

ABSTRACT

Title of dissertation: I GET HIGH WITH A LITTLE HELP FROM MY FRIENDS (AND FAMILY): CLOSE RELATIONSHIPS, DISTRESS TOLERANCE, AND RISK TAKING IN ADOLESCENCE

Katherine Babcock Ehrlich, Doctor of Philosophy, 2012

Dissertation directed by: Professor Jude Cassidy
Department of Psychology

Despite substantial efforts to educate adolescents about the consequences of their risky decisions, adolescent risk behavior remains a significant social and public health problem. The goal of this research was to examine the role of individual and contextual predictors of adolescent health risk behavior and risk-taking measured in the laboratory. Specifically, I examined parent-adolescent relationships and friendships as two contextual predictors of risk, and I measured adolescent distress tolerance as an individual predictor of risk behavior in a longitudinal study of adolescents and their families. In Aim 1, I used a variable-centered approach to examine concurrent and prospective predictors of adolescent risk-taking. In Aim 2, I took a person-oriented statistical approach to the study of adolescent risk-taking by examining whether there are

particular groups of adolescents with particular relationship characteristics who were most likely to engage in risky behavior, and whether these groups of adolescents would be more likely to take risks if they had low distress tolerance. Aim 1 analyses revealed that adolescents were most likely to engage in health risk behaviors when they had negative parent-adolescent relationships or positive friendships, but distress tolerance was unrelated to risk-taking. None of the predictors was related to laboratory risk behavior. Aim 2 analyses revealed that the influence of adolescents' relationships on their risk-taking behaviors depended on their ability to tolerate and manage their emotions. Among adolescents with high levels of friendship conflict, distress tolerance served as a protective factor against health risk behavior. Among high distress tolerant adolescents, those who had high parent-adolescent conflict engaged in greater risk-taking than adolescents who had high friendship conflict. Across all analyses, none of the predictors accounted for Time 2 risk behavior after accounting for Time 1 risk-taking in the models. Overall, these findings suggest that adolescents' relationship experiences and distress tolerance relate to risk-taking behaviors, even at an age when adolescents are engaging in relatively low levels of risk behavior. Future research should continue investigating predictors of risk behavior across multiple levels of analysis, with an emphasis on biological, individual, relational, and environmental factors that contribute to risk-taking.

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by

Katherine Babcock Ehrlich

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Advisory Committee:

Professor Jude Cassidy, Chair
Professor Nathan Fox
Professor Carl Lejuez
Professor Elizabeth Redcay
Professor Tracy Riggins

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I get High with a Little Help from my Friends (and Family):
Close Relationships, Distress Tolerance, and Risk-Taking in Adolescence

Chapter 1: Introduction

A hallmark characteristic of adolescence is the emergence of risk-taking behaviors, including drug and alcohol use, sexual activity, and participation in delinquent and dangerous behaviors (Florsheim, 2003; Johnson & Gerstein, 1998). Despite substantial efforts to educate adolescents about the consequences of their risky decisions, adolescent risk behavior remains a significant social and public health problem (Steinberg, 2008; Williams, Holmbeck, & Greenley, 2002). For example, the most recent findings from the Youth Risk Behavior Survey suggest that almost half of high school students are current alcohol users, over a quarter of adolescents engage in binge-drinking, and nearly 30% of adolescents have ridden in a car driven by someone who had been drinking (Centers for Disease Control & Prevention, 2010). In addition, of the 35% of high school students who are currently sexually active, almost 40% did not use a condom during their last sexual encounter, despite the fact that 90% of high school students receive AIDS or HIV education and presumably have learned the risks of such behavior (Centers for Disease Control & Prevention, 2010). These rates of adolescent risk-taking are concerning, and efforts to understand the precursors, causes, and correlates of risk-taking are needed.

Numerous theories have been proposed to explain adolescent risk-taking (for reviews, see Boyer, 2006, Buhi & Goodson, 2007; Petraitis, Flay, & Miller, 1995; Spooner, 1999). These theories often focus on cognitions about risk-taking (e.g., perceptions about individuals who take risks), social learning processes (e.g., the influence of media on risk-taking), intrapersonal characteristics (e.g., low self-esteem,

distress intolerance), and environmental factors (e.g., dangerous neighborhoods). Indeed, adolescents are thought to engage in risky behavior for a number of different reasons, and it is likely that risk-taking is a multiply determined phenomenon that can be traced back to biological, cognitive, social, and interpersonal influences.

Additional theories have focused on family and peer contextual factors that may play an important role in shaping adolescents' risky behavior (e.g., Patterson, Reid, & Dishion, 1992; Steinberg, 2001, 2008), and evidence suggests that adolescents' close relationships influence their risk-taking behaviors (see Appendix A for a review). Two relationships that have been of considerable interest in relation to risk-taking include the parent-adolescent relationship and adolescents' friendships (described in more detail below). A large body of research supports the notion that the quality of the parent-adolescent relationship influences adolescent risk behavior (e.g., Bradford, Vaughn, & Barber, 2008; Brody & Forehand, 1993). Similarly, adolescents' experiences with friends are thought to be an important contributor to risk behavior (e.g., Dishion & Owen, 2002).

In addition to examination of relationship contexts, another factor that has been considered as a possible contributor to risk-taking is adolescents' emotion regulation capacities (e.g., Simons, Conger, & Whitbeck, 1988; Simons & Gaher, 2005). This thinking is based on the notion that one reason individuals seek out illicit substances (and engage in other potentially dangerous activities) is in an attempt to alleviate their negative emotions. Distress tolerance, or the capacity to tolerate negative emotions, is a specific component of adolescents' emotion regulation abilities that is thought to influence adolescent to risk-taking behaviors (Daughters et al., 2009; Steinberg, Krejci, Collett, Brandon, Ziedonis, & Chen, 2007). Although most research on distress tolerance

and risk behavior has focused on adults, evidence suggests that greater distress tolerance is associated with fewer risk-taking behaviors in adolescence as well (Daughters et al., 2009; Steinberg et al., 2007).

To date, studies have examined the separate connections among adolescent risk-taking, relationships, and distress tolerance, but no study has examined the relative influence of these three predictors as possible contributors to adolescents' risk-taking behaviors. This is a significant gap in our understanding of adolescent risk-taking because it leaves open the question of whether these factors represent unique or overlapping contributors to adolescent risk behavior. Moreover, although a large number of studies have examined the joint influence of parent-adolescent and peer relationships, much of this work has focused on adolescents' peer experiences more broadly, rather than their close friendships specifically. Thus, the goal of this research study is to examine the role of parent-adolescent relationships, friendships, and distress tolerance as predictors of adolescent risk behavior in a longitudinal study of adolescents and their families. Below, I provide a brief review of current evidence for connections between adolescent risk behavior and parent-adolescent relationships and friendships. I then describe the construct of distress tolerance, and review both theory and research on the connections between distress tolerance and risky behavior. After that, I describe a series of study aims that are designed to address limitations of previous research. This work has the potential to integrate seemingly disparate lines of research by testing a model that takes into account adolescents' relationships and emotion regulation capacities as unique contributors in the prediction of risky behaviors.

Parent-Adolescent Conflict and Adolescent Risk-Taking

Of all the close relationships in adolescence that have been examined in relation to adolescent risk-taking, the parent-adolescent relationship has received the most attention (e.g., Arbona & Power, 2003; DiClemente et al., 2001; Duncan, Duncan, & Hops, 1998; Guo, Hill, Hawkins, Catalano, & Abbott, 2002; Tinsley, Lees, & Sumartojo, 2004). Theory and research suggest that adolescents who have poor relationships with their parents are more likely to engage in risky behaviors (see Spooner, 1999, for a review). This connection between adolescents' relationships with their parents and risky behavior has been demonstrated in both cross-sectional and longitudinal studies (e.g., Anderson & Henry, 1994; Parker & Benson, 2004; Webster, Hunter, & Keats, 1994; Wills & Cleary, 1996).

Although conflict is a component of any close relationship (Collins & Laursen, 1992) and can even provide beneficial learning opportunities for adolescents (e.g., conflict resolution skills; Smetana, Yau, & Hanson, 1991), high levels of discord in the parent-adolescent relationship have been shown to relate to adolescent risk-taking behavior (Ary et al., 1999; Bradford, Vaughn, & Barber, 2008; Brody & Forehand, 1993; Crowell, Beauchaine, McCauley, Smith, Vasilev, & Stevens, 2008; Hawkins et al., 1992; Ingoldsby et al., 2006). Adolescents with hostile, avoidant, or conflictual relationships with parents are more likely than others to engage in drug use and other antisocial activities (Ingoldsby et al., 2006; Patterson, Reid, & Dishion, 1992; Scaramella & Leve, 2004). For example, Brody and Forehand (1993) found that the frequency of mother-adolescent conflict predicted later substance use. Similarly, Ary et al. (1999) identified a link between high levels of parent-adolescent conflict and problem behaviors.

These studies suggest that conflict creates stress and fosters a lack of emotional support in the parent-adolescent relationship, which contributes to adolescents' involvement in risky behaviors, such as drug and alcohol use, sexual activity with multiple partners, and delinquent or dangerous behaviors. Alternatively, it is possible that adolescent involvement in risky behaviors generates problems in the quality of the parent-adolescent relationship. Longitudinal studies on the connection between parent-adolescent relationships and adolescent risk-taking allow researchers to examine the directionality of this link; for example, Shelton and van den Bree (2010) found some evidence for bidirectional links between parent-adolescent relationship quality and adolescent substance use. Although it is possible that risk-taking behaviors lead to greater parent-adolescent conflict over time, most research to date has focused on whether parent-adolescent conflict influences later risk-taking behavior. In the present investigation, I will examine concurrent associations between parent-adolescent conflict and adolescent risk-taking as well as change in risk-taking behavior over a one-year period.

To date, most studies of parent-adolescent conflict and adolescent risk-taking have focused on adolescents' relationship with mothers, and less is known about the role of father-adolescent conflict for general adolescent functioning. Nevertheless, it is important to understand the unique role that mothers and fathers play in the development of adolescents' risk-taking behaviors. It may be that adolescent-mother and adolescent-father relationships are similarly linked to adolescent risk-taking behavior. One study, however, found that only self-reported mother-adolescent conflict (and not father-adolescent conflict) was linked to substance use (Farrell & White, 1998). Another

possibility is that adolescents are only likely to engage in dangerous risk-taking behaviors when they have high levels of conflict with both parents. The present investigation is designed to identify whether particular patterns of adolescents' conflict with their mothers and fathers are associated with elevated engagement in risk-taking behaviors.

Friendships and Adolescent Risk-Taking

In addition to the parent-adolescent relationship, researchers have turned to the behavior of adolescents' close friends as a possible explanation for why adolescents choose to engage in substance use, delinquent, and risky behaviors (e.g., Urberg, Degirmencioglu, & Pilgrim, 1997). Friends tend to engage in similar levels of risk-taking behavior (Lynskey, Fergusson, & Horwood, 1998; Prinstein, Boergers, & Spirito, 2001; Urberg, Luo, Pilgrim, & Degirmencioglu, 2003), and adolescents frequently report engaging in risk behavior in the company of friends (e.g., van der Vorst, Engels, & Burk, 2010). Much of the focus on adolescents' friendships has been on the extent to which friends influence each other's risk behavior (e.g., Bot, Engels, Knibbe, & Meeus, 2005; Laursen, Hafen, Kerr, & Stattin, 2012). Fewer studies have focused on the *quality* of friendships as a predictor of risky behavior, but available evidence suggests that there may be a link between the quality of adolescents' close friendships and adolescent risk-taking behaviors.

Available evidence on the links between friendship quality and risk-taking is inconsistent. In some studies, positive associations between friendship quality and risky behavior have been reported (e.g., Urberg et al., 2003). One hypothesis is that friends with a high quality relationship will be more likely to try new activities, and adolescents may have more confidence to engage in risky behaviors when in the company of a close

friend that they can trust. Based on the social control theory (Hirschi, 1969), it could be high commitment to a friend could lead to increased risk-taking behavior if the friend engages in such activity. Thus, after the formation of a high-quality friendship, adolescent risk-taking behavior may be largely influenced by the risk-taking behavior of the friend. In a longitudinal study of adolescent alcohol and cigarette use, adolescents reported on positive and conflictual qualities of their closest friendship (Urberg et al., 2003). Researchers identified links between friendship quality and adolescent alcohol and cigarette use one year later. In this study, lower reports of conflict and higher reports of positive friendship quality were associated with greater involvement in substance use. These findings suggest that a high quality friendship may make adolescents slightly more likely to engage in risky behavior.

Other studies, however, have found negative associations between friendship quality and risk behaviors (e.g., McElhaney, Immele, Smith, & Allen, 2006; Poulin, Dishion, & Haas, 1999). Indeed, adolescents who engage in risky behaviors have relationships that are less satisfying and more contentious than adolescents who do not take part in risky behaviors (Dishion, Andrews, & Crosby, 1995). According to this perspective, low-quality relationships may be reflective of the type of adolescent in the relationship. In other words, it could be that adolescents who are involved in risk-taking are less focused on developing high quality, long-lasting friendships. Additionally, it is possible that adolescents with poor quality friendships are more likely to engage in risky behaviors, perhaps in an effort to gain approval and acceptance from friends.

What might account for these inconsistent findings across studies? As demonstrated in several studies (e.g., Bot et al., 2005; McElhaney et al., 2006), one

possibility is that adolescents may not be equally influenced by the quality of their close friendships. It could be that certain adolescent characteristics, such as attachment or emotion regulation capacities, influence the strength of the association between friendship quality and risky behavior. Additionally, it is possible that discrepant findings emerge when studies examine only the role of friendships without also examining the quality of the parent-adolescent relationship. Thus, an important extension for future work will be to examine multiple factors that may contribute to risk-taking using multiple methodologies to assess these factors. Similarly, longitudinal studies will help researchers determine the ways in which qualities about the friendship can predict future risky behavior.

Adolescent Distress Tolerance and Risk-Taking

Another factor that has been linked to individuals' tendencies to engage in risk-taking behavior is the ability to tolerate distress (Brandon, Herzog, Juliano, Irvin, Lazev, & Simmons, 2003; Brown, Lejuez, Kahler, & Strong, 2002; Daughters, Lejuez, Bornovalova, Kahler, Strong, & Brown, 2005; Daughters, Lejuez, Kahler, Strong, & Brown, 2005; Quinn, Brandon, & Copeland, 1996). Distress tolerance is defined as the ability to withstand negative emotional states (Simons & Gaher, 2005). According to this perspective, individuals who are unable to handle and experience negative emotion-states are more likely than others to turn toward substance use as an avoidant coping mechanism (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004; Brandon et al., 2003; Brown et al., 2002; Simons & Gaher, 2005). An emerging body of research, focused mainly on adult drug users, suggests that distress tolerance is a predictor of substance use. Quinn et al. (1996) found that persistence on difficult tasks (i.e., distress tolerance during

tasks such as mirror tracing and anagrams) was linked to cigarette smoking in adults. Similarly, several studies have identified a connection between persistence on difficult behavioral tasks and success with attempts to quit smoking (Brandon et al., 2003; Brown et al., 2002), suggesting that greater distress tolerance may play a role in the ability to tolerate the negative feelings associated with drug withdrawal.

Although most of this research has been conducted with adult samples, findings from several studies suggest that similar links between distress tolerance and risky behavior exist in adolescent populations as well (Steinberg et al., 2007). In one study, (Steinberg et al., 2007) adolescent smokers reported lower levels of distress tolerance compared to non-smokers. Another study provided the first longitudinal evidence for the role of distress tolerance as a predictor of adolescent substance use (Daughters et al., 2009). In this study, adolescents with lower distress tolerance reported more frequent substance use one year later. Additional research is needed to determine both current and longitudinal associations between distress tolerance and risky behaviors (including both substance use and risky sexual behavior) in adolescence.

The Present Study

Risk behavior among adolescents is alarmingly high, and it is critical for research efforts to determine characteristics of adolescents who are most likely to engage in risky behavior in order to focus prevention programs on those who are most in need. Thus, the present study was designed to address gaps in previous research in several ways. First, the present study will examine the connection between parent-adolescent conflict and risky behavior using a laboratory assessment of conflict. Previous research on the connection between parent-adolescent conflict and adolescent risk-taking suggests that

conflict may influence adolescent risk behaviors, but these studies are often limited methodologically by the reliance on self-report assessments of conflict. This is perhaps not surprising in light of the cost and difficulty of observational assessments of parent-adolescent conflict. Given that parents and adolescents often perceive and report about conflict in their relationships differently (Ehrlich, Cassidy, & Dykas, 2011; Smith & Forehand, 1986), alternative methods, such as observations of parent-adolescent conflict, are important to incorporate into multi-method research designs. In the present study, I will use observations of parent-adolescent conflict, incorporating the frequency, intensity, *and* content of conflict in the parent-adolescent relationship. This is a significant methodological advancement and represents an effort to move beyond simple self-report assessments of the parent-adolescent relationship when trying to understand family relationship processes involved in adolescent risk behavior.

A second extension of this research is the examination of the ways in which multiple relationships contribute to the prediction of adolescent risk-taking. Many studies examining the connections between adolescent relationships and risk-taking behaviors focus on the role of a single relationship (e.g., parent-adolescent relationships *or* peer relationships) as a specific predictor of risk (e.g., Brown, Clasen, & Eicher, 1986; Cottrell et al., 2003; Flewelling & Bauman, 1990; Prinstein et al., 2011). This tendency may be due to the fact that theoretical and statistical models quickly become complex when multiple relationships are considered. Yet adolescents do not experience each relationship in isolation, and without simultaneously examining the relative influence of multiple relationships, studies may obscure detection of the ways in which adolescents' relationships overlap to influence risk behavior.

Finally, the present study will make use of a behavioral measure of adolescent distress tolerance, which is a novel approach to measuring adolescents' emotion regulation capacities. Most studies of adolescents' emotion regulation capacities rely on informants to report about adolescents' regulatory abilities. Despite the popularity of informant reports of adolescents' emotion regulation, a number of researchers have called to move beyond informant reports and single assessments of emotion regulation (e.g., Cole, Martin, & Dennis, 2004). Thus, I will use a validated behavioral assessment of distress tolerance that taps adolescents' abilities to persist in goal-directed behaviors despite experiencing emotional distress.

In summary, the present study is designed to examine multiple relational contexts as well as adolescents' emotion regulation capacities as unique contributors to adolescent risk behavior. This design reflects the widely accepted understanding that both individual characteristics and environmental factors shape adolescents' behavior in ways that are inherently interconnected. Moreover, this research design allows for examination of whether certain risk factors are only problematic under specific conditions. For example, conflictual relationships may contribute to adolescents' motivation to engage in risky activities only when adolescents lack sufficient resources to tolerate and regulate their negative emotions. Thus, the present study takes a dynamic and flexible perspective on factors that might contribute to adolescent risk behavior, incorporating predictors that might serve as contributors to risk behavior only in certain contexts or for certain adolescents. Below, I provide additional details about the specific aims and hypotheses of the study.

Aim 1. My first aim is to examine the connections among parent-adolescent relationships, friendships, distress tolerance, and risk behavior. As described in more detail in Appendix A, numerous studies have examined the links between parent-adolescent relationships and adolescent risk-taking behavior. Similarly, findings have emerged to suggest that the quality of adolescents' friendship experiences may be related to risky behaviors. At the same time, a separate line of research has focused on negative reinforcement behaviors, and these studies indicate that adolescents who are intolerant of distress engage in risk-taking as a coping strategy to alleviate negative affect (Daughters et al., 2009). To date, however, no study has considered the ways in which adolescents' social experiences *and* distress intolerance jointly predict adolescent risk-taking. This is a significant gap in the literature because adolescents' relationships with their parents and friends are thought to be two critical factors that influence adolescent risk behavior, and it is unclear how these factors are unique from adolescents' emotion regulation capacities. For example, it could be that associations between these close relationships and risk-taking are merely artifacts of adolescents' distress tolerance. Thus, the first aim in the present study is designed to tease apart the ways in which these factors independently predict adolescent risk behavior.

