WBSI ($b = -.27, p < .01$). Self-reported suppression, in turn, was associated with a significantly higher frequency of sexual behavior ($b = .26, p < .01$) and a trend toward a higher frequency of substance use ($b = .22, p = .06$). Finally, one significant indirect effect emerged from adolescent-reported supportive paternal responses to adolescent sexual behavior through self-reported suppression (indirect effect = $-.06$, 95% CI [$-.15, -.02$]).

Appendix C: Comprehensive Literature Review

Sex, Drugs, and Attachment in Adolescence and Young Adulthood: A Review of the
Literature

Jason D. Jones

Sex, Drugs, and Attachment in Adolescence and Young Adulthood: A Review of the Literature

Rates of substance use and unsafe sexual practices among America's youth are a major public health concern. According to the most recent data from the Youth Risk Behavior Survey (Kann et al., 2014), a nationwide study of health risk behaviors among high school students in the United States, 66% of adolescents reported ever consuming alcohol, 41% reported ever using marijuana, and 41% reported ever smoking a cigarette. Percentages of adolescents using these substances in the 30 days prior to the survey were 35%, 23%, and 16% for alcohol, marijuana, and cigarettes, respectively. Further, the study found that a substantial minority of teenagers reported episodes of heavy drinking: Nearly one-quarter (21%) of adolescents reported consuming five or more alcoholic beverages within in a short period of time during the month prior to the survey. With respect to sexual behavior, nearly half (47%) of the sample reported having ever had sexual intercourse, and 15% reported having intercourse with more than four partners in their lifetime. Among sexually active adolescents, a striking 41% reported that they did not use a condom the last time they had sexual intercourse.

Evidence suggests that engagement in these types of risky behaviors continues and, in fact, increases in the years after high school. Longitudinal studies examining the developmental trajectories of risk behavior suggest that substance use and sexual risk-taking increase steadily across adolescence, peak in young adulthood (i.e., early to mid-twenties), and subsequently decline (Chen & Jacobson, 2012; Fergus, Zimmerman, & Caldwell, 2007). An epidemiological study of undergraduate

substance use in the US reported a high 30-day prevalence rate of alcohol use (70%), and found that 40% college students could be categorized as episodic heavy drinkers (O'Malley & Johnston, 2002). In addition, a substantial proportion of US college students reported having casual sex or "hooking up," having sex while under the influence of alcohol or drugs, and having sex without using a condom (Armstrong, England, & Fogarty, 2012; Cooper, 2002; Douglas et al., 1997; Monto & Carey, 2014).

Clearly, adolescents and young adults are engaging in behaviors that place them at increased risk for both immediate and future negative outcomes (e.g., health problems, sexually transmitted diseases, poorer academic performance, legal troubles). In addition, the financial burden associated with substance abuse alone exceeds \$500 billion per year in the United States (National Institute on Drug Abuse, 2008). Advancing knowledge about the predictors and correlates of adolescent and young adult substance use and risky sexual behavior is important and has potential implications for social policy, preventions/intervention efforts, and public health.

Adolescent and young adult risk behavior has been examined from a variety of theoretical perspectives (Boyer, 2006; Petraitis, Flay, & Miller, 1995; Steinberg, 2008). Although the various perspectives have focused on many different aspects of the individual and his/her environment, ranging from broad sociodemographic factors to the developmental trajectories of specific brain structures, theoretical accounts of risk behavior have frequently included a focus on adolescents' social environments and close relationships (e.g., with parents and peers). Over the last several decades, attachment theory (Bowlby, 1969/1982, 1973, 1980) has emerged as the most

comprehensive and generative theory of social-emotional development and close relationship processes across the lifespan (see Cassidy & Shaver, 2008, for a review). A growing number of researchers have adopted an attachment theory framework when examining substance use and sexual behaviors in adolescence and young adulthood, and there is now a substantial literature on how attachment relates to these behaviors. To my knowledge, there is no comprehensive review and analysis of this literature (see Birnbaum, in press, for a review of the links between the attachment and sexual behavioral systems, and Schindler et al., 2005, for a brief review of the links between attachment and substance use). Therefore, the main goals of this paper are to (a) provide a comprehensive review of the literature on the links between attachment and substance use and sexual behavior in adolescence and young adulthood, (b) integrate the findings from the various studies and critically evaluate the hypothesis that attachment is related to substance use and sexual behavior, and (c) suggest directions for future research that could move this area of inquiry forward.

Overview

First, I describe the measurement of attachment in adolescence and young adulthood. There are different approaches to assessing attachment beyond childhood and I organized the literature review by measure. Thus, it is important to understand the conceptual and methodological differences among the measures before examining how each measure relates to substance use and sexual behavior. Second, I discuss the reasons for expecting an association between attachment and substance use and sexual behavior in adolescence and young adulthood. Third, I review the empirical literature on the links between attachment and substance use, followed by a review of

the literature on attachment and sexual behavior. Following the review of the literature on each class of behavior, I provide general conclusions about the available evidence. I conclude by discussing the limitations of the available empirical evidence and proposing directions for future research.

Measurement of Attachment in Adolescence and Adulthood

The initial focus of attachment theory and research was on infants and young children. Individual differences in infant attachment are most commonly assessed with Mary Ainsworth's Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978): A laboratory procedure involving observations of infant's reactions to separations from and reunions with an attachment figure (typically mother or father). Based on the infant's affective and behavioral reactions to the separations and reunions, coders categorize the infant as secure, avoidant, anxious-ambivalent, or disorganized (see Weinfield, Sroufe, Egeland, & Carlson, 2008, for detailed descriptions of these attachment categories). In the mid-1980s attachment scholars became interested in measuring individual differences in attachment beyond infancy and childhood. Two main measurement approaches emerged: One approach utilizes interview-based methods; the other approach employs self-report measures. Mary Main and her colleagues (George, Kaplan, & Main, 1984; Main, Kaplan, & Cassidy, 1985) developed the Adult Attachment Interview (AAI) to assess an individual's *current state of mind with respect to attachment*. The AAI is a one-hour long semi-structured interview in which individuals are asked to discuss attachment-related experiences during childhood and provide specific examples to illustrate their descriptions (see Hesse, 2008, for a detailed description of the AAI and its psychometric properties).

Trained coders assign individuals to one of three principal categories (secure-autonomous, dismissing, or preoccupied) based on the characteristics of the individual's responses. Importantly, individuals are assigned to the categories based not on *what* they say, but based on *how* they say it. Individuals who are classified as secure-autonomous are able to discuss early experiences with caregivers (both positive and negative) in an open, non-defensive, and coherent manner. Individuals who are classified as dismissing respond to interview questions in a defensive manner often by minimizing the importance of attachment experiences on development, providing terse responses to interviewer questions, and insisting that they cannot remember early experiences with caregivers. Finally, individuals classified as preoccupied provide lengthy, confused, angry, and incoherent responses to questions about early attachment experiences. In addition to this categorical approach, some researchers have used Q-sort methods to create continuous scales representing state of mind with respect to attachment (Kobak, Cole, Ferenz-Gillies, & Flemmin, 1993). Although originally designed to assess attachment in adults, the AAI has been shown to be a reliable and valid measure of attachment state of mind in adolescence (Allen, 2008).

Around the same time that Main and her colleagues were developing the AAI, two social psychologists (Hazan & Shaver, 1987) developed a brief self-report measure designed to assess individual differences in *attachment style* in the context of adult romantic relationships. The original questionnaire was a forced-choice measure in which individuals select one of three descriptions that best characterizes their general approach to romantic relationships. The three descriptions reflect attachment

categories that correspond to Ainsworth's three categories of infant attachment: secure, anxious-ambivalent, and avoidant. This approach to measuring adult attachment has undergone several changes since its original conception. First, some scholars argued that the avoidant category could be divided up into two separate categories (dismissing-avoidant and fearful-avoidant), resulting in four categories instead of three (Bartholomew & Horowitz, 1991). Second, psychometric evidence suggested that individual differences in attachment are better captured by dimensions rather than categories (Brennan, Clark, & Shaver, 1998; Fraley & Waller, 1998). Thus, new multi-item measures were designed to tap two dimensions of adult attachment: avoidance and anxiety (see Mikulincer & Shaver, 2007, for a review of self-report attachment measures). Avoidance reflects the degree to which individuals are uncomfortable with closeness, intimacy, and emotional disclosure in close relationships (e.g., "I try to avoid getting too close to others"). Anxiety reflects the degree to which individuals fear rejection, desire high levels of intimacy, and worry that relationship partners do not love them (e.g., "I worry a fair amount about losing my close relationship partners"). Low scores on both dimensions reflect secure attachment and high scores on both dimensions reflect fearful attachment. Third, minor wording changes to the items allowed researchers to examine self-reported attachment style in close relationships more broadly, rather than in romantic relationships only (Mikulincer & Shaver, 2007). Self-report attachment style measures have been used successfully in many studies with adolescent and young adult samples and have demonstrated excellent psychometric properties (Mikulincer & Shaver, 2007).

Around the same time that Hazan and Shaver created the measure of adult romantic attachment, Armsden & Greenberg (1987) developed the Inventory of Parent and Peer Attachment (IPPA) to measure adolescents' perceived attachments to parents and peers (e.g., "I can count on my mother/father when I need to get something off my chest."). Unlike the AAI and attachment style measures, the IPPA was not designed to assess specific subtypes or dimensions of attachment. The IPPA can yield either scores reflecting overall quality of attachment to parents (jointly) or to mothers and fathers separately, with higher scores reflecting higher quality attachment. In addition, to overall attachment scores, the IPPA yields scores on three subscales: trust, alienation, and communication. The IPPA has been used in many studies with adolescent and college student samples and has demonstrated good psychometric properties (Armsden & Greenberg, 1987).

A related self-report questionnaire that assesses adolescents' perceptions of attachment to parents is the Behavioral Systems Questionnaire (BSQ; Furman & Wehner, 1999). This measure yields scores on the degree to which an adolescent's relationship with his/her parents reflects a secure, preoccupied, or dismissing attachment style. For example, a sample item tapping the secure style is "I consistently turn to my mother/father when upset or worried." The secure, preoccupied, and dismissing scales of the BSQ have been shown to be moderately to strongly related to the secure, anxious-ambivalent, and avoidant scales of the Hazan and Shaver (1987) measure when it is worded in reference to parents (Furman & Wehner, 1999).

In my literature review, I include studies that used any of the above-mentioned measures. Given the differences among the measures, I review the literature separately for each type of measure (AAI, self-report attachment style, and IPPA/BSQ).

Why Would Attachment Relate to Substance Use and Sexual Behavior?

Several prospective longitudinal studies, along with countless cross-sectional studies, have shown that attachment is associated with a host of social, emotional, cognitive, behavioral, and physiological outcomes (Grossmann, Grossmann, & Waters, 2005; Sroufe, Egeland, Carlson, & Collins, 2005; see Cassidy & Shaver, 2008, for a review). Of particular relevance to the current review, there is considerable evidence showing that attachment insecurity is related to externalizing and problem behaviors in childhood, adolescence, and young adulthood (Allen et al., 2002; Allen, Moore, Kuperminc, & Bell, 1998; Dawson, Allen, Marston, Hafen, & Schad, 2014; Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010). Given evidence that externalizing behavior is related to substance use and risky sexual behavior (e.g., Timmermans, van Lier, & Koot, 2008), it is reasonable to also expect a link between attachment and substance use/sexual behavior.

There are at least two paths through which attachment may predict substance use: an affective path and a social path. According to the tension reduction hypothesis of substance use, people use substances such as alcohol as a means of alleviating stress or reducing negative affect (Conger, 1951; Wills & Shiffman, 1985). Substantial evidence has shown that secure attachment is linked to less psychological distress and better emotion regulation and coping skills (e.g., Cassidy, 1994;

Mikulincer & Shaver, 2008). Thus, relative to insecure individuals, secure individuals may have less motivation to use substances to reduce negative affect. Furthermore, when secure individuals do experience distress they are more likely than insecure individuals to use more adaptive coping strategies, such as support-seeking or problem solving (Mikulincer & Shaver, 2008), and thus may be less likely than insecure individuals to turn to drugs to cope.

The social path from attachment to substance use is less straightforward relative to the affective path. Secure attachment is associated with better social skills and higher popularity in adolescence (Allen, Porter, McFarland, Marsh, & McElhaney, 2005). On the one hand, social competence and high social status may make secure adolescents less susceptible to peer pressure relative to insecure adolescents. On the other hand, there is some evidence that popular adolescents are more likely to experiment with drugs and alcohol relative to their less popular peers (Allen et al., 2005). Experimenting with drugs and alcohol in adolescence is typically a social activity done in the company of friends and peers rather than in isolation. Insecure (particularly avoidant) adolescents and young adults have poor social skills and report less social involvement (e.g., Collins & Read, 1990; Feeney & Noller, 1990), and therefore may be less likely to be in attendance at social gatherings where substances are being used. From this perspective, insecure (particularly avoidant) adolescents and young adults may be less likely to report using substances or to start using substances at later ages relative to their secure counterparts.

With regard to sexual behavior, attachment scholars have proposed that the attachment behavioral system and sexual behavioral system dynamically and

reciprocally influence each other (e.g., Shaver, Hazan, & Bradshaw, 1988; see Birnbaum, in press, for a review). The intra- and interpersonal proclivities associated with attachment insecurity are likely manifested in various forms of sexual behavior. For example, the preference for distance and discomfort with intimacy in close relationships characteristic of attachment-related avoidance may lead avoidant individuals to pursue fewer sexual interactions or to prefer sex outside of a committed romantic relationship. By contrast, the fear of being alone and worries about being unloved that are characteristic of anxious attachment may lead anxious individuals to seek reassurance through sex. In addition, anxious individuals may be more likely to consent to unwanted sexual advances from a partner or agree to unsafe sexual behavior (i.e., unprotected sex) because they fear resisting may push their partner away or that the partner will lose interest. These possibilities are examined in the literature review.

Review of the Literature

Study Selection

Using the PsycINFO, PubMed, and Google Scholar databases, I conducted an extensive literature search for empirical studies reporting statistical associations between attachment and substance use and/or sexual behavior in samples of adolescents and young adults. All studies published in English that met the following criteria were included in the review: (a) used a sample of adolescents or college-aged individuals (mean ages of the samples included in this review ranged from 10.5 to 25 years); (b) measured attachment with either the AAI, a validated self-report attachment style measure (e.g., The Experiences in Close Relationships Scale;

Brennan et al., 1998), the parental attachment scales of the IPPA (peer attachment is not included in this review), or the BSQ; and (c) included a measure of substance use and/or sexual behavior. The primary focus of my review is on actual behavior (e.g., frequency/amount of substance use, condom use); however, I also discuss studies that examined how attachment relates to attitudes and motives related to substance use or sex (e.g., motives for drinking, attitudes toward condom use), as these constructs may provide insight into the mechanisms underlying the links between attachment and substance use/sexual behavior.

As noted by Branstetter, Furman, and Cottrell (2009), researchers studying the predictors and correlates of adolescent substance use or sexual behavior have often used the term attachment interchangeably with terms reflecting other aspects of the parent–child relationship (e.g., closeness, satisfaction, warmth). Although these constructs may be related to attachment, they are conceptually distinct and not interchangeable with attachment. Therefore, only studies measuring attachment specifically were included in this review. I also excluded (a) studies that included a sample that covered a large age range (e.g., 15 to 65) and did not report separate analyses by age group, (b) studies based on a single person or only a few people (i.e., case studies), (c) studies of attachment in sexual offenders, (d) studies that combined attachment measures with other interpersonal or family variables, and (e) studies that combined substance use and/or sexual behavior together with other behaviors (e.g., delinquent or externalizing behaviors, health behaviors such as diet and exercise) to form a single composite outcome variable. In other words, I only included studies in which the analyses focused specifically on the relation between attachment and

substance use and/or sexual behavior. My literature search with these inclusion/exclusion criteria resulted in a final pool of 50 studies on the links between attachment and substance use and 48 studies on the links between attachment and sex published between 1993 and 2014.

Attachment and Substance Use in Adolescence and Young Adulthood

Studies on attachment and drug use have focused on a wide range of substances including alcohol, marijuana, cigarettes, ecstasy, opioids, and cocaine. In some studies, substances were analyzed individually; in others, researchers used composites of various substances. In addition, researchers have examined how attachment relates to several aspects of substance use, including: (a) ever used a certain substance and age at first use, (b) current use and frequency of use, (c) heavy use, (d) negative consequences associated with use, (e) motives for use, and (f) symptoms related to or a clinical diagnosis of substance abuse/dependence. The review is organized by measure of attachment: Studies that used the AAI, self-report attachment style measures, and the IPPA or BSQ are reviewed in that order.

AAI. Only six studies have examined how state of mind with respect to attachment in adolescence or young adulthood relates to substance use.

Current use and frequency of use. Four studies found no main effect of AAI state of mind on adolescent drug or alcohol use (Allen et al., 2005; Branstetter et al., 2009; Marsh, McFarland, Allen, McElhaney, & Land, 2003; Taylor-Seehafer, Jacobvitz, & Steiker, 2008). However, Marsh et al. found that adolescent preoccupied attachment interacted with maternal autonomy, observed during an adolescent–mother interaction, to predict lifetime frequency of adolescent alcohol and drug use.

The maternal autonomy scale reflects the degree to which mothers display confidence and describe the reasoning behind their position when discussing an area of disagreement with their adolescents. Consistent with the authors' predictions, highly preoccupied adolescents whose mothers demonstrated high autonomy during the disagreement discussion reported higher levels of alcohol and drug use. Conversely, highly preoccupied adolescents whose mothers demonstrated low autonomy during the disagreement discussion reported lower levels of alcohol and drug use. These results are consistent with a previous study by the same research group, which found that maternal autonomy moderated the link between adolescent preoccupied attachment and delinquent behavior (i.e., criminal behavior excluding substance use; Allen et al., 2002). The authors suggested that high levels of maternal autonomy may be perceived as threatening by highly preoccupied adolescents whose discourse in the AAI reflects a fixation on attachment-related needs and experiences. Preoccupied adolescents may interpret a mother's autonomy as a sign of distance or separation, which could evoke anger and emotion dysregulation. The adolescents, in turn, may engage in problematic behavior (such as substance use) as a means of coping with the emotional distress or gaining the mother's attention.

In a sample of young adults, some of whom had been psychiatrically hospitalized during adolescence, Allen, Hauser, and Borman-Spurell (1996) found that AAI attachment classifications were unrelated to hard drug use (e.g., heroin, cocaine) in the past 6 months. When the continuous AAI state of mind scales were examined individually four of the eight scales were related to hard drug use, but no clear picture emerged from the pattern of results. The only consistent finding across

correlation and regression analyses was a link between the *derogation of attachment-related experiences* scale and greater hard drug use. The *derogation* subscale is a hallmark of the dismissing state of mind in the AAI. However, the *idealization* subscale, also associated with a dismissing state of mind, was negatively associated with hard drug use. Thus, it is difficult to draw any firm conclusions about a link between a dismissing state of mind and hard drug use from these data.

Substance abuse/dependence. Rosenstein and Horowitz (1996) administered the AAI to a sample of psychiatrically hospitalized adolescents to examine the links between state of mind with respect to attachment and different forms of psychopathology. Adolescents diagnosed with a substance abuse disorder were nearly twice as likely to be classified as dismissing in the AAI relative to adolescents without a substance abuse disorder diagnosis. These results provide additional support for the potential link between a dismissing state of mind and substance use suggested by the results of Allen et al. (1996).

Attachment style. Twenty studies have examined links between attachment style measures and various aspects of alcohol and drug use.

Ever used substances and age at first use. The results of three studies provided initial evidence for a potential link between attachment-related avoidance and later onset of substance use. Cooper, Shaver, and Collins (1998) found, in a large community sample of adolescents ranging in age from 13 to 19 years old, that adolescents endorsing an avoidant attachment style were less likely to have ever used drugs or alcohol compared to their secure and anxious-ambivalent counterparts. Cooper, Albino, Orcutt, and Williams (2004) reassessed the community sample of

adolescents 4.5 years later. Among adolescents who reported no drug or alcohol use at the first assessment, those endorsing an avoidant attachment style were less likely than secure or anxious adolescents to initiate drug or alcohol use in the time between the two assessments. Similarly, Letcher and Slesnick (2013) found, in a sample of substance using runaway teenagers aged 12 to 17, that avoidance predicted an older age at first marijuana use, but was unrelated to age at first alcohol use. Anxious attachment was unrelated to the age at first use variables.

During adolescence, experimenting with drugs and alcohol typically occurs in a social context with one's peer group. As Cooper et al. noted, avoidance is associated with poorer social skills and less social involvement (Collins & Read, 1990; Feeney & Noller, 1990). In addition, more recent evidence showed that avoidant adolescents reported fewer interactions with friends over the course of 1.5 days (Gallo & Matthews, 2006). Thus, deficits in social skills and less social involvement may underlie the link between avoidance and later onset of substance use. The mediational analyses reported by Cooper et al. showing that that lower social competence mediated the link between avoidance and the lack of engagement in substance use support this notion.

Current use and frequency of use. The majority of studies that have examined links between attachment style and current substance use have been conducted with undergraduate samples. However, four studies have used adolescent samples. In a large community sample of adolescents, Cooper et al. (1998) found that anxious adolescents reported using a greater variety of drugs and more frequent marijuana use in the past 6 months compared to secure and avoidant adolescents. At

follow-up 4.5 years later, Cooper et al. (2004) also found that anxious adolescents were more likely to report smoking cigarettes compared to secure and avoidant adolescents. In addition, in a small sample of romantically involved adolescents, Letcher and Slesnick (2014) found that attachment anxiety was marginally positively associated with a composite variable reflecting substance use and sexual risk behavior ($p = .10$). Avoidance was unrelated to the risk behavior composite. A fourth study, conducted with a sample of substance using runaway teenagers, found that attachment style was not associated with frequency of substance use in the past 90 days (Letcher & Slesnick, 2013). Thus, although the findings are mixed, the results of the two studies by Cooper and colleagues (based on nearly 2,000 adolescents) and to a lesser degree the findings of Letcher and Slesnick (2014) provide initial evidence for a link between attachment anxiety and substance use in adolescence.

The nine studies that have examined links between attachment style and current substance use in young adulthood have yielded mixed results. Three studies found that avoidance was positively associated with alcohol use. In a sample of undergraduates, Brennan and Shaver (1995) found that avoidance (but not anxiety or security) was positively associated with a drinking behavior variable reflecting the frequency and severity of recent alcohol consumption. In a different sample of undergraduates, Dumas, Turrisi, and Wright (2006) found no main effects of attachment style on typical weekend drinking behavior. However, these authors found that avoidance (but not anxiety) interacted with student athletic status to predict alcohol consumption: In current and former athletes, greater avoidance was associated with more weekend alcohol consumption whereas, for non-athletes, greater

avoidance was inversely related to weekend alcohol consumption. One possible interpretation of these results is that participation in athletics provides more avoidant individuals with a sort of “default social group” that they are accepted into given their common athletic interests and despite their relatively poor social skills. It is possible that avoidant athletes are invited to social gatherings, whereas avoidant non-athletes are not and thus have fewer opportunities to imbibe. Further, the more avoidant athletes may experience discomfort at social gatherings and, therefore, consume more alcohol relative to their less avoidant peers. A third study that included a sample of high-risk young mothers who gave birth during adolescence found that avoidance, but not anxiety, was associated with more frequent drinking in young adulthood (Golder, Gillmore, Spieker, & Morrison, 2005).

In contrast to these three studies, three studies with undergraduate samples did not find associations between avoidance and alcohol use. Two of these studies found that neither avoidance nor anxiety was related to current alcohol use (Kassel, Wardle, & Roberts, 2007; Owen, Rhoads, Stanley, & Fincham, 2010). The third, Reis, Curtis, and Reid (2012), reported that males’ (but not females’) continuous security scores were negatively correlated with alcohol consumption, but dismissing, preoccupied, and fearful scores were uncorrelated with alcohol consumption.

Findings related to marijuana use have also been inconsistent. Two studies found no links between attachment style and marijuana use among college students (Kassel et al., 2007; Sadava, Busseri, Molnar, Perrier, & DeCourville, 2009).

However, two studies with young adults have found that attachment insecurity is associated with more marijuana use. Golder et al. (2005) found, in a sample of high-

risk young mothers, that avoidance, but not anxiety, was positively associated with marijuana use. In addition, in a large sample of Australian young adults, insecure individuals (anxious and avoidant groups combined) were more likely to report weekly marijuana use compared to secure individuals (Olsson et al., 2013). The study by Olsson et al. also found that insecure young adults were more likely to report daily cigarette smoking relative to secure young adults. Sadava et al. (2009) also reported a significant correlation between anxiety (but not avoidance) and being a current smoker (versus non-smoker). However, anxiety was unrelated to smoking status in the multivariate analysis.

In sum, although there is some initial evidence for a link between attachment anxiety and substance use during adolescence, the results related to substance use in young adulthood are less clear.

Motives for substance use. Four studies found that both avoidance and anxiety are positively associated with using substances to cope with stress or to relax (Brennan & Shaver, 1995; Kassel et al., 2007; McNally et al., 2003; Molnar et al., 2010). In addition, Brennan and Shaver found that security was negatively related to using substances to cope with stress or relax. Links between attachment style and other motives for using substance were less consistent. For example, Molnar, Sadava, DeCourville, and Perrier (2010) found that avoidance was negatively related to drinking for social facilitation purposes and anxiety was positively related to social drinking and drinking for enhancement purposes, but these links did not emerge in the study by Brennan & Shaver (1995).

Heavy substance use. Six studies that examined the link between attachment style and heavy drinking/binge drinking have yielded inconsistent results. Three studies reported no overall effect of attachment style on current heavy drinking (Cooper et al., 1998; Cooper et al., 2004; Sadava et al., 2009). Other studies reported significant associations between attachment style and heavy drinking, but the pattern of results differed across the studies. Garneau, Olmstead, Pasley, and Fincham (2013) found that avoidance, but not anxiety, was positively correlated with the frequency of binge drinking in the past 30 days in a sample of US undergraduates. Interestingly, other studies found evidence for an inverse relationship between attachment insecurity and binge drinking. Australian young adults who endorsed an insecure attachment style (anxious or avoidant) were less likely to endorse binge drinking relative to their secure counterparts (Olsson et al., 2013). Similarly, Molnar et al. (2010) found that anxiety was inversely related to high risk drinking. However, Molnar et al. found that anxiety was indirectly related to more high-risk drinking through greater endorsement of drinking to enhance their experience (i.e., enhancement motives). Finally, Cooper et al. (2004) found, among adolescents who reported no alcohol use at the first assessment, those endorsing an avoidant attachment style were less likely than secure or anxious adolescents to report heavy drinking in the time between the two assessments.

Studies examining heavy use of substances in addition to alcohol have found significant associations with attachment style. Schindler et al. (2005) administered an interview version of the four-category self-report measure of Bartholomew and Horowitz (1991) to opioid dependent German adolescents and asked them to report

on the severity of their drug and alcohol use. The results revealed that more fearful attachment was associated with more severe substance use. Interestingly, dismissing attachment was inversely associated with substance use severity. Finally, Gwadz, Clatts, Leonard, and Goldsamt (2004) examined the link between attachment style and daily substance use in a sample of young men who have sex with men. The authors found that the fearful and preoccupied attachment styles were associated with an increased likelihood of using substances daily.

Negative consequences related to substance use. All five studies that examined the link between attachment style and negative consequences resulting from alcohol consumption reported significant associations; however, the pattern of results differed across studies. In an adolescent sample, Cooper et al. (1998) found that anxious-ambivalent adolescents reported more negative alcohol-related consequences relative to secure and avoidant adolescents. The remaining four studies utilized college student samples. In a sample of Canadian undergraduates, Molnar et al. (2010) found that both avoidance and anxiety were positively correlated with alcohol-related consequences. However, only anxiety remained significant in the multivariate analyses. In addition, Molnar et al. found that anxiety was indirectly related to greater alcohol-related consequences through motives related to drinking to conform and drinking to cope with stress. Similarly, McNally, Palfai, Levine, and Morre (2003) found that a “negative model of self” – characteristic of the fearful and preoccupied attachment styles in the Bartholomew and Horowitz (1991) approach – was associated with a greater number of drinking-related consequences and that this link was mediated by motives related to drinking to cope with stress. Reis et al.

(2012) found that attachment security was negatively related to alcohol-related consequences, but only among males. None of the insecure dimensions were associated with consequences in this study. Finally, in line with their findings related to current drinking behavior, Doumas et al. found that athletic status interacted with attachment-related avoidance to predict drinking-related consequences: For current and former athletes, greater avoidance was related to more negative alcohol-related consequences. In contrast, for non-athletes, greater attachment-related avoidance was associated with fewer alcohol-related consequences.