In the present investigation, I will take a variable-centered approach to examine concurrent and prospective predictors of adolescent risk-taking using two assessments of risk: self-reported health risks (e.g., substance use, risky sexual activities) and risk-taking propensity in a laboratory setting. This analytical approach examines the ways in which the variables are interconnected in meaningful ways at a population level. Given compelling evidence that these factors are significant predictors of adolescent risk

behavior, I hypothesize that hostile parent-adolescent relationships will be uniquely associated with concurrent and prospective adolescent risk-taking behaviors. Further, I expect low distress tolerance to be associated with greater risk-taking. My examination of the links between friendship qualities and risk-taking will take an exploratory approach, given conflicting evidence about the ways in which friendship characteristics are thought to be associated with adolescent risk behavior.

Aim 2. In Aim 2, I will take a person-oriented statistical approach to the study of adolescent risk-taking by examining whether there are particular groups of adolescents who are most likely to engage in risky behavior. By taking a person-oriented perspective (von Eye, 2010), I will first identify subgroups of adolescents who share similar levels of conflict with their parents and best friends. For example, although some adolescents may have similar levels of conflict across relationship contexts, other adolescents may experience greater levels of conflict in one relationship compared to another. Thus, the first step of these analyses will be to identify different clusters of adolescents according to their experiences of conflict with parents and friends. Then, I will examine whether these groups of adolescents differ in their risk behavior.

Of course, increasing evidence suggests that conflict in relationships does not affect all adolescents in the same way (e.g., Adams & Laursen, 2007). For example, for adolescents who have generally positive and supportive relationships with their parents, periodic hostile exchanges may not have the same negative influence that may characterize adolescents who experience conflict in an unsupportive relationship. Similarly, adolescents whose emotions are well regulated and under control may not be as likely to engage in risky behaviors as a result of conflictual relationships compared to

adolescents who have difficulty handling their emotions and who face high levels of conflict in their relationships. As such, I will examine whether adolescent distress tolerance influences the extent to which relationship conflict predicts adolescent risk behavior. I hypothesize that four clusters of adolescents will emerge: one cluster will include adolescents who have low conflict with parents and friends, two clusters will have high levels of conflict with parents or friends (but not both), and a fourth cluster will have high levels of conflict with parents and friends. I predict that only adolescents who have high levels of conflict with parents and friends will engage in high levels of risk-taking behaviors. Further, consistent with previous research (Daughters et al., 2009), I hypothesize that adolescents who have low distress tolerance will engage in greater risk-taking. Finally, consistent with the notion that relationship conflict may not be equally detrimental for all adolescents, I hypothesize that adolescents who have high conflict with parents and friends and low distress tolerance will engage in the highest levels of risk-taking behaviors. As in Aim 1, I will investigate both concurrent and prospective engagement in health risk behavior.

In summary, the two aims outlined above are designed to investigate the multifaceted ways in which adolescents' relationships and distress tolerance may be related to their risk-taking behaviors (see Table 1 for a review of the aims and hypotheses). The present investigation includes the use of innovative methodologies (e.g., observations of parent-adolescent interactions, multiple assessments of risk-taking) to move beyond the field's traditional use of self-reports in investigations of predictors of risk behavior. Moreover, I plan to use a variety of statistical techniques (including path

analysis and cluster analysis) in an effort to uncover the complex ways that adolescent risk behavior may vary as a function of their close relationships and distress tolerance.

Table 1

Aims and Hypotheses Guiding the Present Study

Aim 1: Examine the associations among parent-adolescent conflict, friendship, distress tolerance, and risk-taking in adolescence, including (a) health risk behavior and (b) risk-taking propensity

H1a: Greater parent-adolescent conflict will be associated with greater adolescent risk-taking.

H1b: Greater adolescent distress tolerance will be associated with less adolescent risk-taking.

Research question: Are positive and negative friendship qualities associated with risk-taking?

Aim 2: Examine whether particular subgroups of adolescents are most likely to engage in health risk behavior as a function of parent-adolescent conflict, friendship conflict, and distress tolerance

H2a: Four subgroups of adolescents will emerge: (a) low levels of conflict with parents and friends, (b) high levels of conflict with friends but not parents, (c) high levels of conflict with parents but not friends, and (d) high levels of conflict with parents and friends

H2b: Adolescents who have high levels of conflict with parents and friends will engage in the greatest risk-taking behavior, relative to adolescents in the other clusters

H2c: Adolescents with low distress tolerance will engage in greater risk-taking relative to adolescents with high distress tolerance

H2d: A significant cluster membership \times distress tolerance interaction will emerge, such that adolescents with high conflict with parents and friends and low distress tolerance will engage in the greatest risk-taking behaviors

Chapter 2: Method

Participants. Participants were drawn from a sample of 320 adolescents ($M_{\text{age}} = 14.1$, $SD = .50$; 45% girls) and their parents from a pre-existing longitudinal study examining adolescent distress intolerance and risk-taking. From this larger sample, 223 families participated in an extended laboratory visit that included assessment of close relationships in adolescence. In the present study, adolescents ranged in age from 12 – 17 ($N = 223$, $M = 14.1$, $SD = .94$). This subsample included 214 mothers and 135 fathers. Families were recruited in a large metropolitan area through newspaper advertisements and flyers in public schools. The subsample is racially diverse: 51.6% Caucasian, 35.9% African American, 6.3% Hispanic/Latino, 2.2% Asian/Southeast Asian, and 4.5% describing themselves as “Other.” Participants’ level of SES had considerable variation. Approximately 25% of families made \$55,000 or less, and 43% reported incomes greater than \$100,000 annually. For about 30% of the sample, the biological father did not live with the family. Adolescents were paid \$35 - \$50, with higher dollar amounts given to adolescents who participated longer on the distress tolerance task. Parents were each paid \$60 for their participation in the larger study.

Procedure. The University of Maryland Institutional Review Board reviewed and approved all study procedures and measures (see Appendix B for the approval letter). Families took part in a yearly laboratory visit that lasted approximately 2-3 hours. The average number of days between T1 and T2 assessments was 384.9 days ($SD = 49.5$ days; range = 224 – 574 days). As part of the visit, adolescents and their parents played two computer games, completed a variety of questionnaires, and participated in a videotaped discussion about disagreements in the relationship. When both the mother and father were present, adolescents completed the discussion twice. Because of central aims

that were part of the larger study, all mother-adolescent discussions took place prior to father-adolescent discussions.

Measures

Parent-adolescent conflict. Adolescents and their parents first completed a modified Topics of Conflict Checklist, a measure based on the original Issues Checklist (Prinz, Foster, Kent, & O’Leary, 1979) to assess adolescents’ levels of disagreement with their parents on 19 topics that parents and adolescents frequently disagree about, such as “chores,” “homework,” and “talking back to parents.” Participants rated their level of disagreement on each topic, with scores ranging from 1 (“*do not disagree*”) to 5 (“*disagree much*”). When adolescents had two parental figures, they completed the checklist twice, once for adolescent-mother disagreements and once for adolescent-father disagreements. Both mothers and fathers (when present) independently completed the same checklist for their perceptions of disagreements with their adolescent.

Later during the laboratory session, adolescents and their parents participated in an observational conflict task in which each dyad was instructed to discuss up to three previously identified topics of disagreement. A research assistant chose three topics for the discussion using reports on the topics of conflict checklist, selecting topics that were rated by the parent and adolescent as high in disagreement. Parent-adolescent dyads were instructed to discuss the first discussion topic until they reached a resolution or mutually decided that they were unable to resolve the disagreement. They were instructed to proceed to the second, and then third, topics, which were discussed until the topics were resolved or when the task ended (after 10 minutes). Thus, some parent-adolescent dyads

discussed only one topic, other dyads discussed two topics, and other dyads discussed all three topics during the task.

Adolescent and parent behaviors during the discussion were coded using the Conflict Task Coding System (Ziv, Cassidy, & Ramos-Marcuse, 2002), which is based on an earlier coding system by Kobak, Cole, Ferenz-Gillies, Fleming, and Gamble (1993). We have demonstrated the system's construct validity and internal consistency in previous examinations of parent-adolescent conflict (Dykas, Woodhouse, Ehrlich, & Cassidy, 2010; Ehrlich, Dykas, & Cassidy, 2012). The coding system is composed of three scales for parent behaviors and four scales for adolescent behaviors. Given the large body of research highlighting the links between *negative* parent-adolescent relationship qualities and risk-taking (e.g., Bradford et al., 2008; Ingoldsby et al., 2006), I focused on observations of parent and adolescent *hostility* during the discussion for the present study. The hostility scale assesses the amount of hostile or rejecting behaviors exhibited by parents and adolescents. Individuals who receive high scores on this scale might engage in sarcastic comments or smiles, dysfunctional anger, or aggressive posturing. Anger itself may be expressed during the task without leading to a high hostility score; rather, behaviors that indicate disgust or contempt toward the other person indicate hostility.

Participants received global scores (ranging from 1-7) for the scales based on coders' overall impression of participants' behaviors during the task. Six trained coders rated the discussions, and agreement was assessed continuously throughout the coding period. Coders were blind to all other adolescent and parent information. Two coders coded a randomly selected 25% of mother-adolescent and father-adolescent interactions. Coder disagreements were resolved through discussion during weekly reliability

meetings. To minimize the potential for bias, coders only coded one dyad within the family (when both parents participated). In addition, coders rated only adolescent or parent behaviors within the same dyad. Reliability was continuously monitored using intraclass correlation coefficients (ICCs) to maintain at least $\alpha = .80$ reliability throughout the coding period. In addition, coders took part in ongoing training meetings to prevent coder drift. A copy of the manual is available in Appendix C.

Friendship quality. Adolescents reported about their closest same-sex friendship using the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985), a 30-item questionnaire that measures perceptions of social support and negative interactions in relationships. The NRI contains ten conceptually distinct 5-point subscales, which typically load onto three factors, including *positivity*, *negativity*, and *relative power*. Connolly and Konarski (1994) found this scale to have good internal consistency and test-retest reliability. Furman (1996) reported that friends' reports on this scale are moderately to highly correlated, and scores are associated with behavioral observations of friend dyads. Based on Furman (1996), I will create a mean *Positivity in Friendship* score from the following subscales: *companionship*, *nurturance*, *instrumental aid*, *intimacy*, *affection*, *admiration*, and *reliable alliance* (e.g., share secrets and private feelings) and a mean *Negativity in Friendship* score by averaging responses on the *conflict* and *antagonism* subscales (e.g., hassle or nag one another). A copy of this measure is available in Appendix D.

Distress tolerance. Adolescents completed the Behavioral Indicator of Resiliency to Distress (BIRD; Daughters, Lejuez, Danielson, & Sargeant, 2006), which measures distress tolerance by examining how long a participant persists on a challenging task that

increases in difficulty until the task is virtually impossible to complete successfully. The computer task is based on a well validated version for adults and has been shown to reliably increase distress levels (Daughters, Lejuez, Kahler, et al., 2005; Daughters, Sargeant, Bornovalova, Gratz, & Lejuez, 2008, Daughters et al., 2009). The task has three levels, and the difficulty at each level is calibrated to each participant's performance. Adolescents were directed to click a green dot on the screen using a computer mouse before the dot disappears, and if they were successful they received one point; if they could not click the dot in time, the computer made a loud noise and no points were awarded. In order to maintain motivation for the task, participants were told in advance that their prize money would be based on task performance. Participants were allowed to quit the task at any time by clicking the 'quit game' button on the screen. Throughout the task, a point meter remained visible on the upper right hand screen that demonstrated how many points the adolescent had earned. Distress tolerance is measured by persistence on the task and can be examined as a continuous variable (latency in seconds to terminate) or a categorical variable (whether or not they terminated the task). Participants in the current study have completed this task at each wave of assessment.

Adolescent risk-taking behaviors. Adolescents completed a shortened form of the CDC Youth Risk Behavior Survey (YRBS; Centers for Disease Control and Prevention, 2001), which asks adolescents about their past year real world risk behaviors. This assessment covers a broad scope of risk-taking behaviors, with a specific emphasis on frequency of drug and alcohol use and risky sexual behaviors (e.g., not using a condom). The questionnaire, which was designed to follow trends in youth health behaviors that lead to later health and social problems, has been found to be reliable for

high school samples (Brener, Collins, Kann, Warren, & Williams, 1995). Following MacPherson et al. (2010), I set a requirement of 10% engagement in each risk behavior in order for it to be considered for inclusion in the composite score. I then eliminated risk behaviors that posed no imminent threat to adolescents (e.g., online gambling, looking at pornographic websites). Finally, I reduced the risk-taking variables to behaviors that are susceptible to peer pressure. Thus, the five-item composite score reflects dangerous activities that place adolescents at immediate risk for danger and are most likely to occur in the presence of peers. The five items in the composite include: alcohol and marijuana use, oral sex and intercourse, and riding in a car with someone who had been drinking. Following previous research (Lejuez et al., 2007; MacPherson et al., 2010), I dichotomized these behaviors (as yes/no for whether or not they had engaged in the behavior) to place the behaviors on the same metric and reduce the impact of the non-normality of the distributions. A copy of this measure is available in Appendix E.

Adolescent risk-taking propensity. Risk-taking propensity was measured in a laboratory context using the Balloon Analogue Risk Task – Youth version (BART-Y; Lejuez et al., 2007). In this task, participants were asked to inflate a set of 30 computer-animated balloons that have the capacity to explode if inflated beyond capacity. Participants earn a point for every successful pump, but they lose all points for a given trial if the balloon explodes. During each trial, participants can stop pumping the balloon and “bank” the accumulated points. New trials begin after the balloon popped or participants choose to bank their points for the previous trial. Participants are aware that each balloon will pop at a random point, and thus must decide how many pumps to give each balloon. The total number of points the adolescent banked during the game

determined the final prize. Following previous research with this task (Lejuez et al., 2002; MacPherson et al., 2010), I will use the average number of pumps on balloons adjusted to include only trials in which the balloon did not explode as the measure of adolescent risk-taking propensity. Lejuez and colleagues (2007) found that the BART is correlated with real world risk-taking behaviors, and White, Lejuez, and de Wit (2008) demonstrated the test-retest reliability of the BART.

Chapter 3: Results

Preliminary Analyses

Missing data. Of the 223 participating families, only 123 adolescents completed the conflict discussion task with both parents. Thus, in order to avoid a substantial reduction in sample size, I created a composite score of *Parent-Adolescent Hostile Conflict* using the mean of mother, father, and adolescent observations of hostility during the task. A principal components analysis supported the creation of a single composite score for parent-adolescent hostile conflict, with all four hostility values loading onto a single factor that accounted for 49.8% of the variance. Five families declined to participate in the parent-adolescent conflict discussions, citing concerns about being videotaped, and two adolescents did not complete the self-report friendship measure. In addition, a subset of adolescents did not participate in the follow-up laboratory assessment ($n = 46$). Examination of the pattern of missingness suggested that the data were missing completely at random, Little's MCAR test: $\chi^2(21) = 20.85, p = .47$. As such, I used full information maximum likelihood estimation to account for missing data in the measured variable path analyses when examining Aim 1 (Schafer & Graham, 2002). To examine Aim 2, I performed the cluster analysis and generalized linear model analysis using original data.

Comparison of families as a function of their participation in the study. I compared differences among three types of families: (a) two parents participated in the additional portion of the study, (b) one parent came to the additional portion, and (c) the family did not agree to participate in the study. One-way ANOVAs revealed that these

three groups of families did not differ on adolescent sex, Time 1 or 2 health risk behaviors, Time 1 or 2 BART scores, or Time 1 distress tolerance (all $ps > .10$).

In contrast, these groups of families differed in the age of the child, $F(2, 308) = 7.05, p = .001$. Follow-up comparisons revealed that, compared to adolescents who did not participate in the follow-up study, adolescents who participated with one or two parents were older (mean difference = .49, $p = .002$ for families with one parent and .47, $p = .001$ for two-parent families). No significant differences in age were found for participating families from one or two-parent families, however.

Families also differed in income across the groups, $F(2, 299) = 11.00, p < .001$. Follow-up comparisons revealed that one-parent families had the lowest income, followed by families that did not participate in the additional study, with two-parent families in this study having the highest income ($M_{diff} ps < .05$).

Differences in race also emerged across the three groups of families. Families who declined to participate in the additional portion of the study did not differ as a function of race. In contrast, one-parent families had a smaller proportion of white families than expected (observed $n = 28$, expected $n = 47$). In contrast, two-parent families had a greater proportion of white families than expected (observed $n = 82$, expected $n = 65$).

In summary, adolescents from two-parent families in the present study were older, wealthier, and more likely to be white than adolescents who did not participate in the study. Importantly, however, adolescents who participated in the additional study components did not differ in the core outcome variables (health risk behavior and laboratory risk behavior).

Descriptive statistics. I present the means, standard deviations, ranges, and intercorrelations among study variables in Table 2. As expected, adolescent age was positively correlated with both self-reported risk-taking and laboratory observations of risk behavior at Time 1 and Time 2. Unexpectedly, adolescent sex was only marginally associated with Time 1 self-reported risk behavior and was not associated with Time 2 self-reported risk behavior. In contrast, adolescent girls were significantly less risky than boys on the BART-Y at both Time 1 ($t[294] = -2.45, p = .015, d = .29$) and Time 2 ($t[228] = -1.93, p = .055, d = .26$). Notably, no race differences emerged in self-reports of risk behavior ($t(301) = .65, p = .52$). On the other hand, White adolescents were significantly riskier than minority adolescents on the BART-Y, ($t(284) = -3.64, p < .001, d = .43$). Family income was not associated with either self-reports of risk-taking at Time 1 ($r = -.02, p = .76$) or Time 2 ($r = .12, p = .11$). Family income was not associated with BART performance at Time 1 ($r = .10, p = .17$) but was correlated with BART scores at Time 2 ($r = .20, p = .01$).

Parent-adolescent hostile conflict behaviors observed during the conflict discussions were significantly associated with adolescent reports of conflict with their best friends, marginally associated with Time 1 self-reported risk behavior, and significantly correlated with Time 2 self-reported risk behavior. In contrast, parent-adolescent conflict scores were unrelated to Time 1 and Time 2 laboratory observations of risk behavior. Although adolescent age and sex were unrelated to parent-adolescent conflict scores, significant race differences emerged in observations of parent-adolescent hostile conflict: Minority families were rated as more hostile than White families, ($t(206) = 3.18, p = .001, d = .44$). Similarly, compared to White adolescents, minority adolescents

reported engaging in greater conflict with their friends, $t(206) = 3.39, p = .001, d = .47$.

Adolescent-reported conflict with friends was unrelated to adolescent age and sex.

Table 2

Descriptive Statistics and Intercorrelations Among Study Variables

Variable	Range	2	3	4	5	6	7	8	9	10	11	12	13
1. Adolescent Sex	–	.03	.13 [†]	.17*	.09	.15*	.00	-.07	-.43***	-.07	.00	-.03	.11
2. Adolescent Race	–	–	-.02	.47***	-.01	.20**	.20**	-.23***	-.02	-.23***	.04	.07	.30***
3. Adolescent Age	12 – 17		–	.06	.16*	.11	.00	.08	-.03	.08	.08	.08	.14 [†]
4. Family Income	\$5,000- 320,000			–	-.01	.10	-.23***	-.13 [†]	-.05	-.14*	.03	.12	.20**
5. T1 Health Risk	0 – 5				–	.17*	.11 [†]	.07	.08	.09	-.08	.58***	.11
6. T1 Lab Risk	0 – 100					–	-.01	-.11	-.05	-.13 [†]	.01	.10	.70***
7. T1 P-A Conflict	1 – 7						–	.16*	-.05	.15*	-.01	.16*	-.07
8. T1 Friend Conflict	1 – 4							–	.01	.94***	-.13 [†]	.16*	-.10
9. T1 Pos Friendship	1 – 4.9								–	.00	-.12 [†]	.09	-.01
10. T1 Neg Friendship	1 – 4									–	-.12 [†]	.13 [†]	-.14 [†]
11. T1 Adolescent DT	0 – 300										–	-.06	.02
12. T2 Health Risk	0 – 5											–	.12
13. T2 Lab Risk	0 – 77												–
<i>M</i>			14.1	\$106,202	1.1	39.5	2.9	1.6	3.5	1.6	211	1.5	40.8
<i>SD</i>			.94	\$60,475	1.1	16.2	1.41	.63	.69	.64	108	1.39	16.7

Note. Adolescent sex coded as 0 = female, 1 = male. Adolescent race coded as 0 = Minority, 1 = White. DT = Distress Tolerance. P-A

= Parent-Adolescent. Pos = Positive. Neg = Negative.