Substance abuse/dependence. Two studies examined links between attachment style and clinical symptoms of substance abuse/dependence in community samples. In a sample of adolescent females, Burge et al. (1997) found no link between attachment style and substance abuse assessed on two separate occasions one year apart. By contrast, in a sample of college students, Reis et al. (2012) found that security was negatively correlated with symptoms of substance dependence and fearfulness was positively correlated with symptoms of substance dependence, but only in males. The preoccupied and dismissing dimensions were not significantly related to symptoms in either males or females.

Three studies examined the attachment styles of drug dependent or drug abusing adolescents/young adults. Each of these studies assessed attachment style using an interview version of the four-category self-report measure of Bartholomew and Horowitz (1991). Two studies found that the fearful attachment style predominates in samples of opioid dependent German adolescents (Schindler, Thomasius, Sack, Gemeinhardt, & Küstner, 2007; Schindler et al., 2005).

Specifically, Schindler et al. (2005) reported the following distribution of attachment styles: 65% fearful, 17% preoccupied, 11% dismissing, and 6% secure (compared to 8% fearful, 19% preoccupied, 12% dismissing, and 62% secure in healthy control adolescents). Schindler, Thomasius, Peterson, and Sack (2009) examined the attachment styles of individuals meeting diagnostic criteria for abuse or dependence of three substances: heroin, ecstasy, or marijuana. The three clinical groups did not differ from each other or from the control group with respect to dismissing or preoccupied attachment. However, all three clinical groups reported less security than the control group. A mean comparison of the clinical groups revealed that marijuana abusers were more secure than heroin or ecstasy abusers. In addition, heroin abusers reported greater fearfulness compared to all other groups. In sum, these studies suggest much lower rates of secure attachment among substance abusing or dependent adolescents/young adults.

IPPA/BSQ. Twenty five studies have used the IPPA and one study has used the BSQ to examine links between adolescents' perceptions of attachment to parents and various aspects of alcohol and drug use.

Ever used substances and age at first use. Two studies conducted with large samples of Dutch early adolescents examined the association between IPPA scores and smoker status (i.e., never smoked versus smoked once or more). Harakey, Scholte, Vermulst, de Vries, and Engels (2004) found that the communication and trust scales of the IPPA were negatively correlated with having tried smoking whereas the alienation scale was positively correlated with having tried smoking. However, in a multivariate path model, the direct effects of attachment on smoking

status were not significant. The other study with Dutch early adolescents reported no significant links between attachment and smoking status (Engels, Finkenauer, Kerr, & Stattin, 2005). A third study examined the association between IPPA scores and the age at which adolescents had their first drink of alcohol: Kuntsche, van der Vorst, & Engels (2009) found that higher IPPA scores were related to an older age at first drink.

Current use and frequency of use. The twelve studies that examined the links between IPPA scores and current alcohol use yielded inconsistent results. Six studies found that higher IPPA scores were negatively related to alcohol use (Andres, Castanier, & Le Scanff, 2014; Benda, 2005; Cavendish, Nielsen, & Montague, 2012; Lac, Crano, Berger, & Alvaro, 2013; Rhodes, Reddy, & Grossman, 2005; van der Vorst, Engels, Meeus, Dekovic, & Vermulst, 2006). However, in the study by Andres et al., associations with alcohol use only emerged for attachment to mother, but not to father. In addition, Lac et al. found only indirect (rather than direct) effects of attachment on alcohol use through adolescents' attitudes about drinking and perceived accessibility of alcohol. By contrast, six studies reported no significant associations between IPPA scores and current alcohol use (Bell, Forthun, & Sun, 2000; Cavell, Jones, Runyan, Constantin-Page, & Velasquez, 1993; Chabrol, Rodgers, Sobolewski, & van Leeuwen, 2010; Chédebois et al., 2009; Kuntsche et al., 2009; Lee & Bell, 2003).

Relative to alcohol use, the findings related to the associations between IPPA scores and marijuana use are much more consistent. Across samples of adolescents and undergraduates from three different countries (Canada, France, and the US),

higher scores on the IPPA were negatively related to current marijuana use (Bell et al., 200; Chabrol et al., 2010; Lee & Bell, 2003; McNamara, Vervaeke, & Willoughby, 2008). However, in the study by McNamara et al., associations with marijuana use only emerged for attachment to mother, but not to father.

Three studies examined links between adolescents' perceptions of attachment to parents and cigarette smoking. In a sample of over 28,000 adolescents in New Zealand, Scragg, Reeder, Wong, Glover, and Nosa (2008) found that low scores on the IPPA were associated with an increased risk of regular smoking regardless of parental smoking behavior. Similarly, McNamara et al. (2008) found that higher perceived attachment to mother (but not father) was negatively associated with adolescent smoking. In contrast to these two studies, Chédebois et al. (2009) found no links between IPPA scores and smoking behavior in a sample of French adolescents.

One study examined the link between perceived attachment to parents and cocaine use. Warner, Behnke, Eycler, and Szabo (2010) tested hair samples for evidence of cocaine use in a sample of early adolescents. Approximately half of the adolescents in this study were exposed to cocaine in utero. Compared to the adolescents who tested negative for cocaine use, those adolescents who tested positive for cocaine use reported significantly lower perceived attachment to mother.

Several studies used a broader drug use variable or a composite variable reflecting a combination of various substances (e.g., a composite of alcohol, marijuana, and cigarette use) as the outcome. Three studies found that higher scores on the IPPA were negatively related to substance use (Benda, 2005; Bogard, 2005; Rhodes et al., 2005). However, in the Bogard study, only perceived attachment to

mother was significantly related to adolescent substance use in the regression analyses, and only in adolescent females. Luthar and Goldstein (2008) found a significant negative correlation between IPPA scores and substance use, but only in females, and this link did not remain significant in multivariate analyses. A second study by Luthar and colleagues did not find any significant links between perceived attachment to parents and substance use (Luthar & Barkin, 2012). Finally, Branstetter et al. (2009) found that adolescent security on the BSQ was negatively related to teen-reported and peer-reported substance use at two time points. In addition, Branstetter et al. found that mothers' knowledge of their adolescents' whereabouts and activities (referred to as parental knowledge or parental monitoring) mediated the link between adolescent security and change in substance use over time.

Heavy use. Only one study examined the links between IPPA scores and heavy drug use. Danielsson, Romelsjö, and Tengström (2011) examined the links between perceived attachment to parents and binge drinking at ages 13 and 15 in a large sample of Swedish adolescents. The results revealed that higher IPPA scores were related to a decreased likelihood of binge drinking at both ages, but only among females. However, these links were non-significant in multivariate analyses.

Negative consequences related to substance use. Three studies reported links between perceived attachment to parents and substance-related consequences. In a sample of Dutch adolescents, Kuntsche et al. (2009) found that higher perceived quality of attachment to parents predicted fewer alcohol-related problems one to two years later (even though attachment was not related to degree of alcohol use in this sample). Similar results emerged in undergraduate samples. Bell et al. (2000) and Lee

and Bell (2003) found that higher IPPA scores were associated with fewer negative consequences resulting from substance use.

Substance abuse/dependence. Three studies reported associations between IPPA scores and substance abuse or dependence. Burge et al. (1997) assessed females' substance abuse during their senior year of high school and again 12 months later. At the first assessment, scores on the IPPA trust scale were inversely associated with substance abuse. However, the IPPA communication and alienations scales showed no relation to substance abuse. At 12 month follow up, only the IPPA alienation scale was associated with substance abuse, with higher scores on this scale linked to substance abuse. In another longitudinal study, Raudino, Fergusson, and Horwood (2013) assessed adolescents' perceived attachment to parents at age 15-16 and continued to follow them through the age of 30. The results revealed that higher quality attachment in adolescence was negatively associated with substance abuse/dependence in young adulthood. Finally, Essau (2011) examined the links between perceived quality of attachment to parents and substance use disorders in both community and high-risk samples of adolescents. In the community sample, adolescents diagnosed with a substance use disorder and a comorbid psychiatric diagnoses reported lower perceived quality of attachment to parents relative to adolescence with a pure substance use disorder and adolescents with no psychiatric diagnoses. The pure substance use disorder group and the control group did not differ with respect to IPPA scores. Interestingly, in the high-risk sample, no significant diagnostic group differences emerged with respect to perceived attachment to parents.

Summary of research on attachment and substance use in adolescence

and young adulthood. Overall, the literature reviewed above suggests a link between attachment and substance use in adolescence and young adulthood. However, the overall pattern of findings is far from straightforward, and the results related to several aspects of substance use were fairly inconsistent. In addition, the available evidence from studies using self-report measures (i.e., attachment style questionnaires and the IPPA) is more consistent and compelling relative to the evidence from studies that used the AAI. There are at least two explanations that could account for the weaker findings related to the AAI. On the one hand, it is possible that state of mind with respect to attachment – inferred from the linguistic properties of individuals' responses to questions about attachment-related experiences in childhood – is just a weaker predictor of adolescent/young adult substance use relative to self-reported approaches to or perceptions of current close relationships. On the other hand, the AAI is a very time-consuming and expensive measure to administer and code. As a result, few (only 6) studies have examined the association between AAI state of mind and substance use in adolescence and young adulthood, and those that have included relatively small sample sizes. Thus, the studies may have been statistically underpowered to detect smaller effect sizes. Additional studies with the AAI employing larger samples will provide insight into which of these two alternatives is more accurate.

Another generalization that seems to be supported by the evidence from studies that used the IPPA is that perceived quality of attachment to mother was more consistently related to substance use outcomes compared to perceived quality of

attachment to father. Recent evidence suggests that most adolescents and young adults nominate their mother as their primary attachment figure. In fact, only 11% of adolescents and young adults reported that their father was their primary attachment figure (Rosenthal & Kobak, 2010). Thus, it seems reasonable to expect that perceived quality of attachment to mother would be a more consistent predictor of substance use outcomes than perceived quality of attachment to father. However, it is important to note that, in several cases, researchers did not analyze mother and father IPPA scores separately; thus, caution is warranted before making firm conclusions about a stronger link between IPPA scores in relation to mother compared to father.

Below, I summarize consistent patterns of results that emerged related to the link between attachment and various aspects of substance use.

First, compelling evidence suggests that an avoidant attachment style is associated with a delayed onset of substance use (Cooper et al., 1998, 2004; Letcher & Slesnick, 2013). As discussed earlier, this delayed onset relative to secure or anxious adolescents is likely due to the poor social skills and decreased social involvement associated with attachment-related avoidance. Although the evidence suggests that avoidance may lead to delayed initiation into alcohol and drug use, an important question to consider is what happens once avoidant adolescents do begin using substances. It is possible that longitudinal studies with repeated assessments of substance use across adolescence and young adulthood would reveal a trajectory of increasingly problematic substance use among avoidant individuals following their initiation in alcohol and drug use. Alternatively, avoidance may continue to have an inhibiting effect on substance use through young adulthood. The available evidence

does not provide a conclusive answer. Although less conclusive compared to findings related to attachment style, there is some initial evidence that higher perceived quality of attachment to parents assessed by the IPPA is associated with later initiation into alcohol and tobacco use (Harakey et al., 2004; Kuntsche et al., 2009).

Second, higher quality attachment to parents, assessed by the IPPA and BSQ, was negatively associated with the use of marijuana and cigarettes (findings related to alcohol use were inconsistent). Although some evidence emerged for an association between attachment style and current substance use, the links were inconsistent. It is possible that perceived attachment to parents exerts its influence on adolescent marijuana and tobacco use via higher levels of parental knowledge (i.e., the degree to which parents know where their adolescent is and what he/she is doing; see Branstetter et al., 2009, for empirical evidence). Higher parental knowledge has consistently been linked to less adolescent risk behavior (Racz & McMahon, 2011). Adolescents who hold a positive view of their relationship with their parents and who perceive their parents as available and responsive when needed likely feel more comfortable sharing information with their parents related to their whereabouts and activities. Similarly, in the context of a positive parent–adolescent relationship, parents likely feel more comfortable soliciting information from their adolescents. As it is a strong predictor of risk behavior, additional research focusing on links between attachment and parental knowledge is warranted.

Third, attachment (as measured by both attachment style measures and the IPPA) was more consistently related to the consequences associated with substance use (e.g., missing class, relationship problems) than to current use or frequency of use

(Bell et al., 2000; Cooper et al., 1998; Doumas et al., 2006; Kuntsche et al., 2009; Lee & Bell, 2003; McNally et al., 2003; Molnar et al., 2010; Reis et al., 2012). Insecurity on attachment style measures was consistently related to more negative consequences, whereas higher quality attachment to parents on the IPPA was inversely associated with drug-related consequences. One possible interpretation of this pattern of results is that the occasional and recreational use of substances such as alcohol and marijuana is so commonplace (particularly among college students), that it is difficult to identify attachment-related individual differences in recreational drug use. However, when considering substance use that is severe enough to cause interpersonal and academic problems, it may be easier to detect attachment-related differences.

Fourth, both anxious and avoidant individuals reported coping motivations for using substances (i.e., to reduce stress or to relax; Brennan & Shaver, 1995; Kassel et al., 2007; McNally et al., 2003; Molnar et al., 2010). Further, some evidence indicates that coping motives and psychological distress mediate the link between attachment insecurity and substance use (Golder et al., 2005; McNally et al., 2003; Molnar et al., 2010). These findings are consistent with substantial theory and research showing a link between attachment insecurity and (a) greater psychological distress and (b) less constructive emotion regulation and coping strategies (see Mikulincer & Shaver, 2008, for a review).

Taken together, the studies reviewed in this section support an association between attachment and various aspects of substance use. Clearly, the links between attachment and substance use are complicated and much more work needs to be

done. However, the body of literature reviewed here provides a solid foundation on which future studies can build.

Attachment and Sex in Adolescence and Young Adulthood

Studies on attachment and sex in adolescence and young adulthood have focused on a wide range of sexual behaviors and attitudes, including: (a) virginity status, (b) age at first intercourse, (c) number of sexual partners, (d) attitudes and behavior related to casual sexual encounters or “hook ups,” (e) attitudes and behavior related to extradyadic sex (i.e., sex with a third party when involved in a committed relationship), (f) attitudes and behavior related to condom use and safe sex practices, (g) “sexting” (i.e., sending explicit text messages or provocative photos via some electronic medium), (h) engaging in consensual, but unwanted, sexual activity, and (i) sexual risk-taking (e.g., prostitution, sex with promiscuous or drug using partners, being under the influence of drugs or alcohol during sex).

Although some of these sexual behaviors clearly fall under the category of “risky” behavior in the sense that they increase the likelihood of negative health outcomes or legal troubles (e.g., condom use, prostitution), others do not necessarily meet this definition of “risky” (e.g., sexting, extradyadic sex, agreeing to unwanted sex with romantic partner). However, these behaviors can be construed as “risky” in that they increase the likelihood of negative inter- or intrapersonal outcomes. For example, cheating on a romantic partner could obviously have negative consequences for the relationship. Similarly, sexting could result in significant embarrassment and shame as well as damage the person’s reputation if the explicit photos or messages are leaked beyond their intended recipient. It is for these reasons I decided to include

behaviors like sexting, extradyadic involvement, and consensual but unwanted sex with a romantic partner in this review.

The majority of studies on attachment and sex measured attachment with either self-report attachment style measures or the IPPA. Only three studies have examined sexual outcomes associated with state of mind with respect to attachment in the AAI. The review is organized by measure of attachment: Studies that used the AAI, self-report attachment style measures, and the IPPA are reviewed in that order.

AAI. The three studies that have examined links between state of mind with respect to attachment and sex have focused on age at first sex and sexual risk-taking.

Age at first sex. Similar to their results related to adolescent substance use, Marsh et al. (2003) found no main effect of attachment state of mind on age at first sexual intercourse, but found that adolescent preoccupied attachment interacted with maternal autonomy during an adolescent–mother interaction to predict age at first sex. Highly preoccupied adolescents whose mothers demonstrated high autonomy during a disagreement discussion reported earlier sexual debut. Conversely, highly preoccupied adolescents whose mothers demonstrated low autonomy during the disagreement discussion reported later sexual debut. No links were reported for the dismissing state of mind. Similar to the interpretation related to substance use, it is possible that high levels of maternal autonomy are viewed as threatening by highly preoccupied adolescents who are very focused on their attachment-related needs. Preoccupied adolescents may interpret a mother’s autonomy as a sign of distance or separation and may turn to a sexual partner for the interpersonal closeness and intimacy they desire.

Sexual risk-taking.

In two studies, Kobak and colleagues examined longitudinal links between AAI state of mind and a composite of sexual risk-taking behavior (e.g., non-use of birth control, use of drugs and alcohol before sex) in adolescents from economically disadvantages families. Kobak, Zajac, and Smith (2009) assessed sexual risk-taking at ages 13, 15, and 17 and found that preoccupied attachment was associated with higher sexual risk-taking at each time point and to a steeper increase in sexual-risk taking over time. Dismissing state of mind was unrelated to sexual risk-taking. In a second paper, Kobak, Herres, Gaskins, and Laurenceau (2012) reported significant associations between preoccupied attachment and sexual risk-taking at ages 15 and 17, but only in females. No links emerged between dismissing scores and sexual-risk taking. Thus, these two studies provide compelling, prospective evidence for a link between a preoccupied (but not dismissing) state of mind with respect to attachment and sexual risk-taking behavior.

Attachment style. Thirty four studies have examined links between attachment style measures and various sexual behaviors and attitudes.

Virginity status and age at first sex. Four studies have examined the association between attachment style and virginity status among adolescents and undergraduates. All four studies found that individuals who have never had sex reported greater avoidance compared to non-virgins (Cooper et al., 1998; Gentzler & Kerns, 2004; Kalichman et al., 1993; Tracy, Shaver, Albino, & Cooper, 2003). Interestingly, Gentzler and Kerns found that both virgins and individuals who had sex before the age of 16 reported greater avoidance than individuals who lost their

virginity at age 16 or older. In addition, Gentzler and Kerns found marginal effects of anxiety that differed by gender: Males who were virgins in college reported more attachment anxiety than non-virgins, whereas anxiety was associated with earlier sexual debut among females. In contrast to these four studies, three studies found no link between attachment style and age at first sex (Chisholm, 1998; Letcher & Slesnick, 2013; Yarkovsky & Timmons, 2014).

Number of sexual partners. The evidence for links between attachment style and number of sexual partners is mixed. Four studies reported no association between attachment style and number of partners (Cooper et al., 1998; Feeney, Peterson, Gallois, & Terry, 2000; Letcher & Slesnick, 2013; Tracy et al., 2003). The five studies that did find significant associations did not reveal a consistent pattern of results. Chisholm (1998) found that avoidance (but not anxiety or security) was positively associated with the number of new sex partners per year among female US college students. By contrast, Gentzler and Kerns (2004) did not find a significant link between avoidance and number of partners in an undergraduate sample. However, these authors found that anxiety was negatively related to number of sexual partners, but only among men. Cooper et al. (2004) found that both anxious and avoidant adolescents reported more new sexual partners in the time period between two assessments separated by 4.5 years compared to secure adolescents.

In another sample of undergraduates, Scharfe and Eldredge (2001) found that the links between attachment style and number of sexual partners differed according to current relationship status: Among individuals who were in a committed romantic relationship at the time of the study, security was negatively related to the number of

sexual partners and fearfulness was positively related to the number of sexual partners. In this study, the preoccupied and dismissing dimensions were unrelated to number of partners. Interestingly, the only significant link that emerged among individuals not in a committed relationship was a positive association between security and number of partners. Finally, in a sample of high risk, predominantly African American, pregnant young women, Kershaw et al. (2007) found that both avoidance and anxiety were positively associated with having multiple (i.e., more than 2) sexual partners in the past six months. However, these links did not remain statistically significant in the regression analyses.

Attitudes and behavior related to casual sexual encounters or “hook ups”.

Nine studies on this topic suggest a consistent link between attachment insecurity, particularly avoidance, and less negative attitudes toward casual sex and a greater frequency of engagement in casual sex. Five studies found that more avoidant individuals reported more permissive attitudes toward casual sex (Brennan & Shaver, 1995; Feeney, Noller, & Patty, 1993; Gentzler & Kerns, 2004; Owen et al., 2010; Sprecher, 2013). For example, avoidant individuals were found to more strongly agree with items such as “Sex without love is OK” and “I would have sex with someone that I had no plans to ever talk to again.” Owen et al. found that the link between avoidance and less restricted sexual attitudes emerged only in women, whereas Sprecher found that the link only emerged in men.

With respect to actual behavior (i.e., engaging in casual sex), the results are somewhat less consistent compared to attitudes. Cooper et al. (1998) found that both avoidant and anxious adolescents were more likely to report having sex with a

stranger compared to secure adolescents. Similarly, Paul, McManus, and Hayes (2000) found that students who reported never “hooking up” in college reported greater attachment security and less attachment avoidance compared to students who had engaged in casual sex in college. Scharfe and Eldredge (2001) also found that attachment security was negatively related to engaging in casual sex, but only among individuals in a committed relationship. In addition, these authors found that greater fearfulness was positively associated with engaging in casual sex, but only among individuals in a committed relationship. Gentzler and Kerns (2004) found that avoidance was negatively related to the percentage of sexual encounters that occurred within the context of a committed relationship among both men and women. Similarly, Brennan et al. (1998) found that college students who endorsed a dismissing attachment style reported more promiscuous sexual behavior (e.g., one night stands) compared to secure, preoccupied, and fearful individuals.

Garneau et al. (2013) found that both avoidance and anxiety were positively correlated with the number of “hook up” partners in the past year. However, only avoidance was a significant predictor in the regression analyses, and avoidance was a stronger predictor of “hook up” behavior among males compared to females. In addition, although Garneau et al. found that avoidance was related to a larger number of “hook ups,” avoidance was also negatively correlated with the number of casual encounters involving penetrative sex. In other words, the casual encounters reported by more avoidant undergraduates involved kissing and “heavy petting” rather than intercourse. Finally, although Owen et al. (2010) found a link between avoidance and

attitudes toward casual sex among women, they did not find a link with actual “hook up” behavior.

The consistent link between attachment-related avoidance and more permissive attitudes and behavior related to casual sexual encounters meshes nicely with the broader literature on avoidance and interpersonal functioning (e.g., Mikulincer & Shaver, 2007). Attachment-related avoidance is characterized by discomfort with intimacy and a preference for physical and psychological distance in close relationships (e.g., Feeney, 2008; Hazan & Shaver, 1987; Shaver & Mikulincer, 2002). In addition, research examining the motivations behind sexual behavior has found that avoidance is negatively related to having sex for the purposes of promoting intimacy or emotional closeness. Rather, avoidant individuals report having sex for self-serving reasons such as to impress peers, assert power in a relationship, or lose their virginity (Cooper et al., 2006; Davis, Shaver, & Vernon, 2004; Impett, Gordon, & Strachman, 2008; Schachner & Shaver, 2004; Tracy et al., 2003; see Birnbaum, in press, for a review). Thus, the preference for more casual sexual encounters likely reflects the defensive strategy used by avoidant individuals to preclude the formation of new attachment bonds (Fraley & Shaver, 2000). The intriguing results of Garneau et al. (2013) suggest that even when avoidant individuals do engage in sexually intimate behavior with casual partners, they prefer “less intimate” or more superficial sexual behaviors such as kissing and touching to more intimate behavior such as intercourse.

Attitudes and behavior related to condom use and safe sexual practices.

Although there are some inconsistencies, the evidence suggests that attachment

anxiety is negatively related to condom use and safe sex practices (Feeney, Kelly, Gallois, Peterson, & Terry, 1999; Feeney, Peterson, Gallois, Terry, 2000; Strachman & Impett, 2009). In addition, the studies by Feeney and colleagues found that anxiety was negatively related to discussing contraception and HIV/AIDS with one's partner. Furthermore, Feeney et al. (2000) found that anxiety was related to more negative attitudes toward condoms (e.g., they interrupt foreplay, reduce intimacy, and destroy spontaneity). The findings related to avoidance are less clear. There was some evidence that avoidance is positively related to condom use and to more positive attitudes toward condoms (e.g., they protect against STDs), but the links were not consistent (Feeney et al., 2000).

In a sample of high risk, African American, pregnant young women, Kershaw et al. (2007) found that both avoidance and anxiety were negatively correlated with the frequency of condom use; however, only links with anxiety remained significant in multivariate analyses. In addition, in this sample of at-risk young women, both avoidance and anxiety were associated with more negative attitudes toward condoms (e.g., "using a condom means you don't trust your partner") and poorer condom use self-efficacy (i.e., confidence about properly using condom and discussing condom use with a partner). In another study of young African American women, Sales, Latham, DiClemente, and Rose (2010) found that women who reported using dual method birth control at the time of their last sexual encounter (i.e., condom use and oral contraceptive) were more secure and less fearful than women who did not use dual method birth control. Contrary to the above-mentioned studies, Scharfe and

Eldredge (2001) did not find any significant associations between attachment style and condom use in a sample of US undergraduates.

Two potential consequences of unsafe sexual practices, such as infrequent condom use, are unintended pregnancy and contraction of a sexually transmitted disease (STD). Consistent with the evidence that attachment anxiety is associated with more negative attitudes toward condoms and less frequent condom use, anxiously attached adolescent females were more likely to report having ever been pregnant compared to secure or avoidant adolescent females (Cooper et al., 1998). In Cooper and colleagues' community sample of adolescents, attachment style was unrelated to ever having contracted an STD. However, at a follow-up assessment 4.5 years later, Cooper et al., (2004) found that anxious adolescents reported more pregnancies and STDs during the time between the two assessments compared to secure adolescents. Finally, in a high-risk sample of pregnant young women, both avoidance and anxiety were positively associated with reporting an STD in the past 6 months, but these links were non-significant in the regression analyses (Kershaw et al., 2007).

The negative association between attachment anxiety and condom use/safe sex practices may be a reflection of the underlying intra- and interpersonal insecurities associated with anxious attachment. Intrapersonally, anxious individuals hold negative views of their own self-worth, report lower self-esteem, and report that they do not have control over things that happen to them (i.e., external locus of control; Bartholomew & Horowitz, 1991; Mickelson, Kessler, & Shaver, 1997). Interpersonally, anxious individuals report strong fears of being rejected, unloved, or

abandoned by their romantic partners (Mikulincer & Shaver, 2007). Together, these characteristics of anxious attachment may make it difficult for anxious individuals to competently negotiate sexual encounters. For example, anxious individuals may feel unable or unwilling to discuss condom use with a partner or to insist on condom use in the face of partner objections out of fear that the partner will love them less or even leave them. The evidence showing that anxiety is negatively related to confidence in the ability to negotiate sexual encounters, condom use self-efficacy, and communication about condom use and STDs supports this notion (Feeney et al., 2000; Kershaw et al., 2007).

Sexual risk-taking. In several studies, researchers used a variety of risky sexual behaviors (e.g., number of partners, condom use, early sexual debut) to create a composite variable reflecting overall sexual risk-taking. Three studies reported associations between anxiety and greater sexual risk-taking behavior (Letcher & Slesnick, 2014; McCloskey, 2013; Paulk & Zayac, 2013). However, it is important to note that (a) the composite variable used by Letcher & Slesnick included both substance use variables and risky sex variables and (b) the link between anxiety and risk-taking reported by Letcher & Slesnick was only marginally significant. Neither Letcher and Slesnick nor Paulk and Zayac found links between avoidance and the risk-taking composites (McCloskey did not include avoidance in the analyses). However, Paulk and Zayac found a significant avoidance x anxiety interaction: Adolescents high on both avoidance and anxiety (i.e., fearful) reported greater sexual risk-taking. In addition, Kershaw et al. (2007) found that both anxiety and avoidance were positively correlated with having unprotected sex with a risky partner (e.g., an

injection drug user or someone with a history of STDs) in a sample of high-risk pregnant young women. However, only anxiety remained significant in the multivariate analyses. Finally, Cooper et al. (2004) found that both avoidant and anxious adolescents reported more sexual risk-taking compared to secure adolescents.

Two studies examined the links between attachment style and using drugs and alcohol before or during sex. In an adolescent sample, Tracy et al. (2003) found that avoidant adolescents were most likely to consume alcohol or become intoxicated before sex and secure adolescents were the least likely to consumer alcohol or become intoxicated before sex. Anxious adolescents fell in between the other two groups on the substance use/intoxication variables. In an undergraduate sample, Feeney et al. (2000) found that both avoidance and anxiety were positively associated with using substance before sex. Although more research is needed to corroborate these results, it is possible that substance use during or prior to a sexual encounter serves an emotion regulation or stress reduction function for both anxious and avoidant individuals. Anxious individuals may experience increased stress due to fears of being rejected by partner or of not living up to their partner's expectations. On the other hand, avoidant individual may experience increased stress leading up to a sexual encounter due to their discomfort with intimacy. In both cases, adolescents and young adults may use substances to reduce the arousal and discomfort associated with these sources of stress. This notion is partially supported by evidence showing that both anxious and avoidant individuals report more negative affect during sex compared to secure individuals (Tracy et al. 2003).