[†] $p < .10$. * $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Principal Analyses

Aim 1a. The analysis for Aim 1a focused on the degree to which parent-adolescent conflict, friendships, and distress tolerance were related to self-reported adolescent risk behavior at Time 1 and Time 2. Adolescent age and sex¹ were included in the model as covariates. Using measured variable path analysis (performed using LISREL 8.8 for Windows), I allowed all predictor variables to covary, and I included paths from each predictor variable to the risk behavior variable. As expected, adolescent age ($\beta = .14, p = .03$) was significantly associated with Time 1 risk behavior, and adolescent sex ($\beta = .14, p = .066$) was a marginally significant predictor, with boys reporting greater risk-taking than girls. In addition, adolescents' positive friendship experiences were positively associated with adolescent risk behavior at Time 1 ($\beta = .15, p = .05$; see Figure 1). Similarly, parent-adolescent hostile conflict was associated with adolescent risk-taking at Time 1 ($\beta = .12, p = .044$, one-tailed). In contrast, neither adolescent distress tolerance nor adolescents' negative friendship experiences were associated with adolescent risk behavior. Overall, the model explained 7% of the variance in adolescent risk behavior.

I then examined whether these predictors were associated with Time 2 risk behavior after controlling for Time 1 risk behavior. As expected, adolescent risk behavior was highly correlated from Time 1 to Time 2 ($\beta = .57, p < .001$; see Figure 2). After accounting for Time 1 risk behavior, however, none of the relationship variables was a significant predictor of Time 2 risk behavior, although family hostile conflict approached significance ($\beta = .10, p = .11$)². This model explained 36% of the variance in Time 2 risk behavior.

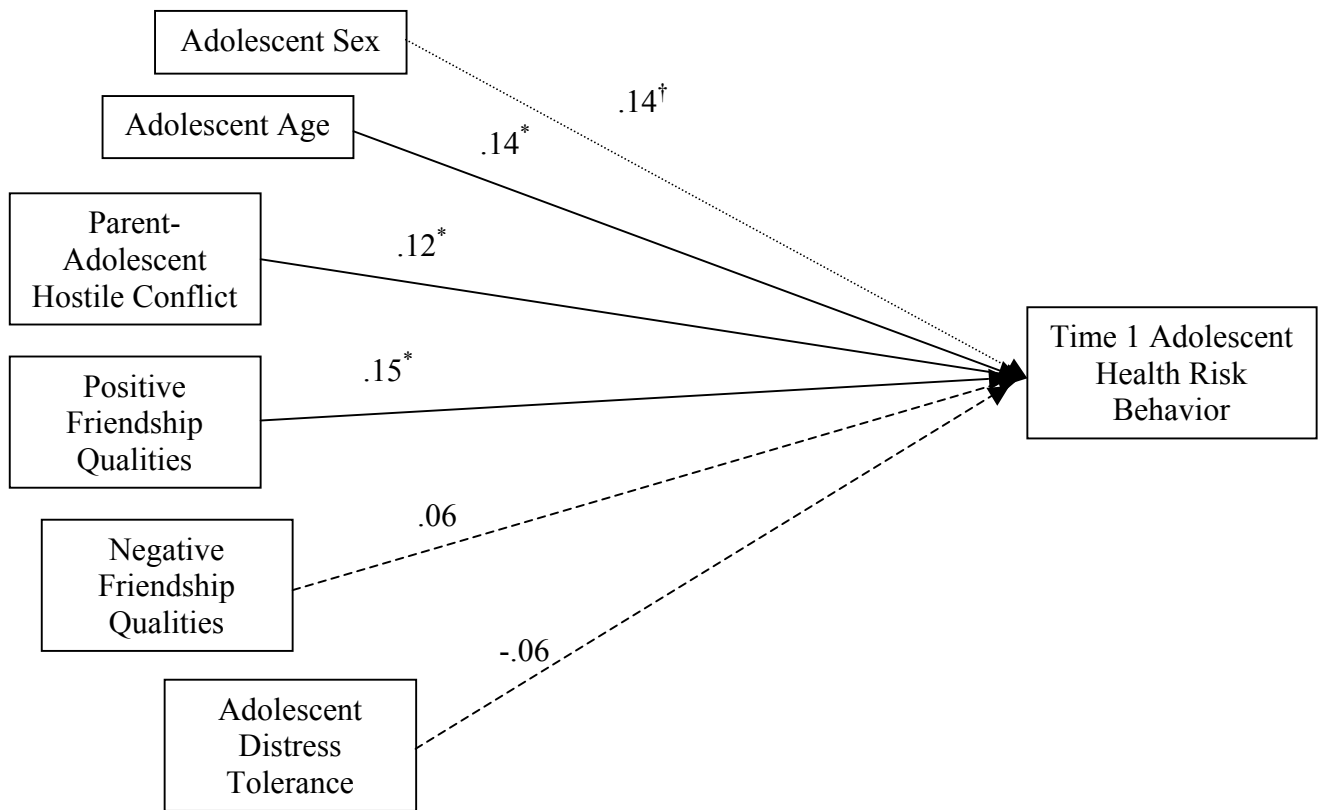


Figure 1. Prediction of Time 1 adolescent health risk behavior. Gender coded as 0 = female, 1 = male. Solid lines indicate significant paths, dotted lines indicate marginally significant paths, and dashed lines indicate non-significant paths. Coefficients are standardized values. (Parent-adolescent hostile conflict is significant at a one-tailed p value.)

[†] $p < .10$. * $p < .05$.

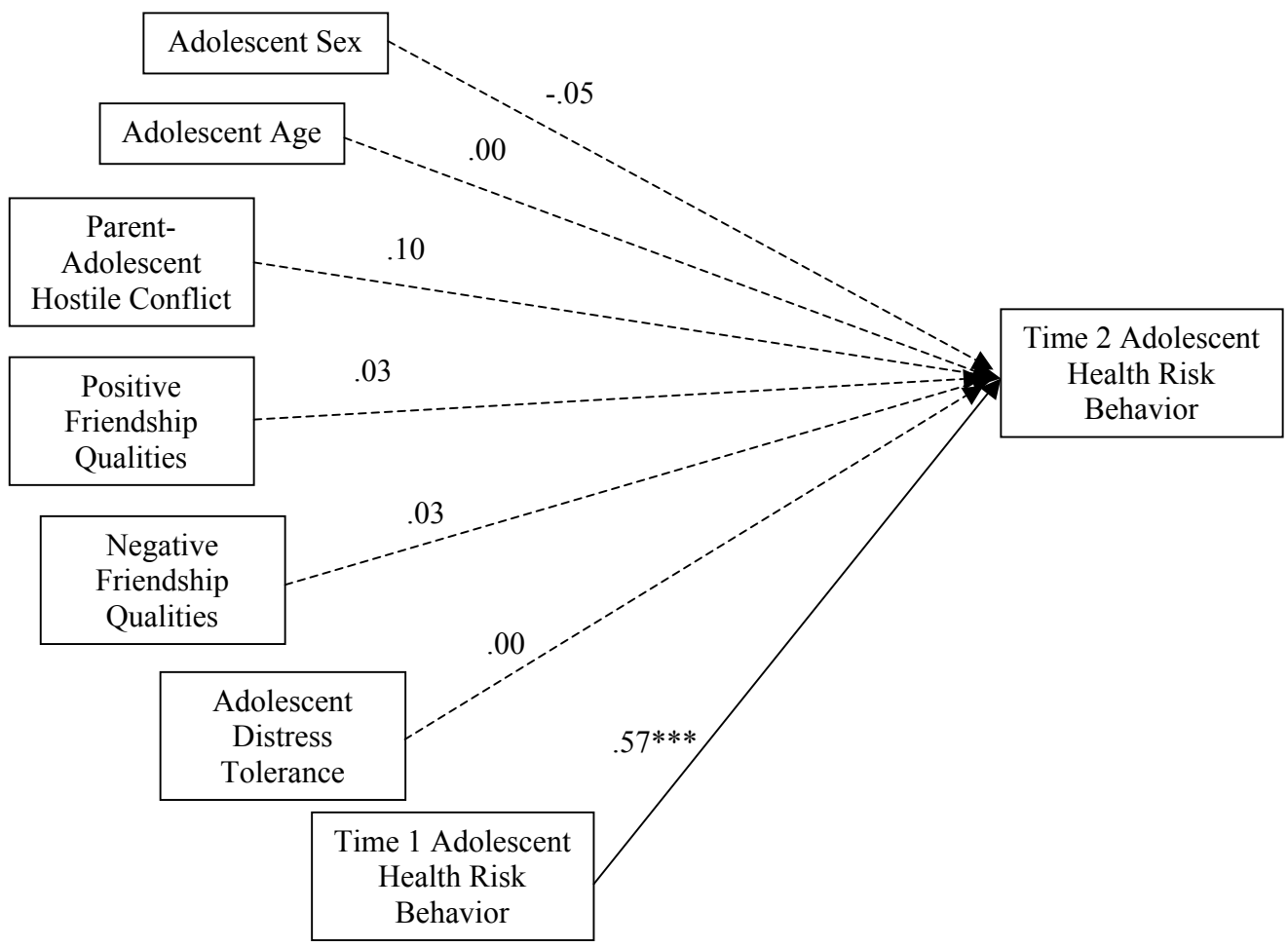


Figure 2. Prediction of Time 2 adolescent health risk behavior. Gender coded as 0 = female, 1 = male. Solid lines indicate significant paths, and dashed lines indicate non-significant paths. Coefficients are standardized values.

*** $p < .001$.

Aim 1b. I also examined the degree to which parent-adolescent conflict, friendships, and distress tolerance were related to risk-taking propensity on the BART-Y. In addition to adolescent age and sex, I included adolescent race and family income as covariates because preliminary analyses suggested that these variables were associated with BART-Y performance. Analyses for Aim 1b were conducted in the same manner described above using measured variable path analysis. Adolescent race emerged as a significant predictor of Time 1 laboratory risk-taking ($\beta = .16, p = .038$; see Figure 3). Family income was marginally associated with Time 1 laboratory risk behavior ($\beta = -.15, p = .064$). Parent-adolescent hostile conflict, adolescent friendships, and distress tolerance were unrelated to Time 1 risk-taking propensity. This model explained 6.4% of the variance in Time 1 laboratory risk-taking.

I then examined whether these predictors were associated with Time 2 laboratory risk behavior after controlling for Time 1 BART-Y scores. As expected, adolescent risk behavior was correlated from Time 1 to Time 2 ($\beta = .17, p = .029$; see Figure 4). In addition, adolescent race was a significant predictor of Time 2 laboratory risk behavior ($\beta = .22, p = .013$). Adolescent sex was marginally associated with Time 2 BART-Y scores ($\beta = .14, p = .10$). None of the other predictor variables was significantly associated with Time 2 risk-taking propensity, however. This model explained 15% of the variance in Time 2 laboratory risk behavior.

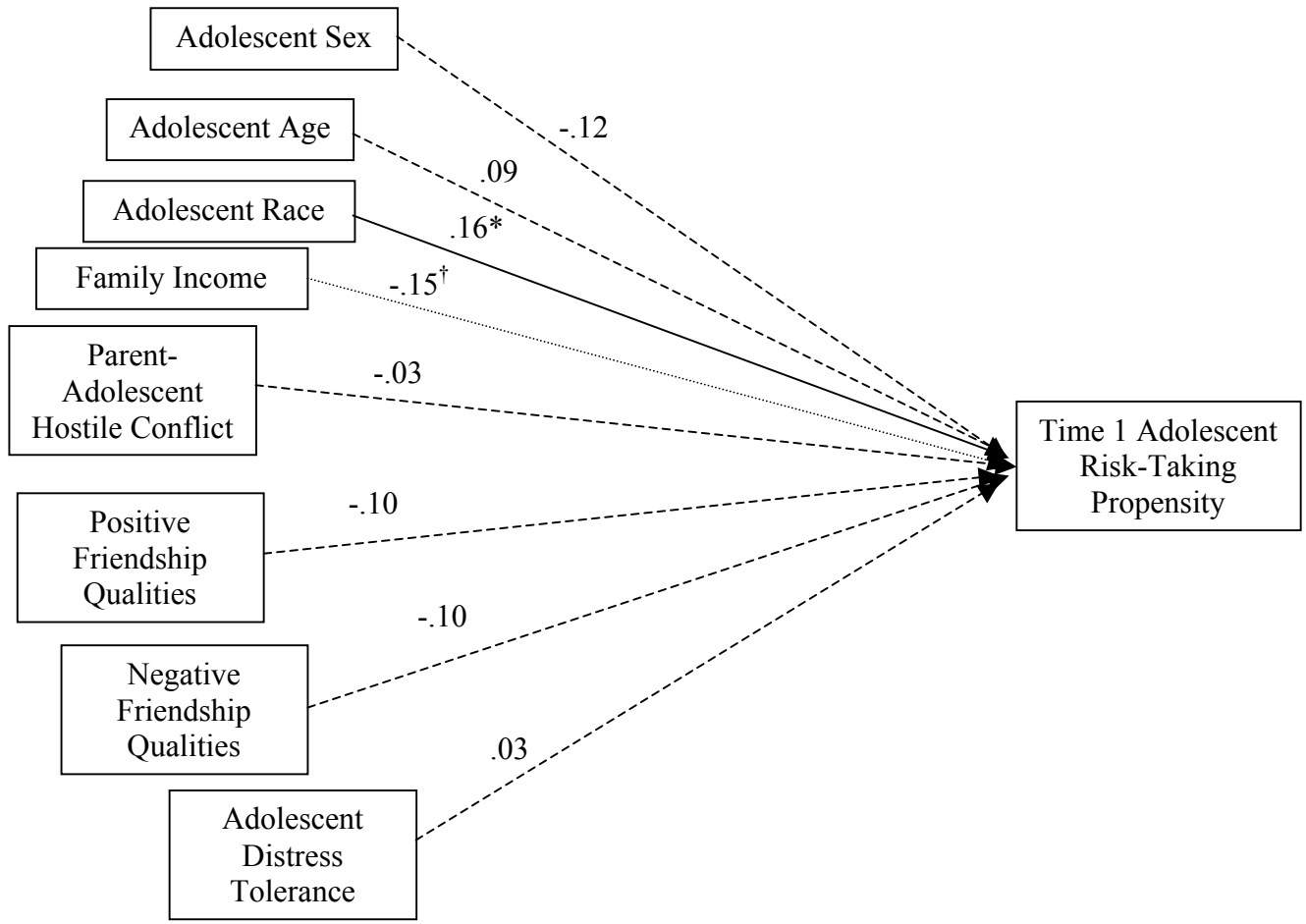


Figure 3. Prediction of Time 1 adolescent risk-taking propensity on the Balloon Analog Risk Task – Youth Version (BART-Y). Gender coded as 0 = female, 1 = male. Race coded as 0 = minority, 1 = White. Solid lines indicate significant paths, dotted lines indicate marginally significant paths, and dashed lines indicate non-significant paths. Coefficients are standardized values.

† $p < .10$. * $p < .05$.

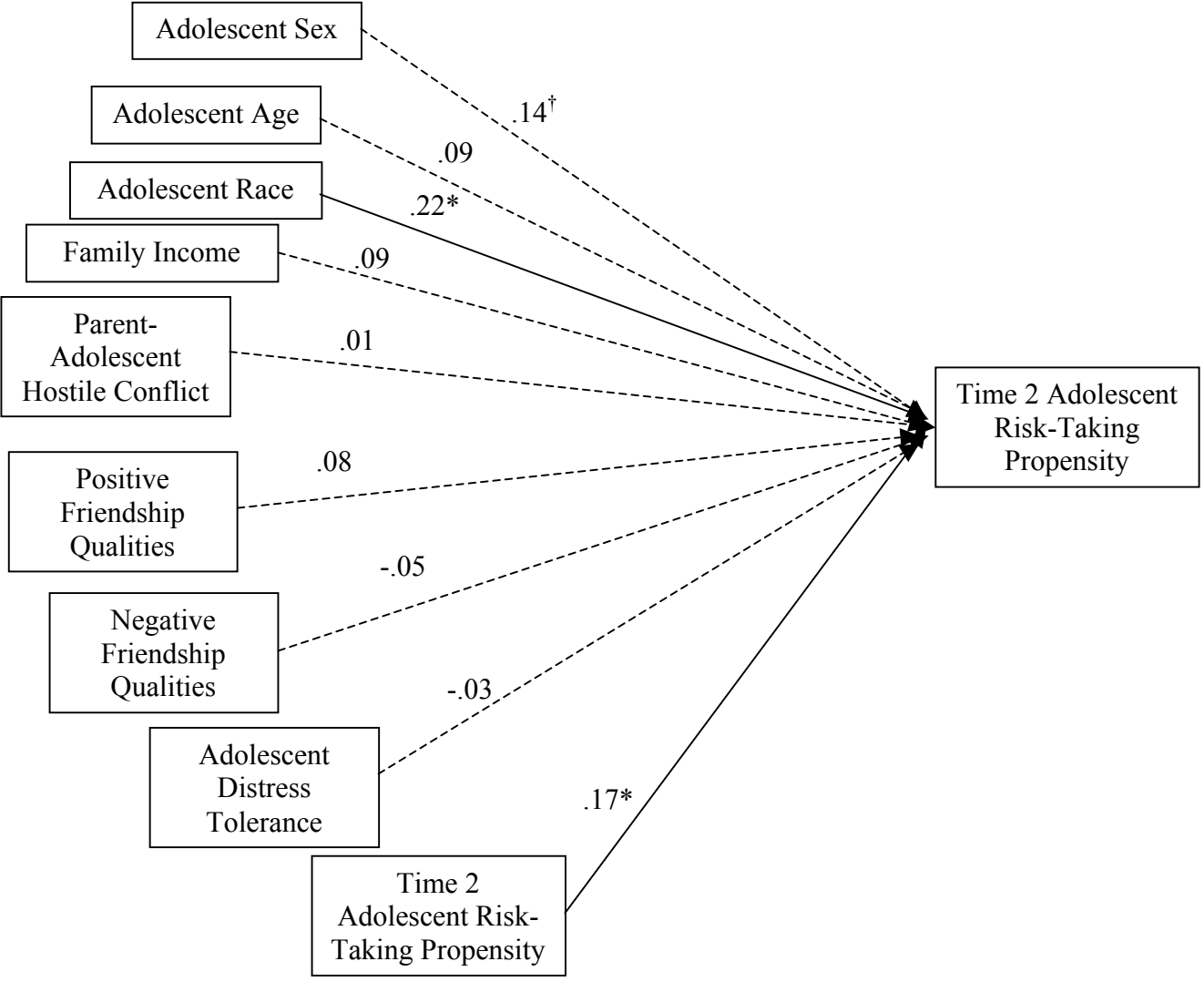


Figure 4. Prediction of Time 2 adolescent risk-taking propensity on the Balloon Analog Risk Task – Youth Version (BART-Y). Gender coded as 0 = female, 1 = male. Race coded as 0 = minority, 1 = White. Solid lines indicate significant paths, dotted lines indicate marginally significant paths, and dashed lines indicate non-significant paths. Coefficients are standardized values.

Aim 2. My goal for this aim was to examine whether there were particular clusters of adolescents who were most likely to engage in risky behavior as a function of their conflict experiences with parents and friends. I then wanted to examine whether clusters of adolescents engaged in more or less risk-taking, depending on adolescents' distress tolerance capacities. I also considered whether these factors differed as a function of adolescent sex. Thus, this two-step research aim takes first a person-centered and then a variable-centered approach to data analysis.

Identification of clusters. First, using the *k*-means clustering procedure (Bergman, Magnusson, & El-Khoury, 2003; DiStefano, 2012; Pastor, 2010), I identified clusters of adolescents who shared similar characteristics in their levels of conflict with parents and best friends. This technique is highly sensitive to extreme cases and outliers, so I first examined the family and friend conflict variables for any extreme scores. I removed four cases from the analysis due to friend conflict scores that were over three standard deviations above the mean. No cases needed to be removed because of extreme parent-adolescent conflict scores. Because the *k*-means procedure is scale dependent (and the family and friend conflict variables have a different range of possible scores), I standardized the variables prior to analysis. As expected, a four-cluster solution identified adolescents with varying levels of conflict with parents and friends: *Low Conflict* ($n = 91$), *Friend-only Conflict* ($n = 71$), *Parent-only Conflict* ($n = 42$), and *High Conflict* ($n = 8$). Table 3 includes the values of the cluster centers, including the means and standard deviations of parent-adolescent and friend conflict scores for each group.

Table 3

Final Solution of k-means Cluster Analysis of Parent-Adolescent and Friend Conflict

	Low Conflict	Friend-Only Conflict	Parent-Only Conflict	High Conflict
Friend Conflict	-.67 (.39)	.88 (.51)	-.52 (.59)	2.70 (.38)
Parent-Adolescent Conflict	-.64 (.50)	-.16 (.67)	1.32 (.73)	1.45 (.95)
N	91	71	42	8

Note. Standard deviations are in parentheses.

Comparison of Time 1 risk behavior across clusters. Next, I used a generalized linear model framework with a Poisson distribution and log link function to investigate whether conflict cluster membership, as well as adolescent sex and distress tolerance, were predictors of later risk behavior. Because the high conflict cluster represented such a small portion of the sample, I decided to exclude this group from the analysis and focus on the remaining three conflict clusters. I used the Pearson chi-square scale parameter method to estimate parameters in order to account for overdispersion of the adolescent risk behavior variable. The generalized linear model approach is preferable over traditional general linear model (GLM) analyses when the dependent variable has a non-normal distribution. In this case, the risk behavior composite score is a count variable and has a Poisson distribution. I included adolescent sex, distress tolerance (dichotomized), and conflict cluster membership as factors and adolescent age as a covariate in the model. In addition, I included all possible two-way interactions among the factors, as well as the Adolescent Sex \times Distress Tolerance \times Conflict Cluster interaction. A summary of the model findings is presented in Table 4. The analysis yielded a main effect of adolescent age, Wald $\chi^2(1) = 6.41, p = .011$. In addition, a significant Conflict Cluster \times Distress Tolerance interaction emerged, Wald $\chi^2(3) = 6.70, p = .035$ (see Figure 5).

Table 4

Generalized Linear Model Predicting Time 1 Adolescent Risk Behavior

	Wald chi-square	<i>p</i> value
Intercept	6.17	.013
Adolescent Sex	.39	.54
Adolescent Age	6.41	.011
Conflict Cluster	1.22	.54
Distress Tolerance	3.85	.05
Sex × Distress Tolerance	.99	.32
Sex × Conflict Cluster	.40	.82
Distress Tolerance × Conflict Cluster	6.70	.035
Sex × Distress Tolerance × Conflict Cluster	1.32	.52

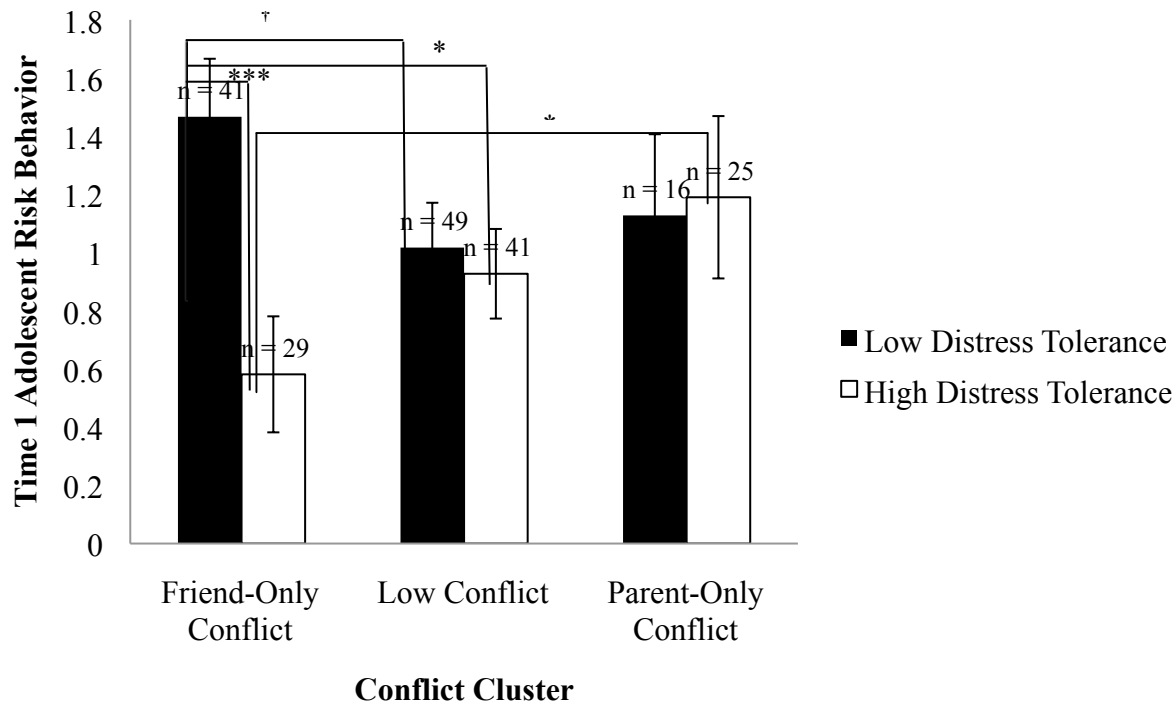


Figure 5. Prediction of Time 1 adolescent health risk behavior.

† $p < .10$. * $p < .05$. *** $p < .001$.

I probed this significant two-way interaction using pairwise comparisons of estimated marginal means and set adolescent age to the mean (14.1 yrs). A number of significant differences emerged. First, for adolescents in the friend-only conflict cluster, adolescents who persisted on the distress tolerance task reported fewer risk-taking behaviors compared to adolescents who quit the task early (mean difference = .89, $p < .001$, $d = .60$). High distress tolerant adolescents in the parent-only conflict cluster engaged in greater risk-taking than high distress tolerant adolescents in the friend-only conflict cluster (mean difference = .61, $p = .031$, $d = .43$). Low distress tolerant adolescents in the friend-only conflict cluster engaged in greater risk-taking than high distress tolerant adolescents in the low conflict cluster (mean difference = .54, $p = .039$, $d = .33$). Finally, a marginally significant difference between low distress tolerant adolescents in the friend-only conflict cluster and the low conflict cluster emerged, with adolescents in the friend-only conflict cluster engaging in more risk behaviors than adolescents in the low conflict cluster (mean difference = .45, $p = .074$, $d = .28$).

Comparison of Time 2 risk behavior across clusters. Finally, I examined the ways in which adolescent conflict clusters and distress tolerance were predictive of Time 2 risk-taking after controlling for Time 1 risk-taking (see Table 5). After controlling for Time 1 risk behavior (Wald $\chi^2 [1] = 60.65$, $p < .001$), none of the other variables was a significant predictor of Time 2 risk-taking.

Table 5

Generalized Linear Model Predicting Time 2 Adolescent Risk Behavior

	Wald chi-square	<i>p</i> value
Intercept	.10	.75
Time 1 Risk Behavior	60.65	< .001
Adolescent Sex	1.83	.18
Adolescent Age	.03	.87
Conflict Cluster	1.19	.55
Distress Tolerance	.17	.68
Sex × Distress Tolerance	.13	.72
Sex × Conflict Cluster	1.29	.52
Distress Tolerance × Conflict Cluster	.59	.75
Sex × Distress Tolerance × Conflict Cluster	.37	.83

Chapter 4: Discussion

The present study was designed to examine contextual and individual predictors of adolescent risk-taking in a diverse sample of adolescents. To this end, I proposed that two central contextual factors, including adolescents' relationships with their parents and best friends, would predict adolescent risk-taking. Further, I hypothesized that adolescent distress tolerance, a characteristic of the adolescent, would serve as a predictor of risk behavior. This research design is a significant extension over previous studies that have focused on either relationship predictors or individual characteristics that might shape risk-taking in adolescence. Additionally, this is the first study to examine the ways that distress tolerance and relationship qualities may interact to predict adolescent risk-taking.

My focus on the parent-adolescent relationship reflects the widely acknowledged role that parents play in shaping adolescent risk behavior. A significant body of research has identified a number of aspects of the parent-adolescent relationship that are associated with risk-taking, such as parental warmth, responsiveness, monitoring, and conflict behavior with adolescents (e.g., Duncan et al., 1998; Ingoldsby et al., 2006; see Spooner, 1999, for a review). Most studies on the links between parent-adolescent relationships and risk-taking have relied on self-report assessments of the relationship, and the current study extended this research by incorporating observations of parent-adolescent conflict to capture observable behaviors in the dyad that might be associated with risk-taking.

Although considerable emphasis has been placed on the importance of parents as factors that shape adolescent risk behavior, other studies have demonstrated that adolescents' peer relationships contribute as well to the development of risk-taking. This extensive body of research has focused on adolescents' peer relationships more broadly

(e.g., peer pressure, peer risk behavior; Brown et al., 1986; Prinstein et al., 2001, 2011; Steinberg, 1986), rather than close friendships within the peer group in particular. Further, less is known about how the qualities of these close relationships may be related to adolescent risk behavior. Therefore, I included examination of the quality of adolescents' best friendships, including positive and negative aspects of the relationships, as predictors of adolescent risk behavior (e.g., McElhaney et al., 2006; Urberg et al., 2003).

Many studies have focused only on the role of adolescents' relationship contexts in the family or at school, but adolescents do not experience these relationships in isolation, and an important question concerns the relative importance of these different relationship contexts as possible contributors to adolescent risk behavior. Research studies that examine only one of these important relationship contexts do not allow for examination of the ways in which these relationships may interact or mutually influence adolescent adjustment or whether one relationship is a more central predictor of risk behavior. Thus, analyses in the current study were designed to identify the multifaceted ways in which adolescents' closest relationships might be associated with adolescent risk behavior.

Finally, I examined adolescent distress tolerance as an additional predictor of adolescent risk-taking in light of theory and research suggesting that adolescents may engage in risky activities (e.g., alcohol use, substance use) because of an inability to cope with negative emotional states (Baker et al., 2004; Brandon et al., 2003; Brown et al., 2002). Indeed, individual characteristics of adolescents have been shown to predict risk behavior (e.g., temperamental, genetic, and personality characteristics; Creemers et al.,

2010; Daughters et al., 2009; Gillespie, Neale, Jacobson, & Kendler, 2009), and an important research question in the present study focused on the extent to which this individual characteristic of adolescents was distinct from the emotion-related aspects of close relationships that were hypothesized to relate to adolescent risk behavior. Notably, the findings in the present investigation suggest that there are multiple pathways to adolescent risk behavior, and researchers can best identify adolescents who are likely to take risks through examination of multiple levels of analysis, including individual and contextual factors. Below, I discuss the findings and implications of the analyses across the two aims of the present study. In addition, I review several unexpected findings that emerged in the present study and deserve greater attention in future research. I conclude by describing study limitations and important directions for future research.

Aim 1: Variable-Centered Approach to the Study of Adolescent Risk Behavior

The goal of Aim 1 was to examine the links among parent-adolescent relationships, friendships, distress tolerance, and assessments of risk behavior (i.e., health risk behaviors and risk-taking propensity in a laboratory setting). I hypothesized that parent-adolescent hostile conflict would be positively associated with adolescent risk behavior and distress tolerance would be negatively associated with risk behavior. Because of inconsistent evidence regarding links between friendship quality and risk-taking (e.g., McElhaney et al., 2006; Urberg et al., 2003), analyses regarding links among positive and negative friendship quality and adolescent risk-taking were exploratory in nature. I examined these connections in the prediction of Time 1 and Time 2 risk-taking using self-reports of risk behavior as well as a laboratory measure of risk-taking propensity.

Prediction of health risk behavior. Analyses for the prediction of Time 1 health risk behavior revealed positive associations between (a) parent-adolescent hostile conflict and risk behavior, and (b) positive friendship quality and adolescent risk behavior, even after accounting for adolescent age and sex. In other words, Aim 1 analyses revealed that adolescents were most likely to engage in risk-taking when they had *negative* parent-adolescent relationships or *positive* friendships. These findings mesh with a growing body of research suggesting that parents and peers may have unique connections to adolescent risk behavior (e.g., Farrell & White, 1998; Fletcher, Darling, & Steinberg, 1995). Interestingly, these findings suggest that the specific aspects of adolescents' relationships with parents and friends that are most associated with adolescent health risk behavior differ across relationship contexts. Specifically, observed negativity within the parent-adolescent relationship, but not in adolescent reports of the friendship, was associated with adolescent risk-taking, which is consistent with previously reported links between adolescent risk behavior and self-reported conflict behaviors (e.g., Shek, 1997; van Doorn, Branje, & Meeus, 2008) as well as observations of hostile parenting behaviors (e.g., Ge, Best, Conger, & Simons, 1996). The present study builds on previous research by showing that the effect of observed parent-adolescent hostile conflict on risk-taking is distinct from aspects of adolescents' peer relationship experiences. This finding suggests that, despite the fact that adolescents spend relatively little time with parents compared to time spent with peers, the experience of hostile exchanges with parents is a significant predictor of adolescent risk behavior. Continued research will be necessary to investigate the utility of parent-adolescent conflict as a predictor of late-adolescent risk behavior.

This contrast in the role of negativity across parent-adolescent and peer relationships is important because it suggests that conclusions about how negative relationship experiences may relate to risk-taking should be qualified by specification about which relationship domains contain high levels of negativity. It could be that no direct links emerged between negative friendship quality and risk-taking because of potential moderators that were not examined in this study (e.g., negativity that results from friendships between two assertive, strong-willed adolescents versus negativity in friendships that are characterized by an imbalance in relationship power or stability). Future research should examine whether there are particular conditions or contexts in which negative friendship qualities are associated with adolescent risk behavior. Additionally, it will be interesting to examine differences in risk-taking behaviors for adolescents whose friendships are characterized by high levels of negative *and* positive qualities (e.g., highly conflictual but also devoted and trusting relationships) compared to adolescents who experience high levels of negativity without high levels of positivity.

It is possible that different explanatory mechanisms account for the observed links between adolescents' relationships with parents and friends. For example, it could be that adolescents engage in risk behavior when they are overwhelmed by negative emotions generated during conflictual experiences with parents; such risk behavior may stem from a motivation to escape unpleasant feelings and cope in self-destructive ways. In contrast, adolescents who enjoy high quality friendships may be more likely to seek out exciting and risky opportunities with friends (e.g., parties, substance use experimentation) compared to adolescents who lack the feelings of confidence that accompany close friendships. In fact, because adolescents engage in risky activities in the company of

friends (Chassin et al., 2004; Gardner & Steinberg, 2005), some of the positive qualities of adolescents' friendships (e.g., companionship, trust) may be developed or strengthened through the very act of engaging in these risk behaviors together.

Findings related to Aim 1 suggested that adolescent distress tolerance was not associated with Time 1 health risk behavior. This result was unexpected, given evidence from previous studies that have identified links between distress tolerance and risk-taking in adolescence (e.g., Daughters et al., 2009; Steinberg et al., 2007). Interestingly, Daughters et al. (2009) found that the link between low distress tolerance and elevated alcohol use was limited to White adolescents, and it is possible that distress tolerance may confer greater health risk only for certain adolescents or in certain contexts (e.g., only when adolescents are feeling stressed and overwhelmed). Because the findings reported in Daughters et al. were based on adolescents from the same sample as the present study (at an earlier time point), I decided to examine whether the interaction effects between distress tolerance and race emerged in the present study. Regression analyses indicated that connections between distress tolerance and risk-taking did not differ as a function of race, however. The role of distress tolerance is further clarified in the analyses examining Aim 2 (discussed in greater detail below).

When this model was used to predict Time 2 health risk behavior, analyses revealed that none of the predictors was significant after controlling for Time 1 risk behavior. One possible reason for the lack of connections among the variables is that risk-taking was fairly stable over the course of the year, and although a paired samples *t*-test indicated that risk-taking significantly increased during this time (mean difference = .44, $t[176] = 4.90$, $p < .001$, $d = .38$), on average, adolescents have engaged in less than

one new risk behavior during that period of time. Moreover, because I used the same five items to measure risk-taking at each time point, adolescents who were already engaging in the maximum number of risks could not continue to increase in risk-taking. In future work, I plan to examine the links among distress tolerance, close relationships, and health risk behaviors that occur later in adolescence, when the variability of adolescent risk behavior will likely be greater than these early adolescent years. In addition, it will be interesting to examine whether the quality of adolescents' close relationships and distress tolerance are associated with early-onset versus late-onset engagement in risk-taking. Given that early-onset risk behavior is thought to be associated with a combination of environmental risk factors and genetic predisposition to these behaviors (e.g., Moffitt & Caspi, 2001; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996), it may be that adolescents' relationship experiences are a better predictor of normative increases in risk-taking behavior that come online later in adolescence, rather than the less common (and more problematic) levels of risk-taking that occur early adolescence.

Prediction of risk-taking propensity. To date, the majority of studies on adolescent risk-taking have focused on adolescents' self-reports of their risk behaviors (see Gardner & Steinberg, 2005; Lejuez et al., 2002, 2003, for exceptions). Although there are inherent benefits to assessing informant reports of their risk-taking behaviors (e.g., adolescents can report about behaviors that we might not be able to witness in the laboratory, such as alcohol use and riding in cars with drunk drivers), this tradition of using self-reports faces concerns about informant biases, questions about accuracy in reports, and problems of shared method variance. Recently, several researchers have developed laboratory-based measures of risk-taking propensity to capture assessments of

risk behavior using a standard, objective measure (e.g., Gardner & Steinberg, 2005; Lejuez et al., 2002, 2003). These laboratory measures are typically correlated (albeit modestly) with self-reports of risk behavior and provide an opportunity to study predictors of risk-taking without relying on adolescent self-reports.

In contrast to the analyses predicting self-reports of risk behavior, adolescent risk-taking propensity in the lab was not accounted for by the quality of their close relationships or distress tolerance capabilities. Instead, risk-taking propensity at Time 1 was associated with demographic characteristics, including adolescent race and family household income (income was a marginally significant predictor). It is interesting to speculate about why adolescents' relationships with their parents and friends had links to health risk behavior but not to laboratory-based measures of risk taking. It could be that performance on the laboratory task has less to do with enduring relationship characteristics and more connection with non-social or temperamental characteristics of the adolescent. For example, risk-taking propensity in the laboratory has been shown to relate to adolescents' impulsiveness or sensation-seeking personality traits (e.g., Lejuez et al., 2002, 2003). Moreover, riskiness on the BART-Y has fewer negative consequences than health risk behaviors, so it is possible that some adolescents take greater risks in the lab than they do in their real life choices. Another possibility is that BART-Y scores could be shaped by current situational contexts (e.g., adolescents who want to finish the task quickly may speed through the trials to finish the game; adolescents who receive a regular allowance may have less financial motivation to be risky during the game) or mood (e.g., depressive symptoms may be associated with decreased desire or motivation to take risks during the game). These possibilities remain to be tested empirically, and

continued research is needed to examine whether there may be other relationship characteristics or specific contexts in which qualities of relationships influence risk-taking propensity.

When this model was used to predict Time 2 risk-taking propensity, analyses revealed that only adolescent race and Time 1 risk-taking propensity were significant predictors. This finding was not entirely surprising for two reasons. First, BART-Y scores across the two years were highly correlated ($r = .70, p < .001$), leaving little variability remaining for the other predictors to explain. Second, unlike health risk behavior, which increased over the course of the year, a paired-samples t -test indicated that adolescents did not increase in risk-taking propensity during this time (mean difference = .54, $t[160] = .54, p = .59$).

Given that BART-Y scores did not increase over the course of the year, and in light of the fact that BART-Y scores are only modestly correlated with self-reported risk behavior at Time 1 (and not correlated with self-reported risk at Time 2), an important direction for future research will be to clarify the ways in which this laboratory-based measure of risk-taking propensity can be viewed as an indicator of risk behavior. It may in fact be the case that risk-taking propensity measured in laboratory settings reflects stable, underlying trait-like components or temperamental qualities that are distinct from some of the risky activities performed in real world settings. Indeed, there is evidence to suggest that risk aversion measured in the laboratory is stable over time (e.g., Harrison, Johnson, McInnes, & Rutstrom, 2005, who found stability in risk aversion over a 6 month period). On the other hand, MacPherson and colleagues (MacPherson, Magidson, Reynolds, Kahler, & Lejuez, 2010), using the same cohort of adolescents, found yearly

incremental increases in risk-taking propensity in pre-adolescence. In sum, more research is needed to better understand the development of performance on risk-taking assessments as well as its correlates to other measures of risk behavior.