Two studies examined links between attachment style and what could be considered “very risky” sexual behavior. Golder et al. (2005) created sexual risk-taking composite that included behaviors such as having sex for money or in exchange for drugs and having sex with more than one partner at a time. In this sample of high-risk young mothers, avoidance (but not anxiety) was positively related to the high-risk sexual behavior composite. The authors also reported that the link between avoidance and risky sex was partially mediated by psychological distress and low self-esteem. In a sample of young men who have sex with men, Gwadz et al. (2004) examined the link between attachment style and sex work (i.e., trading sex for money, drugs, or a place to stay). The results revealed that a fearful attachment style was associated with increased likelihood of trading sex for money, drugs, or a place to stay.

Engaging in consensual, but unwanted, sexual activity. The available evidence indicates an association between attachment anxiety and willingness to participate in consensual, but unwanted, sexual activity. Impett and Peplau (2002) asked female undergraduates how they would respond to a hypothetical scenario in which their partner wanted to be sexually intimate but they were not “in the mood.” The results revealed that highly anxious women were more willing to consent to unwanted sex compared to less anxious women. Avoidance was not related to consenting to unwanted sex. Similarly, Drouin and Tobin (2014) found that anxiety (but not avoidance) was positively associated with engaging in consensual, but unwanted, “sexting,” but only among women. Finally, Gentzler & Kerns (2004) found that anxiety was associated with engaging in consensual, but unwanted, sex in

women but not men. In addition, these authors found that avoidance was positively related to consenting to unwanted sex in both men and women.

The association between anxiety and consenting to unwanted sexual activity likely reflects the underlying relationship insecurities characteristic of anxious individuals. Considering the strong fears of being abandoned or unloved that are the hallmark of attachment anxiety, it is likely that anxious individuals consent to unwanted sexual activity out of fear that their partner will lose interest or get their sexual needs met elsewhere. This notion is supported by empirical evidence (Impett & Peplau, 2002). Only one of the three studies (Gentzler & Kerns, 2004) reported a significant association between attachment-related avoidance and consenting to unwanted sex. Although more research is needed to corroborate this finding, there are reasons to expect such an association. Perhaps, for avoidant individuals, complying with a partner's sexual request is just easier than saying no. Refusing sex could lead to an argument that involves emotional disclosure. A highly avoidant person may just agree to unwanted sex to avoid such an argument. Some preliminary evidence supports this conclusion (Impett & Peplau, 2002).

Sexting. The first study to examine links between attachment style and sexting did not yield very promising results. In a sample of undergraduates, Weisskirch & Delevi (2011) found that attachment anxiety was positively associated with only one of out five indicators of sexting behavior (sending a text message propositioning sexual activity) and only among individuals in a committed relationship. No other significant associations with attachment style emerged. In a second study, using a larger sample of college students in committed relationships, Drouin and Landgraff

(2012) found that both avoidance and anxiety were related to sexting behavior. Avoidance was positively associated with sending both sex text messages and sex picture messages to a romantic partner, whereas anxiety was only positively related to sending sex text messages. These authors also reported a gender X avoidance interaction: Avoidant men were more likely to send sexual texts and pictures to their partners compared to avoidant women. From the perspective of attachment anxiety, it is possible that anxious people view sexting as a way to increase or maintain sexual intimacy or keep their partners interested. From the perspective of attachment avoidance, it is possible that sexting is a less intimate alternative to actual sexual behavior and/or allows avoidant individuals to express their sexuality without in-person interaction. Additional research is needed to examine these possibilities.

Extradyadic affairs. The results related to extradyadic affairs are mixed and suggest gender differences. In a sample of young adult couples, Gangestad and Thornhill (1997) found that women's anxiety was positively related to the number of extradyadic partners while in a committed relationship, whereas women's avoidance was negatively related to the number of extradyadic partners. In men, avoidance was marginally associated with a greater number of extradyadic partners. In a second study, E. Allen & Baucom (2004) found that, overall, dismissing individuals reported a higher number of extradyadic partners over the past two years compared to all other attachment groups. The results also revealed an attachment style X gender interaction: Among males, the dismissing group reported the highest number of extradyadic partners relative to all other attachment groups. Among females, the preoccupied group reported a higher number of extradyadic partners compared to the secure

group. Thus, although additional studies are needed, these initial findings suggest that avoidant men and anxious women are the most likely to engage in extradyadic affairs. The link between avoidance and involvement with an extradyadic partner may reflect avoidant men's desire to assert their independence from their romantic partner. The strong desire for intimacy and to feel loved that is characteristic of attachment anxiety may lead more anxious women to feel that they are not getting what they need from their romantic partner, and to seek the reassurance they need elsewhere. These propositions are supported by the initial findings of E. Allen and Baucom (2004).

IPPA. Eleven studies have used the IPPA to examine links between adolescents' perceptions of attachment to parents and various aspects sexual behavior.

Virginity status and age at first sex. Four studies found that adolescents and young adults who reported higher perceived attachment to parents – particularly to mother – were less likely to have ever had sex (Adam & Chase-Lansdale, 2002; Donenberg, Emerson, & Mackesy-Amiti, 2011; Moore & Chase-Lansdale, 2001; Udell, Sandfort, Reitz, Bos, & Dekovic, 2010). The link between higher IPPA scores and the increased likelihood of remaining a virgin over the course of 1 year reported by Udell et al. was only significant for male adolescents.

Interestingly, the samples used by Adam and Chase-Lansdale, Donenberg et al., and Moore and Chase-Lansdale were comprised of high-risk minority participants (i.e., African American females living in poverty or involved in outpatient psychiatric treatment). Research has shown that African American adolescents and adolescents living in poverty are at increased risk for early sexual debut (Brewster, 1994;

Cavazos-Rehg et al., 2009). Thus, the results of these studies suggest that high quality attachment to mother may be a protective factor that delays sexual initiation in the context of other risk factors. However, among adolescent males from low-income households and Mexican American female adolescents, IPPA scores were not significantly related to age at first sex (Bámaca-Colbert, Greene, Killoren, & Noah, 2014; Lohman & Billings, 2008).

In a sample of African American female college students, Bynum (2007) found that higher scores on the IPPA communication with mother scale were negatively related to women's level of sexual experience, but only among women attending a historically black college/university. Links between communication and level of sexual experience did not emerge among African American women attending a predominantly White institution. It is unclear why the link between higher quality communication with mother and sexual behavior differed as a function of the racial composition of the university the young women were attending. However, these findings highlight the importance of considering broader contextual influences (i.e., type of institution) when examining links between attachment and sexual behavior.

Number of sexual partners. In a large sample of Canadian high school students, higher perceived attachment to parents was negatively related to the number of sexual partners in the past month and the number of partners in the students' lifetimes (Leenaars, Dane, & Marini, 2008). By contrast, two studies did not find any links between IPPA scores and number of sexual partners in samples of African American females (Donenberg et al., 2011; Emerson, Donenberg, & Wilson, 2012). However, Emerson et al. did find that higher IPPA scores were negatively correlated

with the number of older sexual partners (defined as 2 years older than the adolescent females participating in the study).

Condom Use. Only two studies to date have tested this link. Donenberg et al. (2011) and Emerson et al. (2012) found that African American adolescent girls who reported high quality attachment to mother were more likely to report consistently using condoms. Related to condom use is the issue of teenage pregnancy. Moore and Chase-Lansdale (2001) did not find any associations between IPPA scores and the likelihood of teenage pregnancy.

Sexual risk-taking. In several studies, researchers used a variety of risky sexual behaviors (e.g., number of partners, condom use, sex with risky partners) to create a composite variable reflecting overall sexual risk-taking. The findings related to IPPA scores and sexual risk-taking have been inconsistent. Luster and Small (1994) found that a high-risk group (i.e., adolescents who reported having more than one partner and rarely or never using birth control) reported lower quality attachment to parents compared to a low-risk group and a group of abstainers. Two studies found no main effects of perceived quality of attachment to parents on risky sexual behavior. However, these studies did identify mediators and moderators. For example, Emerson et al. (2012) found that peer norms about risk taking mediated the link between perceived attachment to mother and sexual risk-taking. Finally, Rodgers (1999) found that the link between perceived attachment to parents and sexual risk-taking was moderated by communication with parents about sex, but only among males: Adolescent males who reported low attachment to parents and high

communication with parents about sex engaged in the most high-risk sexual behavior. No attachment-related effects emerged in females.

Summary of research on attachment and sex in adolescence and young adulthood. Not surprisingly, given the original focus of attachment style research on romantic relationships, the vast majority of the studies on attachment and sex came from the self-report attachment style measurement tradition. Below, I summarize consistent patterns of results that emerged related to the link between attachment and various sexual behaviors and attitudes.

First, although only a few studies have examined links between the AAI and sexual behavior, all of them suggest a link between a preoccupied state of mind and sexual outcomes (i.e., early sexual debut and sexual-risk taking; Kobak et al., 2009, 2012; Marsh et al., 2003). A preoccupied state of mind in the AAI is characterized by a preoccupation with attachment-related needs and experiences evidenced by a dysregulated, confused, and angry pattern of thoughts and emotions when reflecting on past attachment experiences. This fixation on attachment-related needs may lead preoccupied adolescents to rush into serious and sexual relationships with romantic partners without exercising proper caution. Further, the concerns about relationships and interpersonal difficulties associated with a preoccupied state of mind (e.g., Hill et al., 2011) may make preoccupied adolescents less adept at negotiating safe sexual practices with partners. Additional research with the AAI will help clarify the links between preoccupation and risky sexual behaviors.

Second, although attachment style was not consistently related to age at first sexual intercourse, there was consistent evidence for a link between avoidant

attachment and virgin status (Cooper et al., 1998; Gentzler & Kerns, 2004; Kalichman et al., 1993; Tracy, Shaver, Albino, & Cooper, 2003). It is possible that the preference for distance and discomfort with intimacy characteristic of avoidant individuals makes the intimate act of sexual intercourse less appealing to them. Alternatively, avoidant individuals may desire to lose their virginity, but poor social skills and decreased social involvement may preclude this from happening. Studies using the IPPA also reported a fairly consistent link between higher perceived quality of attachment to parents – particularly to mother – and a decreased likelihood of having ever had sex (Adam & Chase-Lansdale, 2002; Donenberg, Emerson, & Mackesy-Amiti, 2011; Moore & Chase-Lansdale, 2001; Udell, Sandfort, Reitz, Bos, & Dekovic, 2010). Of note, three of the studies that used the IPPA were conducted with high-risk samples, suggesting that higher quality attachment to parents may buffer the effects of risk factors (such as poverty) on sexual debut.

Third, attachment-related avoidance was consistently related to more permissive attitudes toward casual sex and “hook ups” (Brennan & Shaver, 1995; Feeney, Noller, & Patty, 1993; Gentzler & Kerns, 2004; Owen et al., 2010; Sprecher, 2013). As noted above, this link likely reflects avoidant individuals’ preference for distance in close relationships. Uncommitted casual sex affords avoidant individuals the opportunity to satisfy their sexual desires without having to confront issues related to intimacy and commitment. Compared to attitudes about casual sex, the results were somewhat less clear regarding actual engagement in one-night stands or “hook ups.” Although the most consistent link seems to be between avoidance and casual sex, there is also some evidence that anxiety is positively associated with “hooking up”

(e.g., Cooper et al., 1998; Garneau et al., 2013). It is possible that although anxious individuals do not endorse permissive attitudes toward casual sex because of a desire for more intimate and exclusive relationships, they are willing to engage in casual sex as a means of fulfilling their insecurities related to wanting to feel loved and fears of being alone. Although this is just speculation at this point, this idea is consistent with research on the sexual motives of anxious individuals (e.g., Schachner & Shaver, 2004).

Fourth, although there are some inconsistencies, the evidence suggests that attachment anxiety is related to more negative attitudes about condom use and less frequent condom use (Feeney, Kelly, Gallois, Peterson, & Terry, 1999; Feeney, Peterson, Gallois, Terry, 2000; Kershaw et al., 2007; Strachman & Impett, 2009). As noted above, the intra- and interpersonal proclivities associated with attachment anxiety likely make it difficult for anxious individuals to negotiate safe sex practices with partners for fear of pushing them away. Though only two studies have examined links between IPPA scores and condom use, both suggest that higher quality attachment to parents is associated with more consistent condom use (Donenberg et al., 2011; Emerson et al., 2012).

Finally, both AAI studies and studies using attachment style measures consistently found links between attachment insecurity and more sexual risk-taking behavior (e.g., unprotected sex, sex with risky partners, using drugs before sex). The AAI studies found that a preoccupied, but not dismissing, state of mind was associated with more sexual risk-taking (Kobak et al., 2009, 2012). Self-reported

attachment style was also consistently related to sexual risk-taking; however, it is less clear which dimension of insecurity is more consistently related to risky sex.

Overall, the literature reviewed above indicates a link between all three attachment measures and various sexual behaviors and attitudes. However, as was the case with substance use, the links between attachment and certain aspects of sexual behavior (e.g., number of sexual partners) were not consistent across studies.

Additional research is needed to further clarify the associations between attachment and various domains of sexuality in adolescence and young adulthood.

Future Directions

The literature reviewed in this paper suggests that attachment theory provides a useful framework for examining individual differences in substance use and sexual behavior in adolescence and young adulthood. Below, I outline several important directions for future research that could advance this area of research.

First, additional research on how state of mind in the AAI relates to substance use and sexual behavior is warranted. Relative to the large number of studies that have used attachment style questionnaires or the IPPA to examine associations between attachment and substance use/sexual behavior, few studies have explored these associations using the AAI (six studies related to substance use and three studies related to sexual behavior). Not surprisingly, given the time commitment and cost associated with administering and coding the AAI, studies employing the AAI tended to include smaller sample sizes relative to studies using self-report measures of attachment. As a consequence, AAI studies may have been statistically underpowered to detect smaller effect sizes that might have emerged in larger

samples. Nonetheless, the limited available evidence suggests the AAI may be a useful tool for understanding variability in risky behavior, particularly sexual behavior, and these links should be explored further.

Second, also related to the measurement of attachment, no study reviewed in this paper included both the AAI and self-report measures of attachment in the same study. Evidence suggests that the AAI and self-report attachment style measures are only modestly related to each other (Roisman et al., 2007). Given the weak empirical association between interview and self-report measures of attachment, it is possible that some aspects of substance use and/or sexual behavior will be more strongly associated with the AAI compared to self-report measures or vice versa. This possibility awaits empirical investigation.