Aim 2: Person-Centered Approach to the Study of Adolescent Risk Behavior

The goal of Aim 2 was to explore whether certain clusters of adolescents, who shared similar relationship characteristics, were more likely to engage in risk-taking behaviors compared to other adolescents with different relationship characteristics. Further, I explored whether adolescent distress tolerance might influence the extent to which adolescents' relationship characteristics would be associated with risk-taking. The motivation for this research stemmed from the notion that adolescents might not be equally likely to engage in risk behavior as a result of any one factor. For example, it is possible that some adolescents might have elevated levels of hostile conflict with their parents but engage in low levels of risk-taking, perhaps as a result of high distress tolerance that serves as a protective factor against any negative effects of conflict with parents. This person-centered analytical approach thus complements the variable-centered analyses relating to Aim 1 by moving away from correlations among variables in favor of isolating groups of adolescents who are similar to each other in their relationship and distress tolerance capacities.

I hypothesized that four groups of adolescents would emerge, each with a unique profile of relationship characteristics, and that these groups of adolescents would differ in risk-taking behaviors. As expected, I found that four groups of adolescents could be identified based on the extent to which they engaged in conflict with their parents and friends. Specifically, one group had low levels of conflict with parents and friends, two

groups had high levels of conflict with parents or friends (but not both), and a fourth group had high levels of conflict with parents and friends. I decided to exclude this high conflict group of adolescents ($n = 8$) from the main analyses because such a small sample size may reflect extreme or unusual cases that are not typical of the population.

I further hypothesized that an interaction effect would emerge between adolescent distress tolerance and conflict cluster membership, such that adolescents with high levels of conflict and low distress tolerance would engage in the greatest levels of risk behavior. This hypothesis was based on the idea that these adolescents would have the highest levels of distress as a result of their conflictual relationships coupled with the lowest internal resources for regulating that distress. Findings from the generalized linear model revealed a main effect of distress tolerance, such that low distress tolerant adolescents engaged in greater risk-taking than high distress tolerant adolescents. (Interestingly, this main effect of distress tolerance only emerged when the high conflict cluster was excluded from the analysis, which may indicate that these eight adolescents were, in fact, extreme cases that are atypical of the population.)

The distress tolerance main effect, however, was qualified by an interaction with the conflict cluster factor. Post-hoc probing of this interaction revealed that the type of conflict adolescents experienced in their relationships, in conjunction with their distress tolerance capacities for regulating distress, was associated with differences in risk-taking behaviors. One interpretation of these findings is that the influence of adolescents' relationships on their risk-taking behaviors depends on their ability to tolerate and manage their emotions. For example, low distress tolerant adolescents who were in the friend-only conflict cluster engaged in greater levels of risk-taking than high distress

tolerant adolescents in the same conflict cluster. In other words, when adolescents experienced high levels of conflict with their best friends, distress tolerance served as buffer against engagement in risky behaviors. It is interesting to compare this finding to the model that emerged when testing hypotheses for Aim 1a: In Aim 1, path analyses revealed no direct link between negative friendship qualities and risky behavior. These Aim 2 findings suggest that a link between negative friendship quality and risk-taking may exist for low distress tolerant adolescents. It could be that when high distress tolerant adolescents experience negative affect in the friendship, they are able to seek alternative means for handling their negative emotions that do not involve dangerous coping behaviors (e.g., perhaps these adolescents talk to their parents, rather than seek illicit substances). Moreover, in the context of a highly conflictual friendship, the capacity to manage negative emotions may help adolescents avoid destructive, relationship-straining behaviors that would create additional stress.

Additional pairwise comparisons indicated that low distress tolerant adolescents who had high levels of conflict with friends engaged in greater risk-taking behaviors than high and low distress tolerant adolescents in the low conflict cluster. The fact that low distress tolerant, high friendship conflict adolescents engaged in greater risk behaviors than high distress tolerant, low conflict adolescents is not surprising; these findings are in line with the notion that low distress tolerance and conflictual relationships would serve to increase adolescents' emotional distress and thus lead to risky behaviors, including substance use and risky sex. The significant difference in risk-taking for low distress tolerant, high friendship conflict adolescents and low distress tolerant, low conflict adolescents is consistent with my hypotheses about the possibility of cumulative effects

across risk factors. Specifically, this finding suggests that the presence of friendship conflict confers additional risk for engaging in dangerous activities above and beyond the presence of low distress tolerance.

One final (and unexpected) pairwise comparison emerged: Among high distress tolerant adolescents, adolescents who had high levels of conflict with their parents engaged in greater risky behaviors than adolescents who had high levels of conflict with their friends. This finding suggests that among high distress tolerant adolescents, the specific relationship context in which elevated conflict occurs (i.e., with parents or friends) plays an important role in the extent to which adolescents engage in risky behavior. This differentiation in the role of conflict across relationship contexts is consistent with the findings observed in the path analysis described earlier, in which parent-adolescent hostile conflict, but not negative friendship qualities, was associated with adolescent risk behavior. It may be that parent-adolescent conflict is a more distressing experience for adolescents, relative to friendship conflict, and this increased distress may cause adolescents to make poor decisions that put them at risk for poor outcomes. Continued research on the relative influence of parents and friends will be important to clarify the settings in which parents and friends contribute to adolescent risk behavior.

Comparisons between Variable-Centered and Person-Centered Perspectives

A number of researchers have commented on the usefulness of integrating variable- and person-centered analytic strategies in the same study (e.g., Bergman et al., 2003; Laursen, Furman, & Mooney, 2006). In variable-centered models, researchers make hypotheses about connections among variables with the assumption that, at least to

some extent, these links are similar for the whole sample. In contrast, person-centered models highlight individual differences among participants, with the goal of identifying subgroups within samples that differ from each other in meaningful ways. In other words, person-centered models are designed to identify the ways in which connections among variables may differ for particular groups of participants.

It is interesting to compare the ways in which conclusions about the connections among close relationships, distress tolerance, and risk-taking can be informed by both person-centered and variable-centered approaches. Findings from the variable-centered path analyses suggest that increases in parent-adolescent conflict and positive friendship characteristics are associated with linear increases in adolescent health risk behavior. In other words, parent-adolescent hostile conflict and positive friendship experiences represent two unique pathways to adolescent risk behavior.

The person-centered analyses explored in Aim 2 offered a different perspective on the ways in which adolescents' close relationships are associated with adolescent risk behavior. Specifically, these analyses showed that only *some* adolescents who experienced high levels of conflict with parents would engage in elevated risk-taking. Specifically, parent-adolescent conflict was only associated with greater risk-taking for a subset of adolescents – those who had high distress tolerance and non-conflictual friendships. These analyses suggest that for many adolescents, high levels of parent-adolescent conflict do not serve as a serious risk factor for engagement in dangerous activities. Thus, although the variable-centered analyses highlighted a main effect of parent-adolescent conflict as a predictor of risk behavior, the person-centered analyses clarified that this effect might be restricted to a particular group of adolescents.

Another comparison across the variable-centered and person-centered analyses is that the effects observed in Aim 1 are small in magnitude, whereas many of the findings in Aim 2 are medium or large effects. The role of adolescent distress tolerance as a predictor of adolescent risk-taking provides a useful illustration that might help clarify why the person-centered analyses yielded larger effect sizes than the variable-centered analyses. In the variable-centered analysis, adolescent distress tolerance was not a unique predictor of adolescent risk-taking. However, the person-centered analysis suggested that low distress tolerant adolescents were likely to engage in greater risk-taking behaviors than other adolescents when adolescents also experienced high levels of conflict in their relationships. In other words, an adolescent with low distress tolerance is not necessarily likely to engage in a greater number of risky behaviors than high distress tolerant adolescents; only when low distress tolerance is accompanied by a conflictual relationship context is an adolescent likely to engage in risk behavior.

Limitations and Directions for Future Research

Findings from the current study offer valuable insight into the ways in which adolescents' relationship experiences and distress tolerance relate to risk-taking behaviors, even at an age when adolescents are engaging in relatively low levels of risk behavior. (On average, adolescents have taken part in one out of the five risky activities in the risk composite.) One critical direction for future research will be to examine the models proposed in the present study as predictors of late-adolescent risk behavior, when the range and severity of risk-taking will be more variable. Despite the restricted range in adolescent risk behavior, the analyses in the present study lend support to the notion that parent-adolescent relationships, friendships, and distress tolerance are associated with

risk-taking behaviors. Nevertheless, a number of limitations and unanswered questions should be addressed in future research.

Notably, the large number of analyses in the present investigation has inflated the possibility of making a Type 1 error, and it could be that some of the significant findings reported in this study emerged due to chance. Examination of effect sizes, however, suggests that this is not a serious concern. Further, given the importance of identifying adolescents who are most likely to engage in risk behavior, it may be preferable to inflate the chance of making a Type 1 error over the possibility of making a Type 2 error. Replications of these models will bolster support for these findings.

In order to reduce the number of models in the present study, I created a composite score of risk-taking based on adolescents' reports about lifetime engagement in activities that put them at risk for poor outcomes, such as HIV infection, addiction, teenage pregnancy, or death. Although modest intercorrelations emerged among the risk behaviors, it is possible that individual and contextual predictors may differentially predict specific risk behaviors or the contexts in which those behaviors occur. For example, positive friendship qualities may be associated with alcohol use at parties, whereas parent-adolescent conflict might be associated with drinking alone. Research studies gain specificity by focusing on a single risk factor (e.g., MacPherson et al., 2010; Prinstein et al., 2003), so it will be informative to examine the ways in which relationship factors and adolescent distress tolerance relate to some risk behaviors but not others.

Similarly, I created a composite score of parent-adolescent hostile conflict because not every adolescent engaged in the conflict discussions with mothers and fathers. The advantage of this decision was that it preserved a sample size that was large

enough to test hypotheses about interactions among variables, but a limitation of this decision is that I am unable to examine differences that may have emerged for adolescents who experience varying levels of conflict with their mothers and fathers. Further, I did not examine differences between adolescents who live in single-parent homes versus adolescents with two parents, and this work will be important to further shed light on the complex family dynamics that might contribute to adolescent risk behavior. Future research should address the ways in which these differences between mother-adolescent and father-adolescent conflict relate to adolescent risk behavior. It could be that adolescents who have high levels of conflict with mothers *and* fathers are likely to engage in the greatest number of risk-taking behaviors.

An important caveat to the analyses examining Aim 2 is that the high conflict cluster represented a small number of adolescents and was thus excluded from the primary analysis. The small number of adolescents experiencing high conflict across both relationships is not entirely surprising, as it is thought to be relatively rare for adolescents to experience such pervasive hostility and conflict across relationships (Steinberg, 2001). It will be important for future studies to examine samples with a greater number of conflictual adolescents to see if they too are engaging in risk behaviors at elevated levels.

A number of biologically based factors were not examined in the present study but should be considered in future research. For example, Wills, Sandy, Yaeger, and Shinar (2001) examined family and temperament risk factors for adolescent substance use. They found evidence of protective and vulnerability factors as a function of adolescents' self-reported temperament. For example, positive emotionality served as a protective factor against negative family environments. Negative emotionality, in

contrast, potentiated the influence of negative family factors in the prediction of adolescent substance. Thus, additional questions about the extent to which adolescent temperament influences their susceptibility to environmental conditions should be explored.

Additionally, a large body of work has identified links between early pubertal maturation and adolescent risk behavior (e.g., Ellis, 2004, Steinberg, 2008). Belsky, Steinberg, and Draper (1991) hypothesized that family experiences may influence pubertal timing, which in turn influence the development and progression of adolescent risk behavior. Studies have found support for this hypothesis (e.g., Belsky et al., 2010), and it is becoming clear that a possible mechanism for the link between family factors and adolescent adjustment is the phenomenon of accelerated pubertal timing. Much of this research, however, requires longitudinal studies to find support for this hypothesis, so it will be important for ongoing longitudinal research to assess environmental predictors of risk as well as biological development.

In the present study, I focused on the role of distress tolerance as an aspect of adolescents' emotion regulation capacities that might influence their risk behavior. Interestingly, many of the core features of distress tolerance coincide with the self-regulatory functions found in measures executive functioning, such as inhibitory control and goal-directed behavior, that are thought to predict adolescent risk behavior (Casey, Getz, & Galvan, 2008; Hardin & Ernst, 2009). It will be informative for future research to consider the extent to which distress tolerance and executive functioning represent overlapping versus unique contributors to adolescent risk behavior.

I identified several racial differences in adolescents' relationship experiences, which, although not the focus of the present study, merit a brief discussion. First, observers rated minority families as more hostile than White families. These findings are consistent with previously reported racial differences in family conflict behaviors (Smetana, 2008; Smetana, Campione-Barr, & Metzger, 2006). On the other hand, this finding could be related to striking racial differences identified in coder judgments about parent-adolescent conflict (Gonzales, Cauce, & Mason, 1996). Gonzales and colleagues found that, compared to White coders' ratings, African American coders rated African American mother-daughter interactions as less conflictual, and ratings from African American coders were more consistent with family reports of conflict, relative to White coders' ratings. In the present study, almost all coders were non-Hispanic White undergraduate students, and it is possible that coders' ratings were shaped, in part, by their cultural stereotypes. This issue about the effect of racial differences on coder ratings has major implications for study design and decisions about coding teams. If coders are consistently discrepant from participant reports about the behaviors they are trying to quantify (as Gonzales et al. found), then it is possible that these observations made by outgroup members are considerably less valid than ratings made by coders from the participants' ingroup. Gonzales and colleagues included consultants to help train coders from all racial backgrounds to be culturally sensitive to unique characteristics of African American mother-adolescent interactions. Nevertheless, even with this extensive effort to be mindful of cultural differences, coder ratings remained discrepant from participant reports when coders were rating participants of another race.

Similarly, compared to White adolescents, minority adolescents reported having best friendships that were higher in negative qualities. This finding may be related to underlying racial differences in friendship characteristics; alternatively, it is possible that negative interactions with friends (e.g., conflict, antagonism between friends) is simply more normative in minority friendships, and minority adolescents may feel less stigma when acknowledging these conflictual qualities within their close relationships. (Interestingly, in the present study, minority adolescents and their mothers self-reported greater levels of conflict in their relationship, relative to White adolescents and their mothers, $ps < .01$. No race differences emerged in adolescent and father reports of conflict in the father-adolescent relationship, $ps > .27$). If it is simply a reporting bias, and minority and White adolescents actually experience comparable levels of negativity in their relationships, then reports of negative characteristics within relationships may be less valid for minority adolescents. Given that coders and participants identified more negativity in minority parent-adolescent dyads than in White dyads, it is possible that negative relationship characteristics are fundamentally different across race. Examination of race as a moderating variable was beyond the scope of the present study, but it will be important for future research to consider whether adolescents' close relationship experiences may be differentially related to adolescent risk behavior as a function of race.

In summary, the findings in the present study suggest that adolescent risk behavior is a multiply determined phenomenon, with links to parent-adolescent relationships, friendship quality, and distress tolerance. It will be important to continue investigating predictors of risk behavior across multiple levels of analysis, with an emphasis on biological, individual, relational, and environmental factors that contribute

to risk-taking. Moreover, additional research on potential protective factors, such as distress tolerance, and vulnerability factors, such as genetic susceptibility, will be informative for both basic science researchers and clinicians.

Footnotes

¹In preliminary analyses, I examined whether adolescent sex moderated the links between the core predictor variables (i.e., parent-adolescent hostile conflict, positive and negative friendship qualities, and distress tolerance). None of these interaction terms was significant, however; as such, the interaction terms were excluded from the path analysis.

²When Time 1 self-reported risk behavior was not included as a predictor in the model, parent-adolescent hostile conflict became a significant predictor of Time 2 self-reported risk behavior ($\beta = .15, p = .05$). No other predictors achieved significance, however.

Appendix A

Close Relationships and Risk-Taking in Adolescence: Theory and Research

Katherine B. Ehrlich

Close Relationships and Risk-Taking in Adolescence: Theory and Research

A hallmark feature of adolescence is the emergence of risk-taking behaviors, including drug and alcohol use, sexual activity, and participation in delinquent and dangerous behaviors (Florsheim, 2003; Johnson & Gerstein, 1998). Despite substantial efforts to educate adolescents about the consequences of their risky decisions, adolescent risk behavior remains a significant social and public health problem (Steinberg, 2008; Williams, Holmbeck, & Greenley, 2002). For example, the most recent findings from the Youth Risk Behavior Survey suggest that almost half of high school students are current alcohol users, over a quarter of adolescents engage in binge-drinking, and nearly 30% of adolescents rode in a car driven by someone who had been drinking (Centers for Disease Control & Prevention, 2010). In addition, of the 35% of high school students who are currently sexually active, almost 40% did not use a condom during their last sexual encounter, despite the fact that 90% of high school students receive AIDS or HIV education and presumably have learned the risks of such behavior (Centers for Disease Control & Prevention, 2010). These rates of adolescent risk-taking are concerning, and efforts to understand the causes and correlates of risk-taking are needed.

Numerous theories have been proposed to explain adolescent risk-taking (for reviews, see Boyer, 2006, Buhi & Goodson, 2007; Petraitis, Flay, & Miller, 1995; Spooner, 1999). These theories often focus on cognitions about risk-taking (e.g., perceptions about individuals who take risks), social learning processes (e.g., the influence of media on risk-taking), intrapersonal characteristics (e.g., low self-esteem), and environmental factors (e.g., dangerous neighborhoods). More recent theories have incorporated a social neuroscience perspective (e.g., Steinberg, 2008a), which

emphasizes the protracted development of the prefrontal cortex as one reason why adolescents make risky decisions even when they are aware of the consequences they may face. Additional theories have emphasized the role that parents and peers play in shaping adolescents' risky behavior (e.g., Patterson, Reid, & Dishion, 1992; Steinberg, 2001, 2008a). Indeed, adolescents are thought to engage in risk behaviors for a number of different reasons, and it is likely that risk-taking is a multiply determined phenomenon that can be traced back to biological, cognitive, social, and interpersonal influences.

This review takes a critical look at the evidence for connections between adolescent risk-taking behaviors and adolescents' close relationship experiences, examining relationships within the family (parent-adolescent, interparental, and sibling relationships) and relationships outside the family (peer relationships, close friendships, and romantic relationships). My aim is to review and integrate evidence on the interconnections among relationships and risk-taking in adolescence. I begin with a discussion of relationships within the family, followed by a review of evidence for connections between family relationships and adolescent risky behavior. I then examine the role of adolescents' relationship experiences outside the family in contributing to adolescent risk-taking, followed by a brief discussion about the ways in which consideration of multiple relationship experiences (both within and outside the family) may best explain adolescent risk behavior engagement. Finally, I conclude with suggestions for future research.

Family Relationships in Adolescence

Despite the relatively small amount of time that adolescents spend with their families (i.e., less than 15% of their waking hours are spent with family members;

Steinberg, 2008b), family relationships are thought to play a significant role in shaping adolescents' risk-taking behaviors (e.g., Boislard & Poulin, 2011; Miller, Benson, & Galbraith, 2001; Newcomer & Udry, 1987). Below, I review studies that have examined connections between family relationships and adolescent risk behavior, focusing on parent-adolescent, interparental, and sibling relationships.

Parent-Adolescent Relationships and Adolescent Risk-Taking

Of all close relationships in adolescence that have been examined in relation to adolescent risk-taking, the parent-adolescent relationship has received the most attention (e.g., Arbona & Power, 2003; DiClemente et al., 2001; Duncan, Duncan, & Hops, 1998; Guo, Hill, Hawkins, Catalano, & Abbott, 2002; Tinsley, Lees, & Sumartojo, 2004).

Theory and research suggest that adolescents who have poor relationships with their parents are more likely to engage in risky behaviors (see Spooner, 1999, for a review).

This connection between adolescents' relationships with their parents and risky behavior has been demonstrated in both cross-sectional and longitudinal studies (e.g., Anderson & Henry, 1994; Parker & Benson, 2004; Webster, Hunter, & Keats, 1994; Wills & Cleary, 1996). Much of the focus has been on parenting behaviors and specific relationship quality indices, such as parental monitoring, support, hostility and conflict, and attachment (e.g., Darling & Steinberg, 1993; Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Laird, Pettit, Dodge, & Bates, 2003).

Parental Monitoring. Parents frequently (a) overestimate their knowledge of and (b) underestimate the frequency of their adolescent's risk-taking behaviors (Cottrell et al., 2003; Stanton et al., 2000). This reporting trend is thought to result, in part, because of the fact that parents are inherently limited in what they can know about their child's

behavior. If adolescents lie about or selectively limit the information they reveal to their parents, then it can be difficult for parents to get an accurate estimate of their adolescent's risky behaviors. Previous definitions of parental monitoring have focused on parents' active attempts to solicit information about adolescent behaviors (e.g., Dishion & McMahon, 1998). More recently, however, researchers have begun to distinguish between parents' attempts to learn about their child's behaviors, activities, and whereabouts ("parental solicitation") and adolescent *disclosure* about this information (Kerr, Stattin, & Burk, 2010; Stattin & Kerr, 2000). Similarly, researchers have suggested that a *dyadic* approach to the measurement and analysis of parental monitoring may best capture the ways in which parental monitoring is linked to adolescent risk-taking (e.g., De Los Reyes, Goodman, Kliewer, & Reid-Quinones, 2010; Lippold, Greenberg, & Feinberg, 2011; Reynolds, MacPherson, Matusiewicz, Schreiber, & Lejuez, 2011). Indeed, a dyadic approach to the study of parental monitoring seems warranted, given that parent and adolescent reports of monitoring are often only modestly correlated (Lippold et al., 2011) and sometimes not correlated at all (e.g., Cottrell et al., 2003).

Despite these challenges in defining and measuring parental monitoring, the extent to which a parent has knowledge about their adolescent's behaviors and activities has been shown to be a robust predictor adolescent risk behavior, including substance use and risky sex (e.g., Chilcoat, Dishion, & Anthony, 2001; Dishion, Nelson, & Kavanagh, 2003; Huebner & Howell, 2003; Jacobson & Crockett, 2000; Li, Feigelman, & Stanton, 2000; Li, Stanton, & Fiegelman, 2000; for a review, see Crouter & Head, 2002). Findings suggest that adolescents whose parents openly communicate and frequently monitor their adolescents' behavior are less likely than other adolescents to use drugs and alcohol

(Barnes, Farrell, & Windle, 1990; Brook, Brook, Gordon, Whiteman, & Cohen, 1990; Farrell & White, 1998; Hawkins, Catalano, & Miller, 1992).

In a seminal study on the role of parental monitoring and risk-taking, Chilcoat and Anthony (1996) studied changes in parental monitoring over a two-year period among urban families. Higher levels of adolescent-reported parental monitoring were associated with delayed onset in the initiation of substance use, even after accounting for peer drug use and children's antisocial behavior. Similarly, Huebner and Howell (2003) found that among adolescents who were sexually active, greater adolescent-reported parental monitoring (but not parental style or parent-adolescent communication) was associated with a reduced likelihood of having multiple sexual partners and not wearing a condom. Thus, even for adolescents who are sexually active, parental monitoring was associated with safer sexual practices compared to adolescents whose parents were not monitoring their behavior.

As mentioned earlier, efforts to examine the dyadic nature of parental monitoring have revealed that parents and adolescents often disagree about the extent to which parents know about their adolescents' behavior. Several investigations have illustrated that these discrepancies in reports about parental monitoring can predict adolescents' subsequent risk-taking behaviors (De Los Reyes et al., 2010; Lippold et al, 2011; Reynolds et al., 2011). For example, De Los Reyes et al. (2010) examined the extent to which parents and adolescents differed in their reports of parental monitoring over a period of two years. Adolescents whose mothers consistently over-reported the amount of parental monitoring (relative to adolescent reports) engaged in greater delinquent behavior two years later. Interestingly, this finding was not accounted for by mothers' or

adolescents' independent reports of parental monitoring – in fact, parent and adolescent individual reports were uncorrelated with adolescents' delinquent behavior – which suggests that discrepant reporting, and not simply the absence of monitoring, may be a risk factor for adolescent delinquent behavior. Similarly, in a cross-sectional investigation of discrepancies about parental monitoring, Lippold et al. (2011) found that when mothers reported more parental monitoring than their adolescents reported, adolescents had elevated levels of delinquent behavior and positive expectations about substance use. Additional research is needed to clarify whether these discrepancies in reports of parental monitoring result from adolescent attempts to hide their behaviors from parents or whether parents are out of touch with their child's behavior; such research will be informative for determining how to intervene with these at-risk families.

A number of interventions have been designed to educate parents about the importance of monitoring their children's behavior (e.g., Dishion et al., 2003; Griffin, Samuolis, & Williams, 2011; Stanton et al., 2000). These interventions address the possibility that one explanation for adolescents' risky behavior is parental disengagement from monitoring. In other words, adolescents may sense that their parents are not tracking their behaviors, thus providing an opportunity to engage in risk-taking without fear of parental punishment. In light of this possible explanation for the role of a lack of parental monitoring as a contributor to risky behavior, Dishion and colleagues (2003) conducted a brief randomized trial intervention with a diverse sample to train parents how to better monitor their adolescents' behavior. After completing the intervention, parents and adolescents were observed in a semi-structured videotaped discussion about a time when the adolescent spent time with peers. Adolescents were instructed to discuss the

experience with peers in as much detail as they wanted, and parents were asked to first listen and then gather any additional information that they might want to know.

Observers coded parent and adolescent behaviors to gauge the extent to which adolescents disclosed information and parents actively sought information. Compared to dyads in the control condition, dyads in the intervention condition engaged in more parental monitoring behaviors, and these behaviors in turn were associated with a decline in substance use. Families in the control condition, conversely, showed declines in parental monitoring over time. The results of this intervention are encouraging because they suggest that parents play an important role in discouraging adolescent risk behaviors through their efforts to monitor what is happening in their adolescents' lives, and they further suggest that improvements in parents' efforts to monitor their behavior can lead to changes in adolescents' risk involvement.

In contrast, in a different parental monitoring intervention with African American families, Stanton and colleagues (2000) found that training parents to supervise their children's behaviors and communicate about safe sex did not lead to a reduction in risk behaviors. Nevertheless, the intervention was associated with improvements in adolescents' ability to correctly use a condom, which is an important skill for adolescents if they are planning to be sexually active. Similar to the informant discrepancies findings discussed above, parent-adolescent concordance in reports of adolescent risk behavior was negatively correlated with adolescent risk behavior. Taken together, the findings from these two intervention studies highlight the important role that parental monitoring plays in adolescent risk-taking.

Parental support and responsiveness. Another aspect of parenting behavior that is linked to adolescents' risk behavior is the extent to which parents are supportive and responsive to their adolescents' needs (e.g., Dekovic, Wissink, & Meijer, 2004; Jackson & Foshee, 1998; Marshal & Chassin, 2000; Wills, Resko, Ainette, & Mendoza, 2004; Wissink, Dekovic, & Meijer, 2006). Researchers have found that adolescents who can turn to their parents for support are consistently less likely to engage in risky behaviors, such as substance use and delinquency. For example, Dekovic et al. (2004) found that adolescent self-reports of parental support were negatively associated with their delinquent behavior. Similarly, adolescent reports of parental responsiveness were negatively correlated with adolescent reports of dangerous behaviors, such as violence toward peers and carrying weapons to school. One exception to this consistent pattern comes from Marshal and Chassin (2000), who found strikingly different effects of parental support for adolescent girls and boys. For girls, parental support served as a buffer against negative effects of deviant peer association, in that they were less likely to engage in substance use when they experienced high levels of parental support. The opposite pattern emerged for adolescent boys, however: Boys (who affiliated with deviant peers) engaged in greater levels of alcohol use in the context of parental support, compared to boys who experienced less support. Marshal and Chassin argue that these surprising gender differences in the connection between risk-taking and parental support may reflect gender differences in socialization of independence and autonomy. It could be that boys, who are typically socialized to be independent, are threatened by parents' attempts to provide support, and they seek out risky experiences in an effort to rebel from support that could be viewed as coddling. These counterintuitive findings for boys'

substance use in the presence of parental support deserve greater attention in future research.

Parent-adolescent hostility and conflict. Although conflict is a component of any close relationship (Collins & Laursen, 1992) and can even provide beneficial learning opportunities for adolescents (e.g., conflict resolution skills; Smetana, Yau, & Hanson, 1991), high levels of discord in the parent-adolescent relationship have been shown to relate to adolescent risk-taking behavior (Ary et al., 1999; Bradford, Vaughn, & Barber, 2008; Brody & Forehand, 1993; Crowell, Beauchaine, McCauley, Smith, Vasilev, & Stevens, 2008; Hawkins et al., 1992; Ingoldsby et al., 2006). Adolescents with hostile, avoidant, or conflictual relationships with parents are more likely than others to engage in drug use and other antisocial activities (Ingoldsby et al., 2006; Patterson et al., 1992; Scaramella & Leve, 2004). For example, Brody and Forehand (1993) found that the frequency of mother-adolescent conflict predicted later substance use. Similarly, Ary et al. (1999) identified a link between high levels of parent-adolescent conflict and problem behaviors. The primary rationale proposed by these studies is that conflict creates stress and fosters a lack of emotional support in the parent-adolescent relationship, which contributes to adolescents' involvement in risky behaviors, such as drug and alcohol use, sexual activity with multiple partners, and delinquent or dangerous behavior.

Other research suggests that parent-adolescent conflict might not always be associated with greater adolescent risk-taking. In a longitudinal study, Taris and Semin (1997) found that, although there was a concurrent correlation between parent-adolescent conflict and engagement in sexual intercourse, increases in parent-adolescent conflict

over a one-year period were associated with a *decreased* likelihood of having sex. Interestingly, parent-adolescent conflict in this study was measured specifically in relation to conflict about sex-related issues (e.g., frequency of going out with undesirable peers). It could be that these counter-intuitive findings might indicate that when parents communicate with their adolescents about sex – even if such communication is conflictual – adolescents are receptive to parents’ desires to delay sex. Because this research relied on mothers’ and adolescents’ self-reports of parent-adolescent conflict, it is unclear whether these reports of conflict may actually have been reflections of open communication in the relationship. In other words, it could be that parents and adolescents who are open and honest with each other about their attitudes related to sex report having more conflict, but such open communication in the relationship may lead adolescents to consider their parents’ perspectives and therefore engage in safer behaviors. Additional research is necessary in order to shed light on whether there may be certain contexts in which parent-adolescent conflict influences adolescents to be less, rather than more, likely to engage in risky behaviors.

These findings provide evidence for a link between parent-adolescent conflict and risky behaviors (i.e., substance use and risky sexual activity), but these studies are limited methodologically by the reliance on self-report assessments of conflict. This is perhaps not surprising in light of the cost and difficulty of observational assessments of parent-adolescent conflict. Given that parents and adolescents often perceive and report about conflict in their relationships differently (Ehrlich, Cassidy, & Dykas, 2011; Smith & Forehand, 1986), it is important to consider other assessments of conflict that do not rely on informant reports. A second limitation in many of these studies is the lack of focus on

father-adolescent conflict. Less is known about the role of father-adolescent conflict for general adolescent functioning, and it is important to understand the unique role that fathers play for the development of adolescents' risk-taking behaviors. It may be that adolescent-mother and adolescent-father relationships are similarly linked to adolescent risk-taking behavior. One study, however, found that only self-reported mother-adolescent conflict (and not father-adolescent conflict) was linked to substance use (Farrell & White, 1998). Alternatively, it could be that only adolescents who have high levels of conflict with both parents are likely to engage in risk-taking behaviors. Additional research is necessary in order to understand whether and how the quality of the adolescent-father relationship is linked to adolescents' risk-taking behaviors. Similarly, a third limitation of many previous studies is the focus on adolescent boys' relationships and risk-taking behaviors and lack of focus on girls (e.g., Ingoldsby et al., 2006; Patterson et al., 1992). This trend is likely a result of the fact that boys engage in greater levels of delinquency and risk-taking compared to girls (Byrnes, Miller, & Schafer, 1999), but this targeted research has resulted in a considerable gap in the understanding of the links between adolescent girls' family relationships and risk-taking behaviors.

Adolescent attachment. A small but growing body of research has examined the ways in which adolescents' attachment representations are associated with their risk-taking behaviors (e.g., Branstetter, Furman, & Cottrell, 2009; Rosenstein & Horowitz, 1996; van der Vorst, Engels, Meeus, Dekovic, & Vermulst, 2006). Attachment theory focuses on how children and adolescents' experiences with caregivers contribute to emotions, behaviors, and cognitions throughout the lifespan (Bowlby, 1969/1982, 1973;

see also Cassidy & Shaver, 1999, 2008). Compared to insecurely attached adolescents, secure adolescents are better able to cope with life's stresses and are better able to seek help when distressed (see Allen, 2008, for a review). In addition, attachment security is associated with better peer relationships and higher peer popularity (Allen, Porter, McFarland, Marsh, & McElhaney, 2005; Dykas, Ziv, & Cassidy, 2008). These two aspects of attachment security in adolescence raise an interesting paradox: On one hand, attachment security could be associated with *lower* levels of risk-taking behaviors due to better emotion regulation and coping skills, two traits that should buffer adolescents from seeking substances when distressed. On the other hand, attachment security could be associated with *higher* levels of risk-taking behaviors as a result of adolescents' popularity with peers and access to illicit substances (see below for more information about links between peer relationships and adolescent risk-taking). Thus, two important research questions in this area are (a) whether adolescent attachment security is associated with more or less risk-taking behaviors, and (b) whether there are particular contexts in which attachment security serves as a potential buffer and other contexts in which attachment security is a risk factor for engaging in risky behaviors.

Across a variety of samples, evidence suggests that secure adolescents engage in fewer risk-taking behaviors than insecure adolescents. These studies have primarily examined adolescents' alcohol and marijuana use and delinquent behaviors (e.g., Allen, Moore, Kuperminc, & Bell, 1998; Cooper, Shaver, & Collins, 1998; Crawford & Novak, 2008; van der Vorst et al., 2006). The large majority of the research on links between adolescent attachment and risk-taking has relied on self-reports of attachment (e.g., Burge et al., 1997; Dekovic, 1999; Marcus & Betzer, 1996; van der Vorst et al., 2006).

Additionally, many of these studies constructed new measures or combined self-reports of constructs that are modestly related to attachment, such as closeness and warmth, leaving the question open as to whether these studies are actually measuring dimensions of attachment (e.g., Arbona & Power, 2003; Crawford & Novak, 2008; Drapela & Mosher, 2007).

A handful of studies have used other measures of adolescent attachment, such as the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1984, 1985, 1996). For example, in a study of adolescent in-patients at a treatment facility, Rosenstein and Horowitz (1996) found that substance-abusing adolescents were most likely to be classified as dismissing on the AAI. Branstetter et al. (2009) examined connections between adolescent risk-taking and representations of attachment using both self-reports and the AAI and substance use. Across a period of two years, higher levels of adolescents' self-reported attachment security were associated with higher levels of adolescent and mother reports of parental monitoring, which in turn were associated with lower levels of adolescent substance use. This finding remained significant even after accounting for initial levels of adolescent substance use. Interestingly, however, this pattern did not hold for attachment states of mind on the AAI. These findings suggest that it will be informative for future studies to include both self-report and interview assessments of attachment to examine connections to adolescent risk behavior, especially given that self-report and interview measures of attachment are often uncorrelated (Roisman et al., 2007).

Allen et al. (2002) examined the role of attachment as a predictor of increases in delinquent behavior over a two-year period in adolescence. Preoccupation with

attachment predicted increases in delinquent behavior over a two-year period. Similarly, adolescent attachment preoccupation interacted with maternal autonomy, such that preoccupied adolescents whose mothers were assertive and confident were more likely to engage in drug use and risky sexual activities (Marsh, McFarland, Allen, McElhaney, & Land, 2003). In addition, Allen and colleagues examined the role of attachment as a predictor of growth trajectories of delinquent behavior (Allen, Porter, McFarland, McElhaney, & Marsh, 2007). In this study, they found that attachment insecurity was linked to higher initial levels of delinquent behavior *and* a steeper growth trajectory of delinquent behavior over a two-year period from ages 13 to 15. In other words, compared to secure adolescents, insecure adolescents at baseline engaged in riskier behaviors, and the rate at which they increased their delinquent behavior was faster.

Although most evidence to date supports the notion that adolescent attachment security is associated with lower levels of risk-taking, there is some evidence to suggest that attachment security may, in some cases, lead to increases in risk-taking behaviors. In a longitudinal study, Allen and colleagues found that attachment security predicted adolescent popularity with peers (Allen et al., 2005). However, adolescent popularity predicted greater levels of adolescents' alcohol and substance use, even after controlling for prior levels of drug and alcohol use. The analyses were not conducted as a formal test of whether peer popularity mediated the link between attachment and risk-taking; in fact, correlational analyses in this study suggested that there was no link between attachment security and risky behavior. Nevertheless, these findings offer some evidence that an unexpected consequence of attachment security could be, at least in some cases, greater engagement in risk-taking behaviors.

Interparental Relationships and Adolescent Risk-Taking

Interparental relationships have been studied as a possible contributor to children and adolescents' adjustment outcomes (Cummings & Davies, 2010). Although the majority of this research has focused on children's internalizing and externalizing symptoms more generally, there is substantial evidence to suggest that the quality of the interparental relationship is associated with adolescents' risky behavior. One aspect of the parents' relationship that has been extensively studied in relation to adolescent risky behavior is the impact of divorce. In addition, a number of studies have found evidence to suggest that exposure to interparental violence is a significant predictor of later risk behavior. Other aspects of the interpersonal relationship, such as conflict, have been studied less frequently, but there is some evidence to suggest that interparental conflict may be associated with adolescent risk-taking. Below, I review research findings related to several aspects of the interparental relationship that are thought to be associated with adolescent risk behavior.

Divorce. A number of studies have identified parental divorce as a risk factor for adolescents' engagement in risky behaviors, such as drug use and risky sex (Flewelling & Bauman, 1990; Needle, Su, & Doherty, 1990; for a review, see Miller et al., 2001). Children from divorced families consistently have higher rates of substance use (Needle et al., 1990) and deviant behavior (Newcomb & Bentler, 1988). Similarly, adolescents whose parents are divorced are more likely to have sex, have sex at a younger age, and are more likely to get pregnant than their peers who grow up with married parents (e.g., Miller & Bingham, 1989; Newcomer & Udry, 1987).

Interestingly, some evidence suggests that parental divorce may influence adolescent boys and girls differently (e.g., Doherty & Needle, 1991; Guidubaldi & Perry, 1985; Hetherington, Cox, & Cox, 1985). In a prospective study, Doherty and Needle (1991) found that the timing of divorce was a key factor in explaining adolescents' negative behavior patterns, and these timing effects differed by adolescent sex. For example, adolescent boys had negative changes in behavior following the divorce, but adolescent girls exhibited elevated problem behavior *prior* to the divorce and did not show changes in behavior after parents' divorce. It may be that unique, sex-specific mechanisms explain the role of divorce as a contributor to risky behavior. For example, some evidence suggests that adolescent girls are more likely than boys to become involved in efforts to maintain harmony in the parents' marriage (e.g., Shelton, Harold, Goeke-Morey, & Cummings, 2006), and it could be that pre-divorce turmoil in the deteriorating marriage is more stressful for girls, leading to greater involvement in risk-taking as a method of coping. Other studies, however, have found no gender differences in the long-term negative outcomes for adolescents whose parents divorced (Acock & Kiecolt, 1989), so continued research on the ways in which divorce may influence adolescents' risk-taking behavior is needed.

A number of studies have sought to explain why adolescents from divorced families report higher levels of risk-taking, but surprisingly, many explanations have not been able to account for this link. For example, adolescent risk behavior after divorce does not appear to be caused by living with one parent as opposed to two parents: Adolescents living with a step-parent (as a result of parents divorcing and remarrying) also show elevated risk-taking, relative to adolescents living with two biological parents

(e.g., Flewelling & Bauman, 1990). Similarly, the effect of parental divorce on adolescent adjustment has not been fully explained by decreased socioeconomic status (Acock & Kiecolt, 1989) or by common underlying genetic associations (Burt, Barnes, McGue, & Iacono, 2008). Other factors, such as increased conflict and instability or decreased emotional support, may explain why adolescents from divorced families report higher levels of risk-taking, but these possibilities remain to be tested. Some evidence suggests that negative effects of divorce on adolescent risk-taking may occur as a result of distressing emotions brought on by the divorce. In a study of adolescents from divorced families, Buchanan, Maccoby, and Dornbusch (1991) found that “feeling caught” between divorced parents was associated with adolescent risk-taking. Thus, when parental divorce creates turmoil and significant emotional distress, adolescents may turn to drugs, alcohol, or other risky behaviors to cope with their negative emotions.