Third, with a few notable exceptions, much of the research on the links between attachment and substance use/sexual behavior has been cross-sectional. Longitudinal studies with repeated assessments of attachment and substance use/sexual behavior from early adolescence into young adulthood will provide insight into potential behavioral trajectories associated with attachment.

Fourth, although this review focused solely on how attachment relates to substance use and sexual behavior, there are clearly biological and genetic influences on both classes of behavior (e.g., Harden, 2014; Rhee et al., 2003). This raises the important question of whether and how attachment interacts with genetic factors to predict substance use and/or sexual behavior. Olsson et al. (2013) provided compelling initial evidence that self-reported attachment insecurity interacts with certain allelic variations of the dopamine receptor gene (*DRD4*) to predict marijuana

and tobacco use in young adulthood. Replication and extension of this initial study is an important direction for future research.

Fifth, further examination of the role of attachment as a potential protective factor against problematic substance use and risky sexual behavior in at-risk populations is warranted. Substantial evidence indicates that attachment security promotes better emotion regulation and coping skills as well as better interpersonal skills (see Cassidy & Shaver, 2008, for a review). These competencies may help at-risk individuals resist the temptation to succumb to peer pressure to use substances and to navigate sexual encounters with the appropriate level of caution. Research on attachment as a protective factor for at-risk adolescents also has potential clinical implications. If attachment does buffer at-risk adolescents from engaging in substance use/risky sex, intervention and prevention programs aimed at reducing or preventing adolescent risk behavior could benefit from an attachment-based approach. Some initial evidence suggests that an attachment-focused intervention for the parents of at-risk teens was successful in reducing aggressive and antisocial behavior (Moretti & Obsuth, 2009). Similar findings may emerge for interventions focused on substance use and/or risky sex.

Finally, although the focus of this review was on how attachment may influence substance use and sexual behavior, it is possible that effects operate in the opposite direction as well. For example, it is possible that negative sexual experiences could affect one's attachment style in romantic relationships. Similarly, problematic substance use and the negative consequences resulting from it could put a strain on the parent-adolescent relationship and may affect how adolescents perceive the

quality of attachment to their parents. Future research on the links between attachment and substance use/sexual behavior should include examination of these potential bidirectional effects.

Appendix D: Institutional Review Board Approval



Jason Jones <jasonjones5001@gmail.com>

IRB Addendum Approval

1 message

University of Maryland IRB <no-reply@umresearch.umd.edu> Fri, Oct 14, 2011 at 6:01 PM
To: "Dr. Carl W. Lejuez" <clejuez@psyc.umd.edu>, "Dr. Andres De Los Reyes" <adlr@umd.edu>, "Dr. Jude Anne Cassidy" <jcassidy@umd.edu>, Katherine Babcock Ehrlich <kbabcock@umd.edu>, Jason Jones <jasjones@umd.edu>, James Blair <jamesblair@mail.nih.gov>, Ronneal Mathews <rmathew1@umd.edu>



Addendum Application Approval

DO NOT REPLY TO THIS EMAIL ADDRESS AS IT IS UNMONITORED

To: Principal Investigator, Dr. Carl W. Lejuez, Psychology
Co-Investigator, Dr. Andres De Los Reyes, Psychology
Co-Investigator, James Blair, Psychology
Co-Investigator, Dr. Jude Anne Cassidy, Psychology
Student, Jason Jones, Psychology
Student, Katherine Babcock Ehrlich, Psychology
Point of Contact, Ronneal Mathews, Psychology

From: James M. Hagberg
IRB Co-Chair
University of Maryland College Park

Re: IRB Protocol: 05-0191 - Testing a Prospective Behavior Predictor of HIV Risks

Approval Date: October 07, 2011
Expiration Date: February 10, 2012
Application: Addendum
Review Path: Expedited

The University of Maryland, College Park Institutional Review Board (IRB) Office approved your Addendum IRB Application. This transaction was approved in accordance with the University's IRB policies and procedures and 45 CFR 46, the Federal Policy for the Protection of Human Subjects. Please reference the above-cited IRB Protocol number in any future communications with our office regarding this research.

Recruitment/Consent: For research requiring written informed consent, the IRB-approved and stamped informed consent document will be sent via mail. The IRB approval expiration date has been stamped on the informed consent document. Please note that research participants must sign a stamped version of the informed consent form and receive a copy.

Continuing Review: If you intend to continue to collect data from human subjects or to analyze private, identifiable data collected from human subjects, beyond the expiration date of this protocol, you must [submit a Renewal Application](#) to the IRB Office 45 days prior to the expiration date. If IRB Approval of your protocol expires, all human subject research activities including enrollment of new subjects, data collection and analysis of identifiable, private information must cease until the Renewal Application is approved. If work on the human subject portion of your project is complete and you wish to close the protocol, please [submit a Closure Report](#) to irb@umd.edu.

Modifications: Any changes to the approved protocol must be approved by the IRB before the change is

implemented, except when a change is necessary to eliminate an apparent immediate hazard to the subjects. If you would like to modify an approved protocol, please [submit an Addendum request](#) to the IRB Office.

Unanticipated Problems Involving Risks: You must promptly report any unanticipated problems involving risks to subjects or others to the IRB Manager at 301-405-0678 or jsmith@umresearch.umd.edu

Additional Information: Please contact the IRB Office at 301-405-4212 if you have any IRB-related questions or concerns. Email: irb@umd.edu

The UMCP IRB is organized and operated according to guidelines of the United States Office for Human Research Protections and the United States Code of Federal Regulations and operates under Federal Wide Assurance No. FWA00005856.

1204 Marie Mount Hall
College Park, MD 20742-5125
TEL 301.405.4212
FAX 301.314.1475
irb@umd.edu
<http://www.umresearch.umd.edu/IRB>

Appendix E: Consent/Assent Forms

University of Maryland College Park
Adolescent Consent Form (completed by adolescents over 18)

Date _____

Initials _____

Project Title	Testing Predictors of Risk
Purpose of the Study	<i>This research is being conducted by Drs. Jude Cassidy and Carl Lejuez at the University of Maryland, College Park. We are inviting you to participate in this research project because you have been participating in an ongoing study in our lab about adolescent risky behaviors. The purpose of this research project is to test the relation between adolescents' thoughts and emotions and their engagement in risky behaviors. We also wish to examine the extent to which risky behaviors are related to environmental and biological factors. We believe this research can ultimately be helpful in identifying adolescents who are likely to engage in risk behaviors before they begin doing so and allow for prevention efforts to help prevent the development of such behaviors.</i>
Procedures	<i>The procedures involve a 30- to 45-minute session today. During the session, you will complete questionnaires that ask about your thoughts and experiences with your parents. You will also complete a writing task and a computerized color-naming task while two sensors are connected to your fingers that record electrical activity in the skin. The electrical recording equipment is non-invasive and involves attaching the two sensors to your fingers with Velcro straps. For your participation today, you will receive \$15.</i>
Potential Risks and Discomforts	<i>There may be some risks from participating in this research study. You may experience mild and temporary frustration or distress as a result of completing the questionnaires and the two laboratory tasks. However, this distress is likely to be minimal and no greater than that you would experience in everyday life. You are free to withdraw from the study at any time without penalty.</i>
Potential Benefits	<i>There is no promise of direct benefits to you or your parents for participating in this study. We hope that, in the future, other people might benefit from this study through improved understanding of the occurrence of risky behavior in adolescents.</i>

<p>Confidentiality</p>	<p><i>All information collected is confidential and your name will not be identified at any time "to the extent permitted by law." To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below. The Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The Certificate of Confidentiality does not prevent the researchers from disclosing voluntarily, without your consent, information that would identify you as a participant in the research project under the following circumstances. Possible exceptions to confidentiality include cases in which evidence of abuse to children or impaired persons is uncovered. Further, if at any time you provide information that suggests you might hurt yourself, referrals for mental health services will be provided. The data you provide in this research study, without your name attached, will be grouped with data from other participants if the results of the study are used in scientific reports or presentations.</i></p> <p><i>Any potential loss of confidentiality will be minimized by storing data in a secure locked laboratory, with locked cabinets and password-protected computers.</i></p>
<p>Medical Treatment</p>	<p><i>The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.</i></p>
<p>Right to Withdraw and Questions</p>	<p><i>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.</i></p>

	<p><i>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator, Dr. Carl Lejuez at: Department of Psychology, University of Maryland, College Park, MD 20742, clejuez@umd.edu, (301) 405-5932 or Dr. Jude Cassidy, jcassidy@umd.edu, (301) 405-4973.</i></p>	
Participant Rights	<p><i>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</i></p> <p style="text-align: center;">University of Maryland College Park Institutional Review Board Office 1204 Marie Mount College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678</p> <p><i>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</i></p>	
Statement of Consent	<p><i>Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.</i></p> <p><i>If you agree to participate, please sign your name below.</i></p>	
Signature and Date	PARTICIPANT NAME [Please Print]	
	PARTICIPANT SIGNATURE	
	DATE	

University of Maryland College Park
Adolescent Assent Form (completed by adolescents under 18)

Project Title	Testing Predictors of Risk
Purpose of the Study	<i>This research is being conducted by Drs. Jude Cassidy and Carl Lejuez at the University of Maryland, College Park. We are inviting you to participate in this research project because you have been participating in an ongoing study in our lab about adolescent risky behaviors. The purpose of this research project is to test the relation between adolescents' thoughts and emotions and their engagement in risky behaviors. We also wish to examine the extent to which risky behaviors are related to environmental and biological factors. We believe this research can ultimately be helpful in identifying adolescents who are likely to engage in risk behaviors before they begin doing so and allow for prevention efforts to help prevent the development of such behaviors.</i>
Procedures	<i>The procedures involve a 30- to 45-minute session today. During the session, you will complete questionnaires that ask about your thoughts and experiences with your parents. You will also complete a writing task and a computerized color-naming task while two sensors are connected to your fingers that record electrical activity in the skin. The electrical recording equipment is non-invasive and involves attaching the two sensors to your fingers with Velcro straps. For your participation today, you will receive \$15.</i>
Potential Risks and Discomforts	<i>There may be some risks from participating in this research study. You may experience mild and temporary frustration or distress as a result of completing the questionnaires and the two laboratory tasks. However, this distress is likely to be minimal and no greater than that you would experience in everyday life. You are free to withdraw from the study at any time without penalty.</i>
Potential Benefits	<i>There is no promise of direct benefits to you or your parents for participating in this study. We hope that, in the future, other people might benefit from this study through improved understanding of the occurrence of risky behavior in adolescents.</i>

<p>Confidentiality</p>	<p><i>All information collected is confidential and your name will not be identified at any time "to the extent permitted by law." To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below. The Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The Certificate of Confidentiality does not prevent the researchers from disclosing voluntarily, without your consent, information that would identify you as a participant in the research project under the following circumstances. Possible exceptions to confidentiality include cases in which evidence of abuse to children or impaired persons is uncovered. Although your parents will not be able to see your study responses, your guardian will be informed immediately if your study responses indicate suicidal thoughts or behaviors. The data you provide in this research study, without your name attached, will be grouped with data from other participants if the results of the study are used in scientific reports or presentations.</i></p> <p><i>Any potential loss of confidentiality will be minimized by storing data in a secure locked laboratory, with locked cabinets and password-protected computers.</i></p>
<p>Medical Treatment</p>	<p><i>The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.</i></p>
<p>Right to Withdraw and Questions</p>	<p><i>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized</i></p>

	<p>or lose any benefits to which you otherwise qualify.</p> <p>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator, Dr. Carl Lejuez at: Department of Psychology, University of Maryland, College Park, MD 20742, clejuez@umd.edu, (301) 405-5932 or Dr. Jude Cassidy, jcassidy@umd.edu, (301) 405-4973.</p>	
Participant Rights	<p>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</p> <p style="text-align: center;">University of Maryland College Park Institutional Review Board Office 1204 Marie Mount College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678</p> <p><i>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</i></p>	
Statement of Assent	<p>Your signature indicates that you have read this assent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will receive a copy of this signed assent form.</p> <p><i>If you agree to participate, please sign your name below.</i></p>	
Signature and Date	PARTICIPANT NAME [Please Print]	
	PARTICIPANT SIGNATURE	
	DATE	

University of Maryland College Park
Adolescent Consent Form (completed by parent)

Project Title	Testing Predictors of Risk
Purpose of the Study	<i>This research is being conducted by Drs. Jude Cassidy and Carl Lejuez at the University of Maryland, College Park. We are inviting you to participate in this research project because you have been participating in an ongoing study in our lab about adolescent risky behaviors. The purpose of this research project is to test the relation between adolescents' thoughts and emotions and their engagement in risky behaviors. We also wish to examine the extent to which risky behaviors are related to environmental and biological factors. We believe this research can ultimately be helpful in identifying adolescents who are likely to engage in risk behaviors before they begin doing so and allow for prevention efforts to help prevent the development of such behaviors.</i>
Procedures	<i>The procedures for your child involve a 30- to 45-minute session today. During the session, your child will complete questionnaires that ask about his/her thoughts and experiences with parents. He/she will also complete a writing task and a computerized color-naming task while two sensors are connected to his/her fingers that record electrical activity in the skin. The electrical recording equipment is non-invasive and involves attaching the two sensors to his/her fingers with Velcro straps. For your child's participation today, he/she will receive \$15.</i>
Potential Risks and Discomforts	<i>There may be some risks from participating in this research study. Your child may experience mild and temporary frustration or distress as a result of completing the questionnaires and the two laboratory tasks. However, this distress is likely to be minimal and no greater than that your child would experience in everyday life. Your child is free to withdraw from the study at any time without penalty.</i>
Potential Benefits	<i>There is no promise of direct benefits to you or your child for participating in this study. We hope that, in the future, other people might benefit from this study through improved understanding of the occurrence of risky behavior in adolescents.</i>

<p>Confidentiality</p>	<p><i>All information collected is confidential and your child's name will not be identified at any time "to the extent permitted by law." To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below. The Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The Certificate of Confidentiality does not prevent the researchers from disclosing voluntarily, without your consent, information that would identify you as a participant in the research project under the following circumstances. Possible exceptions to confidentiality include cases in which evidence of abuse to children or impaired persons is uncovered. Although you will not be able to see your child's study responses, you will be informed immediately and given referrals for getting your child help if his/her study responses indicate suicidal thoughts or behaviors. The data your child provides in this research study, without his/her name attached, will be grouped with data from other participants if the results of the study are used in scientific reports or presentations.</i></p> <p><i>Any potential loss of confidentiality will be minimized by storing data in a secure locked laboratory, with locked cabinets and password-protected computers.</i></p>
<p>Medical Treatment</p>	<p><i>The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.</i></p>
<p>Right to Withdraw and Questions</p>	<p><i>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if</i></p>

	<p><i>you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.</i></p> <p><i>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator, Dr. Carl Lejuez at: Department of Psychology, University of Maryland, College Park, MD 20742, clejuez@umd.edu, (301) 405-5932 or Dr. Jude Cassidy, jcassidy@umd.edu, (301) 405-4973.</i></p>	
Participant Rights	<p><i>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</i></p> <p style="text-align: center;">University of Maryland College Park Institutional Review Board Office 1204 Marie Mount College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678</p> <p><i>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</i></p>	
Statement of Consent	<p><i>Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.</i></p> <p><i>If you agree to participate, please sign your name below.</i></p>	
Signature and Date	PRINTED NAME OF ADOLESCENT	
	PRINTED NAME OF PARENT	
	PARTICIPANT SIGNATURE	
	DATE	

University of Maryland College Park
Parent Consent Form

Project Title	Testing Predictors of Risk
Purpose of the Study	<i>This research is being conducted by Drs. Jude Cassidy and Carl Lejuez at the University of Maryland, College Park. We are inviting you to participate in this research project because you have been participating in an ongoing study in our lab about adolescent risky behaviors. The purpose of this research project is to test the relation between adolescents' thoughts and emotions and their engagement in risky behaviors. We also wish to examine the extent to which risky behaviors are related to environmental and biological factors. We believe this research can ultimately be helpful in identifying adolescents who are likely to engage in risk behaviors before they begin doing so and allow for prevention efforts to help prevent the development of such behaviors.</i>
Procedures	<i>The procedures involve a 30- to 45-minute session today. During the session, you will complete a questionnaire that asks about your thoughts. You will also complete a writing task and a computerized color-naming task. For your participation today, you (and your spouse, if present) will receive \$15 total. For your participation today, your family will receive a total of \$30 (\$15 for adolescent, \$15 for parent[s], regardless of the number of parents).</i>
Potential Risks and Discomforts	<i>There may be some risks from participating in this research study. You may experience mild and temporary frustration or distress as a result of completing the questionnaire and the two laboratory tasks. However, this distress is likely to be minimal and no greater than that you would experience in everyday life. You are free to withdraw from the study at any time without penalty.</i>
Potential Benefits	<i>There is no promise of direct benefits to you or your child for participating in this study. We hope that, in the future, other people might benefit from this study through improved understanding of the occurrence of risky behavior in adolescents.</i>

<p>Confidentiality</p>	<p><i>All information collected is confidential and your name will not be identified at any time "to the extent permitted by law." To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below. The Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The Certificate of Confidentiality does not prevent the researchers from disclosing voluntarily, without your consent, information that would identify you as a participant in the research project under the following circumstances. Possible exceptions to confidentiality include cases in which evidence of abuse to children or impaired persons is uncovered. Further, if at any time you provide information that suggests you might hurt yourself, referrals for mental health services will be provided. The data you provide in this research study, without your name attached, will be grouped with data from other participants if the results of the study are used in scientific reports or presentations.</i></p> <p><i>Any potential loss of confidentiality will be minimized by storing data in a secure locked laboratory, with locked cabinets and password-protected computers.</i></p>
<p>Medical Treatment</p>	<p><i>The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.</i></p>
<p>Right to Withdraw and Questions</p>	<p><i>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized</i></p>

	<p><i>or lose any benefits to which you otherwise qualify.</i></p> <p><i>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator, Dr. Carl Lejuez at: Department of Psychology, University of Maryland, College Park, MD 20742, clejuez@umd.edu, (301) 405-5932 or Dr. Jude Cassidy, jcassidy@umd.edu, (301) 405-4973.</i></p>	
Participant Rights	<p><i>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</i></p> <p style="text-align: center;">University of Maryland College Park Institutional Review Board Office 1204 Marie Mount College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678</p> <p><i>This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.</i></p>	
Statement of Consent	<p><i>Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.</i></p> <p><i>If you agree to participate, please sign your name below.</i></p>	
Signature and Date	PARTICIPANT NAME [Please Print]	
	PARTICIPANT SIGNATURE	
	DATE	

Appendix F: Coping with Children’s Negative Emotions Scale – Adolescent Version
(Adolescent Report)

Coping with Children’s Negative Emotions Scale – Adolescent Version

Instructions: In the following items, please indicate on a scale from 1 (very unlikely) to 7 (very likely) the likelihood that that your mother responds to you in the ways listed for each item. Please read each item carefully and respond as honestly and sincerely as you can. For each response, please circle a number from 1-7.

Response Scale:	1	2	3	4	5	6	7
	Very Unlikely		Medium				Very Likely
1. When my mother sees me becoming angry at a close friend, she usually:							
a. becomes uncomfortable and uneasy in dealing with my anger	1	2	3	4	5	6	7
b. encourages me to express my anger	1	2	3	4	5	6	7
c. talks to me to calm me down	1	2	3	4	5	6	7
d. tells me not to make such a big deal out of it	1	2	3	4	5	6	7
e. gets angry at me for losing my temper	1	2	3	4	5	6	7
f. helps me think of things to do to solve the problem	1	2	3	4	5	6	7
2. When I get down because I've had a bad day, my mother usually:							
a. tells me I really have nothing to be sad about	1	2	3	4	5	6	7
b. tries to get me to think of the good things that happened	1	2	3	4	5	6	7
c. listens to me talk about my feelings	1	2	3	4	5	6	7
d. becomes obviously uncomfortable when she sees I'm feeling down	1	2	3	4	5	6	7
e. helps me think of things to do to get my problem solved	1	2	3	4	5	6	7
f. tells me to straighten up and stop sulking around the house	1	2	3	4	5	6	7
3. When I get anxious about performing in a recital or a sporting event, my mother usually:							
a. helps me think of things to do to make sure I do my best	1	2	3	4	5	6	7
b. yells at me for becoming so anxious	1	2	3	4	5	6	7
c. tries to calm me down by helping me take my mind off things	1	2	3	4	5	6	7
d. tells me not to make such a big deal out of it	1	2	3	4	5	6	7
e. encourages me to talk about what is making me so anxious	1	2	3	4	5	6	7
f. gets anxious about dealing with my nervousness	1	2	3	4	5	6	7
4. When I get angry because I can't get something I really want, my mother usually:							
a. tries to make me feel better by making me laugh	1	2	3	4	5	6	7
b. helps me think of other ways to go about getting what I want	1	2	3	4	5	6	7
c. gets upset with me for becoming so angry	1	2	3	4	5	6	7
d. becomes uncomfortable and doesn't want to deal with me	1	2	3	4	5	6	7
e. tells me I'm being silly for getting so angry	1	2	3	4	5	6	7
f. encourages me to talk about my angry feelings	1	2	3	4	5	6	7
5. When I get sad because I've had my feelings hurt by a friend, my mother usually:							
a. gets nervous dealing with my sad feelings	1	2	3	4	5	6	7
b. encourages me to talk about what is bothering me	1	2	3	4	5	6	7
c. tries to cheer me up	1	2	3	4	5	6	7
d. tells me that things aren't as bad as they seem	1	2	3	4	5	6	7
e. gets angry at me for not being more in control of things	1	2	3	4	5	6	7
f. helps me think of ways to help make the problem better	1	2	3	4	5	6	7

Response Scale:	1	2	3	4	5	6	7
	Very Unlikely			Medium		Very Likely	

- 6. When my mother sees me become anxious about something at school, she usually:**
- | | |
|--|---------------|
| a. tells me that I'm making too big a deal out of it | 1 2 3 4 5 6 7 |
| b. becomes nervous and uneasy in dealing with my anxiety | 1 2 3 4 5 6 7 |
| c. gets angry at me for not dealing with things better | 1 2 3 4 5 6 7 |
| d. encourages me to talk about what is making me nervous | 1 2 3 4 5 6 7 |
| e. helps me think of things to do to solve the problem | 1 2 3 4 5 6 7 |
| f. helps comfort and soothe my anxious feelings | 1 2 3 4 5 6 7 |
- 7. When I get angry at a family member, my mother:**
- | | |
|---|---------------|
| a. tries to help us resolve the conflict | 1 2 3 4 5 6 7 |
| b. threatens to punish me | 1 2 3 4 5 6 7 |
| c. tells me I'm over-reacting | 1 2 3 4 5 6 7 |
| d. tries to help me calm down | 1 2 3 4 5 6 7 |
| e. encourages me to let my angry feelings out | 1 2 3 4 5 6 7 |
| f. becomes very uneasy and avoids dealing with me | 1 2 3 4 5 6 7 |
- 8. When I get upset because I miss someone I care about, my mother usually:**
- | | |
|--|---------------|
| a. becomes nervous dealing with me and my feelings | 1 2 3 4 5 6 7 |
| b. encourages me to talk about my feelings for this person | 1 2 3 4 5 6 7 |
| c. tries to get me to think about other things | 1 2 3 4 5 6 7 |
| d. tells me that I have nothing to be upset about | 1 2 3 4 5 6 7 |
| e. gets upset with me for not being in control of my feelings | 1 2 3 4 5 6 7 |
| f. helps me think of ways to get in touch with the person I miss | 1 2 3 4 5 6 7 |
- 9. When I become nervous about some social situation that I have to face (such as a date or a party), my mother usually:**
- | | |
|---|---------------|
| a. tries to calm me down by pointing out how much fun I will have | 1 2 3 4 5 6 7 |
| b. gives me advice about what to do in the social situation | 1 2 3 4 5 6 7 |
| c. gets angry at me for being so emotional | 1 2 3 4 5 6 7 |
| d. prefers not to deal with my nervousness | 1 2 3 4 5 6 7 |
| e. encourages me to express my feelings | 1 2 3 4 5 6 7 |
| f. tells me I'm making a big deal out of nothing | 1 2 3 4 5 6 7 |

Appendix G: Coping with Children's Negative Emotions Scale – Adolescent Version
(Mother Report)

Coping with Children's Negative Emotions Scale – Adolescent Version

Instructions: In the following items, please indicate on a scale from 1 (very unlikely) to 7 (very likely) the likelihood that you would respond in the ways listed for each item. Please read each item carefully and respond as honestly and sincerely as you can. For each response, please circle a number from 1-7.

Response Scale:	1	2	3	4	5	6	7
	Very Unlikely		Medium		Very Likely		
1. When I see my teenager becoming angry at a close friend, I usually:							
a.	become uncomfortable and uneasy in dealing with his/her anger	1	2	3	4	5	6 7
b.	encourage him/her to express his/her anger	1	2	3	4	5	6 7
c.	talk to him/her to calm him/her down	1	2	3	4	5	6 7
d.	tell him/her not to make such a big deal out of it	1	2	3	4	5	6 7
e.	get angry at him/her for losing his/her temper	1	2	3	4	5	6 7
f.	help him/her think of things to do to solve the problem	1	2	3	4	5	6 7
2. When my teenager gets down because he/she has had a bad day, I usually:							
a.	tell him/her that he/she really has nothing to be sad about	1	2	3	4	5	6 7
b.	try to get him/her to think of good things that happened	1	2	3	4	5	6 7
c.	listen to him/her talk about his/her feelings	1	2	3	4	5	6 7
d.	become obviously uncomfortable when I see he/she is feeling down	1	2	3	4	5	6 7
e.	help him/her think of things to do to get his/her problem solved	1	2	3	4	5	6 7
f.	tell him/her to straighten up and stop sulking around the house	1	2	3	4	5	6 7
3. When my teenager gets anxious about performing in a recital or a sporting event, I usually:							
a.	help him/her think of things to do to make sure he/she does his/her best	1	2	3	4	5	6 7
b.	yell at him/her for becoming so anxious	1	2	3	4	5	6 7
c.	try to calm him/her down by helping him/her take his/her mind off things	1	2	3	4	5	6 7
d.	tell him/her not to make such a big deal out of it	1	2	3	4	5	6 7
e.	encourage him/her to talk about what is making him/her so anxious	1	2	3	4	5	6 7
f.	get anxious about dealing with his/her nervousness	1	2	3	4	5	6 7

Response Scale:	1	2	3	4	5	6	7
	Very Unlikely		Medium		Very Likely		

4. When my teenager gets angry because he/she can't get something that he/she really wants, I usually:

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| a. try to make him/her feel better by making him/her laugh | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b. help him/her think of other ways to go about getting what he/she wants | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c. get upset with him/her for becoming so angry | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d. become uncomfortable and don't want to deal with him/her | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e. tell him/her he/she is being silly for getting so angry | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f. encourage him/her to talk about his/her angry feelings | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5. When my teenager gets sad because he/she has had his/her feelings hurt by a friend, I usually:

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| a. get nervous dealing with his/her sad feelings | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b. encourage my teenager to talk about what is bothering him/her | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c. try to cheer him/her up | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d. tell him/her that things aren't as bad as they seem | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e. get angry at him/her for not being more in control of things | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f. help him/her think of ways to help make the problem better | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

6. When I see my teenager become anxious about something at school, I usually:

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| a. tell him/her that he/she is making too big a deal out of it | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b. become nervous and uneasy in dealing with his/her anxiety | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c. get angry at him/her for not dealing with things better | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d. encourage him/her to talk about what is making him/her nervous | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e. help him/her think of things to do to solve the problem | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f. help comfort and soothe his/her anxious feelings | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Response Scale:	1	2	3	4	5	6	7
	Very Unlikely		Medium		Very Likely		

7. When my teenager gets angry at a family member, I usually:

- | | |
|--|---------------|
| a. try to help them resolve the conflict | 1 2 3 4 5 6 7 |
| b. threaten to punish him/her | 1 2 3 4 5 6 7 |
| c. tell him/her he/she is over-reacting | 1 2 3 4 5 6 7 |
| d. try to help him/her calm down | 1 2 3 4 5 6 7 |
| e. encourage him/her to let his/her angry feelings out | 1 2 3 4 5 6 7 |
| f. become very uneasy and avoid dealing with him/her | 1 2 3 4 5 6 7 |

8. When my teenager gets upset because he/she misses someone he/she cares about, I usually:

- | | |
|---|---------------|
| a. become nervous dealing with him/her and his/her feelings | 1 2 3 4 5 6 7 |
| b. encourage him/her to talk about his/her feelings for this person | 1 2 3 4 5 6 7 |
| c. try to get him/her to think of other things | 1 2 3 4 5 6 7 |
| d. tell him/her he/she has nothing to be upset about | 1 2 3 4 5 6 7 |
| e. get upset with him/her for not being in control of his/her feelings | 1 2 3 4 5 6 7 |
| f. help him/her think of ways to get in touch with the person he/she misses | 1 2 3 4 5 6 7 |

9. When my teenager becomes nervous about some social situation that he/she has to face (such as a date or a party), I usually:

- | | |
|---|---------------|
| a. try to calm him/her down by pointing out how much fun he/she will have | 1 2 3 4 5 6 7 |
| b. give him/her advice about what to do in the social situation | 1 2 3 4 5 6 7 |
| c. get angry at him/her for being so emotional | 1 2 3 4 5 6 7 |
| d. prefer not to deal with his/her nervousness | 1 2 3 4 5 6 7 |
| e. encourage him/her to express his/her feelings | 1 2 3 4 5 6 7 |
| f. tell him/her he/she is making a big deal about nothing | 1 2 3 4 5 6 7 |

Appendix H: White Bear Suppression Inventory

White Bear Suppression Inventory (WBSI)

This survey is about thoughts. There are no right or wrong answers, so please respond honestly to each of the items below. Please circle the appropriate number to indicate how much you agree with each statement.