Interparental aggression and violence. Several studies have examined links between interparental aggression and abuse and adolescent risk-taking. Across these studies, evidence suggests that verbal and physical abuse in the marriage are both associated with adolescent risk behaviors, including substance use (Fergusson, Boden, & Horwood, 2008), sexual activity (Elliott, Avery, Fishman, & Hoshiko, 2002), and delinquent behavior (Boden, Fergusson, & Horwood, 2010). For example, in a 25-year longitudinal study, Fergusson and colleagues found that adolescent illicit drug use was associated with exposure to interparental violence before the age of 16. Similarly, a study of adolescent girls indicated that those who had witnessed interparental violence were more likely to engage in risky sexual behavior (Elliott et al., 2002).

Interparental conflict. Connections between interparental conflict and children

and adolescents' negative outcomes, including internalizing and externalizing behavior problems, have been well documented in cross-sectional and longitudinal studies (for reviews, see Cummings & Davies, 2002, 2010; Davies & Cummings, 1994). A large body of research supports the notion that interparental conflict is stressful and behaviorally and emotionally dysregulating for children and adolescents (Cummings & Davies, 2002; Davies & Cummings, 1994; Davies, Harold, Goeke-Morey, & Cummings, 2002). The *emotional security theory* (Cummings & Davies, 2010; Davies & Cummings, 1994) states that negative consequences of interparental conflict result from children's inability to derive a sense of comfort and security in the family context. (This theory is similar to attachment theory [Bowlby, 1969/1982; 1973] in that children's sense of "emotional security" can be influenced by the parent-child relationship, but differs in the emphasis placed on other family relationships, such as the interparental relationship.)

Interparental conflict is thought to contribute to children and adolescents' increased negative emotional reactivity and poor emotion regulation skills (see Cummings & Keller, 2006, for a review). In addition, a lack of confidence in parents' availability contributes substantially to problems responding to distress (Cassidy, 1994). The presence of conflict in the marriage may interfere with parents' abilities to be sensitively attuned to the needs of their children. Similarly, children who witness conflict in the marriage may be reluctant to turn to parents for help in times of need. Theory and research suggest that one reason for engaging in health risk behaviors is to cope with negative emotions (Simons & Gaher, 2005). Thus, if interparental conflict contributes to adolescents' experience of negative emotions, and if adolescents lack appropriate resources to manage these feelings, then they may turn to risky behaviors in as an

avoidant coping mechanism.

Surprisingly, few studies have examined links between interparental conflict and adolescent risk behaviors (Davies & Windle, 2001; Tschann, Flores, Martin, Pasch, Baisch, & Wibbelsman, 2002). Davies and Windle (2001) examined the role of interparental conflict on adolescents' delinquent behaviors across two years. Mother reports of arguments in the marriage were related to adolescent delinquency, although this effect was limited to adolescents who reported having a difficult temperament or who perceived low levels of support in the family. These findings suggest that it is important to consider both individual and contextual factors when examining the link between interparental conflict and adolescent risk-taking, as it may be that interparental conflict exerts a negative influence particularly for certain types of adolescents or in specific family contexts.

In a longitudinal study of Mexican American adolescents, Tschann and colleagues studied the ways in which interparental conflict may influence adolescents' emotional distress, substance use, and sexual experience. Parents and adolescents reported about the frequency, intensity, content, and resolution of interparental conflict in the home. Interparental conflict about child-related issues was directly linked to adolescents' substance use and sexual experience six months later. In addition, child involvement and appraisals of conflict were related to their emotional distress, which in turn was related to adolescent substance use and sexual experience. These findings shed some light on the notion that adolescents who are exposed to interparental conflict may be at risk for participating in substance use and risky sex (and not just delinquent behaviors). Because this research focused on Mexican-American adolescents (who are thought to be at high

risk for participating in these unsafe behaviors), it will be important for future research to examine links between interparental conflict and adolescent risk behavior in a broader range of racial and ethnic groups.

An additional question related to the link between interparental conflict and adolescent risk behavior concerns the content of such conflict between parents. Researchers have proposed that if the content of the conflict centers on children (e.g., childcare, parenting decisions), then the negative outcomes associated with interparental conflict may be more severe than if the conflict pertained to topics not directly related to the children (see Grych & Fincham, 1993). The intensity of interparental conflict may be another important aspect that determines whether interparental conflict influences adolescent risk-taking. For example, adolescents who witness overt displays of anger and hostility may be more at risk for engaging in risk behaviors compared to adolescents who experience milder forms of conflict (e.g., nagging, complaining). Thus, an important direction for future research is to examine not only whether the presence of interparental conflict predicts risk behavior, but also whether the frequency, intensity, and content of interparental conflict influences adolescents' risk-taking behaviors.

Sibling Relationships and Adolescent Risk-Taking

Sibling relationships have been studied less frequently than other family relationships as possible contributors to adolescent risk-taking. In the last decade, however, growing interest has led to increasing efforts to understand how siblings influence adolescent behavior (e.g., Branje, van Lieshout, van Aken, & Haselager, 2004; Brody, 1998; Samek & Reuter, 2011). Siblings often exhibit similar levels of substance use and risk-taking behaviors (e.g., Slomkowski, Rende, Conger, Simons, & Conger,

2001). One explanation for such similarity is their shared genetic susceptibility (e.g., McHale, Bissell, & Kim, 2009). This explanation emphasizes that sibling similarity in risk behavior is merely an artifact of a shared genetic predisposition, rather than an aspect of the relationship itself. Some evidence suggests that this heritability hypothesis may at least partially account for sibling similarity in risky behavior. In a national sample of adolescent sibling pairs, siblings who were more genetically similar to each other (e.g., identical twins) reported more similar sexual behaviors, relative to siblings who were less genetically similar (e.g., adopted siblings; McHale et al., 2009). Interestingly, in this study the link between sibling genetic similarity and substance use concordance was explained by closeness in the relationship and family warmth. Thus, even in the presence of a genetic explanation for similar risk behavior between siblings, it is possible for relationship and environmental factors to continue to play an important role.

Other researchers have proposed a social learning theory explanation to account for the links between sibling risk behaviors (Bank, Patterson, & Reid, 1996). According to this perspective, siblings may learn risk-taking behaviors from each other by modeling risk behavior attitudes and experiences (e.g., Ary, Tildesley, Hops, & Andrews, 1993; Criss & Shaw, 2005; Slomkowski et al., 2001). In addition, older siblings who experiment with drugs and alcohol can provide opportunities for younger siblings to learn about and experiment with illicit substances (Brook, Whiteman, Gordon, & Brenden, 1983; Brook, Whiteman, Gordon, & Brook, 1990). Younger siblings who might not otherwise have a desire to engage in risky behavior or access to illicit substances may use older siblings as both a model for behavior and an opportunity to gain access to drugs and alcohol. Brook and colleagues (1990) found that even after accounting for the role of

older brothers as providers of drugs for younger brothers, there was still a connection between older and younger brother drug use. In other words, the link between sibling risk-taking was not solely a result of the increased availability of drugs. This finding suggests that older siblings may play a dual role for younger sibling substance use, serving as models for risky behavior and providing opportunities for younger siblings to engage in similar activities.

Less is known, however, about how the *quality* of the sibling relationship may buffer siblings from engaging in risky behaviors. As with the role of other close relationships, there may be several ways that the quality of the sibling relationship serves to influence adolescent risk-taking behavior. On one hand, it could be that sibling relationships characterized by negativity contribute to greater levels of risk-taking behavior in an effort to minimize negative emotions that arise in the context of such hostility and conflict. Moreover, these hostile relationships may also be characterized by coercion and peer pressure to engage in risk-taking. On the other hand, siblings who enjoy a warm, close relationship with each other may be susceptible to sibling influence (Rowe & Gulley, 1992). In this case, it could be that a close relationship with a sibling who engages in risky behavior may lead to an adolescent's increased interest in engaging in risky behavior. Thus, an important research question concerns whether positive or negative qualities of the sibling relationship are potential risk factors for adolescent risk-taking behaviors.

A handful of studies have examined how qualities of the sibling relationship are associated with adolescent risk-taking. In a longitudinal study of Latino and African American families, East and Khoo (2005) found that greater sibling support was

associated with lower drug and alcohol use three years later. In addition, sibling conflict was associated with increases in drug and alcohol use. Surprisingly, however, low levels of sibling conflict were also associated with *increased* risky sexual behavior. Although this finding was unexpected, it could be that adolescents whose sibling relationships are characterized by low conflict are similarly less conflictual in their romantic relationships; such unwillingness to engage in conflict may result in poor decisions about sexual activities and the use of contraceptives. This finding should be explored in future research, however.

In another study, Samek and Rueter (2011) examined the unique effects related to sibling relationship quality and genetic similarity in a sample of adopted and non-adopted sibling pairs. Adolescents who felt close to their siblings engaged in less substance use, and this effect held even if the sibling was a substance user. Further, these findings did not differ based on the genetic relatedness of the sibling pair. Similarly, Branje et al. (2004) found that greater levels of support from an older brother were associated with girls' less aggressive and delinquent behavior two years later. Sibling support from older sisters was not associated with younger siblings' delinquency, however, suggesting the need to differentiate between the role of brothers and sisters in future research. Similar evidence for the role of sibling hostility and warmth comes from a sample of same-sex sibling pairs (Slomkowski et al., 2001). For sisters, greater warmth and lower hostility as reported by the older sibling were negatively associated with the younger sister's delinquency. Younger sisters had the highest levels of delinquency when they had a delinquent and hostile older sister. A different pattern emerged for brothers, however. Younger brothers engaged in the highest levels of delinquency when they had a deviant

older brother who was hostile *and* warm. These findings suggest that there may be sex differences in the extent to which positive and negative qualities of the sibling relationship influence adolescent risk-taking behaviors.

Social Relationships Outside the Family in Adolescence

Adolescence is characterized by dramatic shifts in daily companionship, changing from a large portion of time spent with family members to time spent mostly with peers (Brown, 2004; Csikszentmihalyi & Larson, 1984; Fuligni & Stevenson, 1995). Given that adolescents are most likely to engage in risky behavior while in the presence of peers and friends (Chassin et al., 2004; Gardner & Steinberg, 2005; Steinberg, 2008a), these changes in how adolescents spend their day have important implications for risk-taking behavior. Below, I describe the ways in which relationships with peers, friends, and romantic partners are thought to influence the development of adolescents' risk-taking behaviors.

Peer Relationships and Adolescent Risk-Taking

Peer relationships have long been recognized as a major contributor to adolescent risk-taking behaviors (Petraitis et al., 1995; Schulenberg et al., 1999; Steinberg, 1986). Although researchers are largely in agreement that peer relationships are associated concurrently and prospectively with risk-taking, significant disagreement remains about the reasons why peer relationships are associated with risk. A large focus of research on the role of peer relationships in shaping risk-taking behaviors has focused on socialization versus selection of these behaviors. These two factors, described in more detail below, focus on the extent to which adolescents learn risk-taking behaviors after joining a peer group (socialization), or whether adolescents choose peer groups based on

existing levels of risk-taking (selection). Empirical findings have suggested that selection effects tend to outweigh socialization effects (e.g., Bauman & Ennett, 1996; Engels, Knibbe, & Drop, 1997) but it is likely that at least some of adolescents' risk-taking behavior results from socialization influences by peers (Monahan, Steinberg, & Cauffman, 2009; Sieving, Perry, & Williams, 2000; Simons-Morton & Chen, 2006). Attempts to understand adolescents' perceptions and attitudes about risk-taking show that cognitions about the risk-taking behaviors of peers may explain adolescents' decisions to take risks themselves. Finally, other researchers have focused on adolescent popularity with peers as a predictor of risky behavior, and recent clarifications in how to measure and define popularity has yielded important information about its connections to risk behavior. Below, I describe each of these aspects of peer relationships in more detail.

Peer socialization of risk-taking. Socialization theories of risk-taking emphasize the role that peer influence and pressure play in contributing to risk-taking behavior (e.g., Duncan, Tildesley, Duncan, & Hops, 1995; Sieving et al., 2000; Wills & Cleary, 1999). This thinking stems from the notion that peers may contribute to the development of adolescent risk behavior by aiding in access to illicit substances, creating norms for risk behavior, and pressuring or encouraging adolescents to engage in risky behaviors to maintain status in the group. Further, evidence suggests that adolescents engage in risky behavior in the presence of peers, rather than alone (e.g., Gardner & Steinberg, 2005). Thus, according to this perspective, one major reason that adolescents engage in risky behavior is due to socialization of these behaviors in an attempt to maintain status or connectedness in the peer group.

In a longitudinal study of adolescent alcohol use, Sieving and colleagues (2000) found support for peer socialization as a contributor to adolescents' subsequent alcohol use. Similarly, Duncan et al. (1995) found that peer encouragement to use drugs was a significant predictor of adolescent substance use. In many studies of peer socialization of risk, researchers measure peer socialization by examining adolescents' perceptions of how much their peers encourage their risk-taking behaviors (e.g., Sieving et al., 2000) or by measuring risk-taking behaviors that occur after the adolescent has joined the peer group (e.g., Duncan et al., 1995). These research studies give us some insight into peer socialization processes, but they are limited because these study designs rely on self-reports of peer socialization, which can be inaccurate. Further, many studies do not measure risk-taking behaviors prior to joining the peer group, which may inflate effects of peer influence. In an attempt to move beyond self-reports of peer influence, researchers have more recently used behavioral observations (Allen, Porter, & McFarland, 2006; Dishion & Owen, 2002) as well as experimental manipulations (Gardner & Steinberg, 2005) to examine the effects of peer influence on risk-taking.

Some experimental evidence suggests that peer influence plays an important role in adolescent risk-taking behaviors (Gardner & Steinberg, 2005). In this study, participants played a computer game called "Chicken," which was designed to mimic decision-making processes and risk-taking propensity during a simulated driving experience (i.e., participants had to decide whether to accelerate or decelerate when a traffic light changed from green to yellow). Adolescents earned more points if they successfully navigated through the yellow light before it turned red, but they lost all accumulated points if they drove through a red light. In one condition, adolescents played

the game alone, while adolescents in the other condition played while two friends watched and were allowed to call out advice. Gardner and Steinberg (2005) found that adolescents who played the game in the presence of peers took more risks than adolescents who played the game alone. Although this effect was evident for adolescents and adults, the influence of peers was more pronounced for adolescents. These findings lend support to the notion that peer influence causally increases adolescents' risk-taking behaviors.

Selection of risky peers. In contrast to theories of peer influence, theories of adolescent selection of risky peers propose that adolescents choose peer groups and friends based on preexisting levels of risk behaviors, selecting peer groups whose behaviors are similar to their own (e.g., Burk, van der Vorst, Kerr, & Stattin, 2012; Ennett & Bauman, 1994; Fisher & Bauman, 1988). Based on this model, adolescents are motivated to initiate relationships or change peer groups according to the behaviors of peers. For example, adolescents who enjoy engaging in risks may seek out similar substance-using friends, whereas adolescents who are risk-averse may find peer groups who are similarly cautious in their behavior.

Peer selection effects can best be detected using longitudinal study designs, which allow for examination of whether risk-taking behaviors precede acquisition of friends who are engaging in such behaviors. In a longitudinal investigation of early adolescent smoking and alcohol behaviors, Bauman and colleagues (Ennett & Bauman, 1994; Fisher & Bauman, 1988; see Bauman & Ennett, 1996, for a review) found that adolescents who were using substances at one time point were more likely than non-using peers to gain a close friend that also used substances one year later. Similarly, Burk et al. (2012) recently

examined adolescents' and their peers' drinking behavior across adolescence. Evidence emerged in support of peer selection for alcohol use, particularly in early adolescence.

Current evidence about the relative importance of peer selection and peer influence is mixed: Some studies have shown stronger selection effects (e.g., Ennett & Bauman, 1994; Fisher & Bauman, 1988) while other studies have found larger effects of peer influence (e.g., Wills & Cleary, 1999) and still other studies have identified relatively equal contributions from influence and selection (e.g., Kiuru, Burk, Laursen, Salmela-Aro, & Nurmi, 2010; Popp, Laursen, Kerr, Stattin, & Burk, 2008). Recently, Knecht and colleagues (Knecht, Burk, Weesie, & Steglich, 2011) have argued that these inconsistent findings across studies are not necessarily due to participant characteristics (e.g., race, gender composition) but rather may be due to differences in methodological and statistical analysis techniques. Knecht et al. used a multilevel modeling technique to simultaneously measure selection and influence effects in a longitudinal study design. Using this approach, they found stronger evidence for the role of peer selection, rather than peer influence, in shaping adolescent alcohol use. Future research should continue to investigate the relative contributions of peer selection and influence, especially in light of more sophisticated statistical techniques that can estimate both factors concurrently. Moreover, because some evidence suggests that the relative contributions of peer selection and influence effects may change over the course of adolescence (Burk et al., 2012; Popp et al., 2008), it will be particularly informative for studies to examine how effects of peer socialization and peer influence change across development.

Perceptions and attitudes about peer risk-taking. Given that adolescents are concerned with maintaining peer acceptance and approval, adolescents may be likely to

engage in risky behaviors to fit in with their perceptions of peer attitudes and risk behaviors. Unfortunately, adolescents have difficulty accurately estimating the risk behavior of their peers (e.g., Belendiuk, Molina, & Donovan, 2010). A number of studies have found that adolescents' perceptions of peer risk-taking may be a better predictor of adolescent risk-taking than peers' actual behavior (Bauman & Fisher, 1986; Iannotti, Bush, & Weinfurt, 1996). For example, Iannotti and colleagues (1996) found that adolescents' perceptions of peer substance use at age 12 predicted adolescents' substance use the following year, even when controlling for adolescents' previous levels of substance use. Similarly, Henry, Schoeny, Deptula, and Slavick (2007) found that when peer attitudes about the costs of sex were low (e.g., peers showed little concern about pregnancy or feelings of embarrassment as a result of engaging in sex), adolescent girls were more likely to have sex without a condom. These findings are concerning because they suggest that adolescents may be modifying their behavior based on perceptions of peer behaviors – perceptions that may be inaccurate.

In contrast, there is some evidence to suggest that perceptions about peer attitudes can serve as a protective factor against risky behavior. DiIorio and colleagues (2001) examined adolescents' perceptions about peer attitudes towards sex, and they found that adolescents who perceived negative peer attitudes about sex were less likely to engage in sexual activity. These adolescents may have been motivated to avoid sexual activities because of concerns of undesirable social repercussions. These findings have led some researchers to suggest that preventative interventions target perceptions about social norms in an effort to reduce risky behavior (Henry et al., 2007).

Peer acceptance and popularity. Traditional theories of adolescent peer acceptance and popularity predict that low accepted, rejected adolescents would be most at risk for negative outcomes, including delinquent and risky behavior (Kupersmidt & DeRosier, 2004; Parker & Asher, 1987). Indeed, there is evidence that disliked adolescents engage in higher levels of substance use and delinquency than their non-rejected peers (Ollendick, Weist, Borden, & Greene, 1992; Prinstein & LaGreca, 2004; Spooner, 1999; Woodward & Fergusson, 1999). For example, Woodward and Fergusson (1999) found a connection between children's peer relationship problems at age 9 and later substance abuse outcomes, including alcohol and marijuana use. Similarly, Ollendick et al. (1992) examined children's sociometric status in fourth grade as a predictor of later risky behavior. They found that children who were classified as rejected were more likely than popular or average children to report substance abuse problems five years later. These findings are consistent with the idea that difficulty getting along with peers is a significant risk factor for later problematic behavior, including delinquency and substance use. One explanation for these findings is that rejected adolescents turn to antisocial activities in response to social isolation. It could also be that disliked adolescents seek out illicit substances as a way of self-medicating in response to social pain.