1. There are things I prefer not to think about.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

2. Sometimes I wonder why I have the thoughts I do.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

3. I have thoughts that I cannot stop.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

4. There are images that come to mind that I cannot erase.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

5. My thoughts frequently return to one idea.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

6. I wish I could stop thinking of certain things.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

7. Sometimes my mind races so fast I wish I could stop it.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

8. I always try to put problems out of mind.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

9. There are thoughts that keep jumping into my head.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

10. There are things that I try not to think about.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

11. Sometimes I really wish I could stop thinking.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

12. I often do things to distract myself from my thoughts.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

13. I have thoughts that I try to avoid.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

14. There are many thoughts that I have that I don't tell anyone.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

15. Sometimes I stay busy just to keep thoughts from intruding on my mind.

Strongly Disagree	Disagree	Neutral/ Don't Know	Agree	Strongly Agree
1	2	3	4	5

Appendix I: Stream of Consciousness Writing

Stream of Consciousness Writing Task Instructions

Please spend a few minutes writing down whatever information is present in your awareness from moment to moment. Your report might include, but is not limited to, descriptions of thoughts, ideas, memories, feelings, fantasies, plans, sensations, or observations. Basically, anything that comes to mind from moment to moment. Please continue writing until I tell you to stop.

Place a check mark in the right margin of the paper each time a thought or feeling related to the hurtful event you just identified comes to mind.

Appendix J: Emotional Stroop Words

Pos Emotion	Neg Emotion	Pos Social Emo	Neg Social Emo	Neutral	Neutral Practice
BEAUTY	CRUEL	ADORE	ABANDON	AVERAGE	BORDER
CHARITY	CURSE	AFFECTION	ALONE	BANNER	BROAD
HEAVEN	DISEASE	CARING	DESPAIR	INSTANCE	DECIDE
JUSTICE	DISTURB	COMFORT	DIVORCE	LOBBY	DOUBLE
LIBERTY	MISTAKE	DEPEND	HURT	MIDDLE	FOLLOW
PARADISE	NASTY	EMBRACE	INSECURE	QUANTITY	LOBBY
PURE	TIRED	INTIMATE	LONELY	REGION	MEMORY
SMART	UGLY	LOVING	LOSS	SYMBOL	SIGHT
WEALTH	VIOLENCE	SUPPORT	REJECT	THEORY	SPELL
WISDOM	WICKED	TRUST	SORROW	WATCH	WANDER
					GARMENT
					POSTER

Appendix K: Youth Risk Behavior Survey

Youth Risk Behavior Survey

For each item, please circle the best answer.

1. In the past year, how many times have you been in a car without wearing a seatbelt?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

2. In the past year, how many times have you ridden a bike without wearing a helmet?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

3. In the past year, how many times have you crossed a busy street recklessly
- for example when there is no crosswalk or if the traffic signal says not to cross

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

4. In the past year, how many times have you ridden in a car driven by someone who had been drinking alcohol?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

5. In the past year, how many times have you *been in* a physical fight?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

6. In the past year, how many times have you *started* a physical fight?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

7. In the past year, how many times have you carried a weapon (gun, club, knife) outside your home?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

8. In the past year, how many times have you used a weapon or other object to hurt someone?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

9. In the past year, how many times have you stolen something from a store?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

10. In the past year, how many times have you stolen something from another person?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

11. In the past year, how many times have you gambled money (even a dollar) *in person*?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

12. In the past year, how many times have you gambled money (even a dollar) *on the internet*?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

13. In the past year, how many times have you visited inappropriate websites (site containing pornography, violent or gruesome pictures, promoting illegal activities, or hateful messages towards a person or group of people)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

14. In the past year, how many times have you participated in cybersex (sexual activity or arousal through communication by computer)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

15. In the past year, how many times have you met an adult in person who you met on the internet?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

16. In the past year, how many times have you had a drink of alcohol (even a sip)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

• How many total times have you had a drink of alcohol?

(a) How many of these times were **without** your parents or guardians (You **did not** have your parent's permission)

(b) How many of these times were **with** your parents or guardians? (You had the permission of your parents to drink)

The SUM of the boxes to the left must equal the number in the box above

17. In the past year, how many times have you had 5 or more drinks of alcohol in the same day?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

18. During your life, on how many days have you had at least one drink of alcohol?

0 days	1 or 2 days	3 to 9 days	10 to 19 days	20 to 39 days	40 to 99 days	100 or more days
---------------	--------------------	--------------------	----------------------	----------------------	----------------------	-------------------------

19. How old were you when you had your first drink of alcohol other than a few sips?

- (0) I have never had a drink of alcohol other than a few sips
- (1) 8 years old or younger
- (2) 9 or 10 years old
- (3) 11 or 12 years old
- (4) 13 or 14 years old
- (5) 15 or 16 years old
- (6) 17 years old or older

20. During the past 30 days, on how many days did you have at least one drink of alcohol?

0 days	1 or 2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 to 29 days	All 30 days
---------------	--------------------	--------------------	--------------------	----------------------	----------------------	--------------------

21. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?

0 days	1 day	2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 or more days
---------------	--------------	---------------	--------------------	--------------------	----------------------	------------------------

22. During the past 30 days, how did you **usually** get the alcohol you drank?

- (0) I did not drink alcohol during the past 30 days
- (1) I bought it in a store such as a liquor store, convenience store, supermarket, discount store, or gas station
- (2) I bought it at a restaurant, bar, or club
- (3) I bought it at a public event such as a concert or sporting event

- (4) I gave someone else money to buy it for me
- (5) Someone gave it to me
- (6) I took it from a store or family member
- (7) I got it some other way

23. During the past 30 days, on how many days did you have at least one drink of alcohol **on school property**?

0 days	1 or 2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 to 29 days	All 30 days
---------------	--------------------	--------------------	--------------------	----------------------	----------------------	--------------------

24. In the past year, how many times have you smoked a cigarette (even a puff)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

25. In the past year, how many times have you smoked more than 5 cigarettes in a day?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

26. How old were you when you smoked a whole cigarette for the first time?

- (0). I have never smoked a whole cigarette
- (1). 8 years old or younger
- (2). 9 or 10 years old
- (3). 11 or 12 years old
- (4). 13 or 14 years old
- (5). 15 or 16 years old
- (6). 17 years old or older

27. During the past 30 days, on how many days did you smoke cigarettes?

0 days	1 or 2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 to 29 days	All 30 days
---------------	--------------------	--------------------	--------------------	----------------------	----------------------	--------------------

28. During the past 30 days, on the days you smoked, how many cigarettes did you smoke **per day**?

- (0) I did not smoke cigarettes during the past 30 days
- (1) Less than 1 cigarette per day
- (2) 1 cigarette per day
- (3) 2 to 5 cigarettes per day
- (4) 6 to 10 cigarettes per day
- (5) 11 to 20 cigarettes per day

(6) More than 20 cigarettes per day

29. During the past 30 days, on how many days did you smoke cigarettes **on school property**?

0 days	1 or 2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 to 29 days	All 30 days
---------------	--------------------	--------------------	--------------------	----------------------	----------------------	--------------------

30. Have you ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days?

Yes	No
------------	-----------

31. During the past 12 months, did you ever try **to quit** smoking cigarettes?

(2) I did not smoke during the past 12 months

(1) Yes

(0) No

32. During the past 30 days, on how many days did you use **chewing tobacco, snuff, or dip**, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?

0 days	1 or 2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 to 29 days	All 30 days
---------------	--------------------	--------------------	--------------------	----------------------	----------------------	--------------------

33. During the past 30 days, on how many days did you use **chewing tobacco, snuff, or dip on school property**?

0 days	1 or 2 days	3 to 5 days	6 to 9 days	10 to 19 days	20 to 29 days	All 30 days
---------------	--------------------	--------------------	--------------------	----------------------	----------------------	--------------------

34. In the past year, how many times have you used marijuana?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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35. During your life, how many times have you used marijuana?

0 times	1 or 2 times	3 to 9 times	10 to 19 times	20 to 39 times	40 to 99 times	100 or more times
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36. How old were you when you tried marijuana for the first time?

(0) I have never tried marijuana

(1) 8 years old or younger

(2) 9 or 10 years old

(3) 11 or 12 years old

- (4) 13 or 14 years old
- (5) 15 or 16 years old
- (6) 17 years old or older

37. During the past 30 days, how many times did you use marijuana?

0 times	1 or 2 times	3 to 9 times	10 to 19 times	20 to 39 times	40 or more times
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38. During the past 30 days, how many times did you use marijuana **on school property?**

0 times	1 or 2 times	3 to 9 times	10 to 19 times	20 to 39 times	40 or more times
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39. In the past year, how many times have you used cocaine or crack?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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40. In the past year, how many times have you used heroin?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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41. In the past year, how many times have you used methamphetamines including Speed or Crystal Meth?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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42. In the past year, how many times have you used hallucinogens including PCP?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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43. In the past year, how many times have you sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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44. In the past year, how many times have you used **ecstasy** (also called MDMA)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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45. In the past year, how many times have you used **derbisol** (also called dirt, durb, db)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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46. During your life, how many times have you taken **steroid pills or shots** without a doctor's prescription?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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47. During the past 12 months, has anyone offered, sold, or given you an illegal drug **on school property**?

Yes	No
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48. During the past 12 months, how many times have you used prescription drugs not as prescribed (Oxycontin, Xanax, Ritalin, DXM, Triple C, Robitussin)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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49. In the past year, how many times have you used any other drug not listed above (do not include medications given to you by your parents)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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50. In the past year, how many times have you used a needle to inject any of the drugs above?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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51. In the past year, how many times did you re-use a needle from someone else (even if you cleaned it)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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52. In the past year, how many times have you given or received oral sex?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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If you have had oral sex in the past year, with how many different people has this occurred?

(a) How many of these people were your boyfriend/girlfriend?

(b) How many of these people were **NOT** your boyfriend/girlfriend?

The **SUM** of the boxes to the left must equal the number in the box above

53. Have you ever had sexual intercourse?

Yes	No
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54. How old were you when you had sexual intercourse for the first time?

- (0) I have never had sexual intercourse
- (1) 11 years old or younger
- (2) 12 years old
- (3) 13 years old
- (4) 14 years old
- (5) 15 years old
- (6) 16 years old
- (7) 17 years old or older

55. Did you drink alcohol or use drugs before you had sexual intercourse the **last time**?

- (2) I have never had sexual intercourse
- (1) Yes
- (0) No

56. The **last time** you had sexual intercourse, did you or your partner use a condom?

- (2) I have never had sexual intercourse
- (1) Yes
- (0) No

57. The **last time** you had sexual intercourse, what **one** method did you or your partner use to **prevent pregnancy**? (Select only **one** response.)

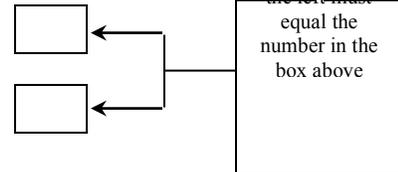
- (0) I have never had sexual intercourse
- (1) No method was used to prevent pregnancy
- (2) Birth control pills
- (3) Condoms
- (4) Depo-Provera (injectable birth control)
- (5) Withdrawal
- (6) Some other method
- (7) Not sure

58. In the past year, how many times have you had sexual intercourse?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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If you have had intercourse in the past year, with how many different people has this occurred?

- (a) How many of these people were your boyfriend/girlfriend?
- (b) How many of these people were **NOT** your boyfriend/girlfriend?



59. In the past year, how many times have you had intercourse with no condom?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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• If you have had intercourse in the past year without a condom, how many people did you **NOT** use a condom with, even once?

(a) How many of these people were your boyfriend/girlfriend?

(b) How many of these people were **NOT** your boyfriend/girlfriend?

The **SUM** of the boxes to the left must equal the number in the box above

60. In the past year, how many times have you kissed someone on the lips (not including family)?

Zero	Once	A few times	1-3 times per month	1-3 times per week	Almost every day or more
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• If you have kissed someone on the lips in the past year, how many people did you kiss?

(a) How many of these people were your boyfriend/girlfriend?

(b) How many of these people were **NOT** your boyfriend/girlfriend (**this does not include family members**)?

The **SUM** of the boxes to the left must equal the number in the box above

61. How do **you** describe your weight?

- (0) Very underweight
- (1) Slightly underweight
- (2) About the right weight
- (3) Slightly overweight
- (4) Very overweight

62. Which of the following are you trying to do about your weight?

- (0) **Lose** weight
- (1) **Gain** weight
- (2) **Stay** the same weight
- (3) I am **not trying to do anything** about my weight

63. During the past 30 days, did you **exercise** to lose weight or to keep from gaining weight?

Yes	No
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64. During the past 30 days, did you **eat less food, fewer calories, or foods low in fat** to lose weight or to keep from gaining weight?

Yes	No
-----	----

65. During the past 30 days, did you **go without eating for 24 hours or more** (also called fasting) to lose weight or to keep from gaining weight?

Yes	No
-----	----

66. During the past 30 days, did you **take any diet pills, powders, or liquids** without a doctor's advice to lose weight or to keep from gaining weight? (Do **not** include meal replacement products such as Slim Fast.)

Yes	No
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67. During the past 30 days, did you take steroids or supplements without a doctor's advice to build muscle mass?

Yes	No
-----	----

68. During the past 30 days, did you **vomit or take laxatives** to lose weight or to keep from gaining weight?

Yes	No
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69. During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose?

Yes	No
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70. Are you sexually attracted to:

- (1) Only males
- (2) Mostly males
- (3) More to males but significantly to females
- (4) About equally to males and females
- (5) More to females but significantly to males
- (6) Mostly females
- (7) Only females
- (8) Neither males nor females

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