In recent years, however, researchers have begun to test alternative hypotheses about the relation between peer acceptance and adolescent risk-taking, proposing that in some cases, higher peer status may be associated with *greater* involvement in risky behavior (Kiesner & Pastore, 2005; Prinstein, Choukas-Bradley, Helms, Brechwald, & Rancourt, 2011; Prinstein, Meade, & Cohen, 2003). These alternative hypotheses stem

from two theoretical advancements in the literature. First, Moffitt (1993, 1997) proposed that adolescents come to view participation in illicit activities, such as substance use, as mature and adult-like. Accordingly, popular adolescents may be more likely to engage in these behaviors as a way of demonstrating their high status and autonomy. Second, researchers who study peer relationships have distinguished between different types of children who may receive a “popular” peer status. Children and adolescents may be rated as popular for two different reasons: (a) they are well liked by their peers, having what is known as high *sociometric popularity*, or (b) they have high social status but may be dominant and aggressive, or what is referred to as *perceived popularity* (Parkhurst & Hopmeyer, 1998).

Empirical support has emerged for this updated perspective on the connections between peer popularity and risky behavior. Prinstein et al. (2003) examined sexual activity as a function of adolescents’ peer-sociometric and perceived popularity. Adolescents’ sexual behaviors were positively associated with perceived popularity but were not associated with sociometric popularity. In addition, findings revealed that the number of sexual partners was negatively associated with perceived popularity. These findings suggest that perceived popular adolescents are likely to engage in moderate but not high levels of sexual behaviors (that is, they are likely to have engaged in some sexual behaviors but not with a large number of sexual partners).

Similar evidence for complex connections between perceived peer popularity and health risk behavior comes from a longitudinal study of high school students, who reported on their engagement in alcohol and cigarette use and sexual behavior (Prinstein et al., 2011). In this sample, Prinstein and colleagues examined both linear and

curvilinear relations between adolescents' perceived popularity and their health risk behaviors. Interestingly, evidence of both linear and curvilinear associations emerged, and the pattern of findings was somewhat different for boys and girls. Specifically, perceived popularity was positively associated with later marijuana use for boys but not for girls. In addition, there was a positive link between perceived popularity and number of sexual partners for boys who were high in perceived popularity. In contrast, for boys who were lower in popularity, there was no association between perceived popularity and the number of sexual partners. These results suggest a need to consider curvilinear associations between the quality of adolescents' peer relationships and their risky behaviors, as simple linear models may obscure meaningful information about the ways in which peer status influences health risk.

Friendships and Adolescent Risk-Taking

In addition to the behaviors of the larger peer group, researchers have turned to the behavior of adolescents' close friends as a possible explanation for why adolescents choose to engage in substance use, delinquent, and risky behaviors (e.g., Urberg, Degirmencioglu, & Pilgrim, 1997). Friends' risk-taking behaviors are typically correlated (Lynskey, Fergusson, & Horwood, 1998; Prinstein, Boergers, & Spirito, 2001; Urberg, Luo, Pilgrim, & Degirmencioglu, 2003), and adolescents frequently report engaging in risk behavior in the company of friends (e.g., van der Vorst, Engels, & Burk, 2010). Much of the focus on adolescents' friendships has been on the extent to which friends influence each other's risk behavior (e.g., Bot, Engels, Knibbe, & Meeus, 2005). Fewer studies have focused on the *quality* of friendships as a predictor of risky behavior, but

available evidence suggests that there may be a link between the quality of adolescents' close friendships and adolescent risk-taking behaviors.

Friends can influence adolescent risk-taking behaviors through discussions and encouragement of risk-taking, or what researchers have referred to as “deviant friendship processes” (Dishion & Patterson, 1999; Patterson et al., 1992). These discussions often include direct encouragement of risk behavior as well as advice about how to take part in deviant behaviors (Dishion, Spracklen, Andrews, & Patterson, 1996). In a longitudinal study of adolescents and their close friends, Dishion and Owen (2002) examined the bidirectional links between boys' deviant friend discussions and adolescent substance use. Using observations of friendship interactions, they found that the extent to which boys engaged in deviant talk in early adolescence was related to late adolescent risk-taking. Moreover, substance use in early adolescence influenced the nature of the friendship discussion in late adolescence. This study suggests that, at least for adolescent boys, substance use influences and is influenced by the quality of their close friendships. This study is a notable advancement of the majority of research on links between friends and substance use because they observationally examined *behaviors* in the friendship dyad, thus avoiding shared method biases that plague this field. Unfortunately, however, because this sample included only boys, we do not know how these processes may be similar or different for adolescent girls. Given important sex differences in friendship experiences (Berndt, 1981, 1982), future research should examine connections between behaviors with friends and substance use for both boys and girls.

Other studies have investigated individual differences in the extent to which friends serve as sources of influence for adolescent engagement in risky behavior (Allen

et al., 2006; Bot et al., 2005; Laursen, Hafen, Kerr, & Stattin, 2012). In a longitudinal study of early adolescents, Bot et al. (2005) examined the role of friendship characteristics and friends' drinking behavior in explaining adolescents' drinking patterns. In this study, they distinguished between mutual friendships and unilateral friendships – friendships where only one of the two adolescents acknowledges the relationship as such. Findings revealed that friends' drinking patterns were related concurrently, particularly for adolescents with mutual friendships. Adolescents whose close friend had higher peer sociometric status were most likely to be influenced by the friend's drinking behavior, adjusting their drinking patterns over time to be more similar to the higher status friend's behavior. These findings are important because they suggest that friends may not equally influence each other's drinking behavior. Instead, it could be that friends who have more power in the relationship may be most likely to influence the behavior of their lower status friends.

Although many studies have examined the extent to which friends influence each other's risk-taking behaviors, fewer studies have examined friendship quality as a predictor of risk behavior. Further, available evidence on links between friendship quality and risk-taking is inconsistent. In some studies, positive associations between friendship quality and risky behavior have been reported (e.g., Urberg et al., 2003). One hypothesis is that friends with a high quality relationship will be more likely to try new activities, and adolescents may have more confidence to engage in risky behaviors when in the company of a close friend that they can trust. Based on the social control theory (Hirschi, 1969), it could be high commitment to a friend could lead to increased risk-taking behavior if the friend engages in such activity. Thus, after the formation of a high-quality

friendship, adolescent risk-taking behavior may be largely influenced by the risk-taking behavior of the friend. In a longitudinal study of adolescent alcohol and cigarette use, adolescents reported on positive and conflictual qualities of their closest friendship (Urberg et al., 2003). Researchers identified links between friendship quality and adolescent alcohol and cigarette use one year later. In this study, lower reports of conflict and higher reports of positive friendship quality were associated with greater involvement in substance use. These findings suggest that a high quality friendship may actually put adolescents slightly at risk for engaging in risky behavior.

Other studies, however, have found negative associations between friendship quality and risk behaviors (e.g., McElhaney, Immele, Smith, & Allen, 2006; Poulin, Dishion, & Haas, 1999). Indeed, adolescents who engage in risky behaviors have relationships that are less satisfying and more contentious than adolescents who do not take part in risky behaviors (Dishion, Andrews, & Crosby, 1995). According to this perspective, low-quality relationships may be reflective of the type of adolescent in the relationship. In other words, it could be that adolescents who are involved in risk-taking are less focused on developing high quality, long-lasting friendships. In one study, McElhaney et al. (2006) found that supportive friendships were associated with lower levels of problem behaviors, such as theft and violent behavior towards others, even after accounting for demographic variables. Interestingly, this effect was moderated by adolescent attachment: For adolescents who were high on attachment preoccupation, there was a significant negative association between friendship quality and delinquent behavior. For adolescents who were low on attachment preoccupation, the link between friendship quality and delinquent behavior was not significant. Thus, only for some

adolescents (that is, those who were high on attachment preoccupation) did a high quality friendship decrease their risk-taking behavior. It is interesting to speculate about why only adolescents who were high in attachment preoccupation engaged in delinquent behavior that varied as a function of their friendship quality. Preoccupied adolescents are highly concerned about their ability to be close to other relationship partners, such as friends. It may be that when these adolescents find high quality friends, they are less likely to act in ways that could be viewed negatively by the friend and thereby threaten the relationship (e.g., by engaging in delinquent activities). This research will be important to extend by considering the friend's delinquent behavior. Perhaps preoccupied adolescents would be *more* likely to engage in delinquent activity in order to maintain a close friendship with a deviant friend.

Still other studies have failed to find connections between friendship quality and adolescent risk behavior (e.g., Selfhout, Branje, & Meeus, 2008). What might account for these inconsistent findings across studies? As demonstrated in a number of studies (e.g., Bot et al., 2005; McElhaney et al., 2006), one possibility is that adolescents may not be equally influenced by the quality of their close friendships. It could be that certain adolescent characteristics, such as temperament, emotion regulation capacities, or attachment, influence the strength of the association between friendship quality and risky behavior. Others have argued that the role of adolescent friendships in the prediction of adolescent risk behavior has been inflated due to methodological and research design limitations (Jaccard, Blanton, & Dodge, 2005). Thus, an important extension for future work will be to examine multiple factors that may contribute to risk-taking using multiple methodologies to assess these factors. Similarly, longitudinal studies will help researchers

determine the ways in which qualities about the friendship can predict future risky behavior.

Romantic Relationships and Adolescent Risk-Taking

Compared to the large number of studies examining the role of peers and friends in contributing to adolescent risk-taking, only a few studies have examined the ways in which adolescent romantic relationships shape risky behaviors. One explanation for this relative neglect likely results from the previous assumption that romantic relationships in adolescence were indicative of emerging problems, such as deviant social behavior or psychopathology (see Collins, Welsh, & Furman, 2009, for a review). And although it is true that adolescents who begin dating earlier than their peers also report higher levels of substance use, most of this research has been conducted using cross-sectional study designs, so is impossible to determine whether being in a romantic relationship directly influences risk-taking. Contemporary views on adolescent development now emphasize the normative aspect of adolescents' romantic relationships (Collins, 2003). Indeed, approximately half of all adolescents have been involved in a romantic relationship by the age of 15. In the last decade, researchers have directed their attention to studying the ways in which adolescents' romantic relationships influence their risk-taking experiences.

The majority of studies on connections between adolescent risk behavior and romantic relationships focus on (a) whether being involved in a relationship confers a risk for engaging in risk-taking and (b) whether the romantic partner's risky behavior is related to adolescent risk-taking (see Rhule-Louie & McMahon, 2007, for a review). Evidence suggests that adolescents involved in romantic relationships are likely to engage in levels of risky behaviors that are similar to their romantic partners. Using data

from the National Longitudinal Study of Adolescent Health, Haynie and colleagues examined the connection between adolescents' substance use and delinquent behaviors and their romantic partners' risk-taking behaviors (Haynie, Giordano, Manning, & Longmore, 2005). Romantic partners' risk-taking experiences were related to adolescents' risk-taking, even after accounting for the role of friends in influencing risk behavior. These findings parallel research on the similarities between peer risk-taking behaviors and adolescent behaviors. More research is needed to determine whether adolescents select romantic partners based on pre-existing levels of risky behavior, or whether adolescents' risk-taking behaviors change as a result of socialization effects from the romantic partner.

Other research has sought to determine whether risk-taking behaviors precede the development of romantic relationships, or whether adolescents develop risky behavior after entering into a romantic relationship. Engels and Knibbe (2000) found that adolescent alcohol use at ages 14-15 was positively associated with romantic relationship involvement three years later. In addition, adolescent boys' drinking patterns changed following the initiation of a romantic relationship, such that drinking in public settings declined but drinking in homes increased. Girls' drinking patterns, however, were unchanged after developing a romantic relationship.

Similar findings emerged in a longitudinal study of adolescents in Sweden (Eklund, Kerr, & Stattin, 2010). Researchers examined whether prior delinquent behaviors predicted romantic relationship involvement status, and whether relationship status, in turn, predicted later delinquent behavior. Interestingly, adolescent boys' delinquent behavior (but not girls' behavior) increased the likelihood of becoming

involved in a romantic relationship the following year. Unexpectedly, after accounting for prior levels of delinquent behavior, romantic relationship status was not associated with greater delinquency the following year. On the other hand, the association between romantic relationship involvement and delinquency was significant for adolescents who were high on impulsivity traits. These findings suggest that only some adolescents may be likely to get involved in romantic relationships that increase their tendencies to engage in risk-taking behaviors. Across these two studies, findings lend more support to the notion that riskier adolescents are more likely to become involved in romantic relationships compared to their less risky peers; these findings do not suggest that becoming involved in a romantic relationship leads to greater overall levels of risky behavior.

A smaller number of studies have examined whether the *quality* of the intimate relationship predicts adolescent risk-taking (e.g., Meeus, Branje, & Overbeek, 2004). In a large study of adolescents, Meeus and colleagues measured (a) whether adolescents were involved in an intimate relationship and (b) perceptions of romantic relationship support as possible predictors of adolescent delinquent behavior, focusing on violent crime and vandalism. Interestingly, across a period of six years, they found no differences in delinquent behavior for adolescents who had a romantic partner versus those who did not. On the other hand, adolescents who perceived higher levels of support from their partner had lower levels of delinquent behavior. Further, the authors found no support for the reverse pattern, where delinquent behaviors led to changes in support from a romantic partner. These findings suggest that romantic relationship qualities may have some

protective effects, but it remains to be seen whether the protective effects remain when the romantic partner engages in risky behavior.

Interconnections Among Relationships and the Prediction of Adolescent Risk-Taking

Many studies examining the connections between adolescent relationships and risk-taking behaviors focus on the role of a single relationship (e.g., parent-adolescent relationships *or* peer relationships) as a specific predictor of risk (e.g., Brown, Clasen, & Eicher, 1986; Cottrell et al., 2003; Flewelling & Bauman, 1990; Prinstein et al., 2011). This trend is not surprising, given that theoretical and statistical models quickly become complex when multiple relationships are considered. Yet adolescents do not experience each relationship in isolation, and without simultaneously examining the relative influence of multiple relationships, studies may obscure detection of the ways in which adolescents' relationships overlap to influence risk behavior. Given broad empirical support for the theoretical proposition that there are "relations among relationships" (Bronfenbrenner, 1979; Dunn, 1988), it is critical to examine adolescent risk behavior in the context of multiple relational subsystems. In the following sections, I highlight several examples that demonstrate how the links between risk-taking and relationships are best understood through consideration of multiple relational subsystems. The goal of this section is to provide an illustrative, rather than exhaustive, review of studies that have examined the ways in which multiple relationships influence adolescent risk-taking behaviors.

Parent-adolescent and interparental relationships. Several researchers have considered the important issue of how interparental and parent-adolescent relationships

uniquely influence children and adolescents' outcomes (e.g., Harold & Conger, 1997). Indeed, increasing interest in understanding "spillover" effects that result when marital problems affect the parent-child relationship has resulted in a greater understanding of the ways that interparental and parent-child relationships mutually influence child and adolescent functioning (see Krishnakumar & Buehler, 2000 for a review).

Unfortunately, few of these studies have considered the ways in which interparental and parent-adolescent relationships uniquely influence adolescent risk behavior specifically, instead focusing on adjustment outcomes more broadly. For example, Harold and Conger (1997) conducted a longitudinal study of marital and parent-adolescent relationships as predictors of adolescent developmental outcomes. They hypothesized that marital hostility would be associated with increased hostility directed toward the adolescent, which in turn would be associated with greater maladjustment, including internalizing and externalizing behavior problems. Although this study used a composite measure of externalizing problems that included a range of problematic behaviors, several of the items tapped adolescents' engagement in risky behaviors (e.g., "driven a car when drunk"). Support for their hypothesized model emerged for the prediction of boys' but not girls' externalizing behaviors. In future research, it will be important to examine the unique contributions of interparental and parent-adolescent relationships as predictors of adolescent risk behavior. In addition, it will be useful for researchers to use narrow outcome measures that reflect engagement in risky behavior specifically, rather than externalizing problems more broadly.

Parent-adolescent and peer relationships. Other studies have examined the ways in which family and peer systems influence adolescent risk-taking (e.g., Ary et al.,

1999; Farrell & White, 1998; Fletcher, Darling, & Steinberg, 1995; see also Dodge et al., 2006). Some findings suggest that the effects of the parent-adolescent relationship are less important in influencing risk behavior once peer relationships have been taken into account (e.g., Bahr, Marcos, & Maughan, 1995). Other studies, however, suggest that both parents and peers play an important role in influencing adolescent risk behavior. For example, Farrell and White (1998) examined the joint influence of parent-adolescent relationships and peer pressure as predictors of adolescent substance use. They found a significant interaction between adolescent girls' (but not boys') reports of the quality of their relationship with their mother and their experience of peer pressure. Specifically, girls who were living without fathers, who experienced high levels of peer pressure, and who encountered distress with their mothers had elevated drug use, compared to adolescents who did not experience at least one these risks. In another study, Ary and colleagues (1999) examined the ways in which family and peer experiences uniquely predicted later problem behavior, including risky sex and substance use. Examination of parent and adolescent reports revealed that adolescents whose families experienced high conflict and low involvement were less likely to be monitored by their parents and were more likely to associate with deviant peers. A lack of parental monitoring and association with deviant peers, in turn, predicted adolescent risk behavior. These findings are consistent with the idea that both parent-adolescent and peer relationships uniquely influence adolescent risk-taking.

Other studies have sought to investigate whether parents and peers can serve as protective factors against the initiation of risky behavior (e.g., Fallu et al., 2010). For example, in a longitudinal study of at-risk boys, Fallu et al. examined whether parent or

peer relationships could buffer adolescents from engaging in substance use. Findings revealed that both parental monitoring efforts and the presence of peers with conventional behaviors in early adolescence were associated with less substance use in mid-adolescence. Just as other studies have shown independent effects of parent and peer influences in encouraging risk-taking, these findings suggest that parents and peers can also serve as unique protective influences for adolescent risk behavior.

Parent-adolescent and romantic relationships. As discussed earlier, a large body of research suggests that the quality of the parent-adolescent relationship is associated with adolescent risk-taking behavior, and a smaller body of research has found support for connections between adolescents' romantic relationships and risk-taking behavior. Meeus et al. (2004) sought to connect these separate lines of research by examining whether the quality of the romantic relationship moderates the link between parent-adolescent relationships and risky behavior in a longitudinal sample of adolescents and young adults. Interestingly, when adolescents had a romantic partner, only support from the romantic partner (and not from the parent) was negatively associated with later delinquent behavior. On the other hand, when adolescents did not have a romantic partner, support from parents was negatively associated with later delinquent behavior. As suggested by Meeus and colleagues, it could be that romantic partners – when present – take on the primary role in discouraging delinquent behavior. These findings raise an interesting question: Do delinquent romantic partners encourage *greater* delinquent behavior, above and beyond any buffering effects from supportive parents? This will be an important question for future research.

Friend and sibling relationships. In contrast to the growing recognition of parent-peer influences on adolescent behavior, much less is known about how adolescents' friendships and sibling relationships may influence adolescent risk-taking. This is somewhat surprising, given that siblings are often also the peers of adolescents and may influence adolescents' risk behaviors in ways that mimic peer relationships. Poelen, Engels, van der Vorst, Scholte, and Vermulst (2007) sought to address this gap in the literature by examining the role of best friends and siblings in the prediction of adolescent alcohol use over the course of a year. These researchers found evidence for similarities between adolescents' alcohol use and their siblings' and friends' alcohol use, but they found no evidence that friends *or* siblings influenced changes in alcohol use over time. These findings support theories of peer selection of risk-taking behaviors. Similarities among sibling risk behaviors may have been due to earlier socialization effects, such as family environment characteristics that supported engagement in risk behavior, shared genetic susceptibility, or some other common factor that supported similar drinking behaviors.

Parent, peer, and sibling relationships. A growing number of studies have examined the role of parent, peer, and sibling relationships in the prediction of adolescent risk behavior (e.g., Ary et al., 1993; Bahr, Hoffmann, & Yang, 2005). These studies are particularly informative because they provide insight into the ways in which family and peer relationships may serve as unique or redundant influences on adolescent risk-taking. Ary and colleagues (1993) examined parent, peer, and sibling attitudes about alcohol use as potential sources of influence for adolescents. Examination of adolescent alcohol use over the course of a year revealed that parents, peers, and siblings each influenced

adolescent alcohol use through their attitudes about the positive effects associated with using alcohol. In this study, however, target adolescents reported about their peers' attitudes toward alcohol, so it will be important to extend this work by using peer reports in the future. Similar findings were reported in a cross-sectional study of parent, peer, and sibling correlates of adolescent drug use (Bahr et al., 2005). In this study, parent, peer, and sibling drug use behaviors were each uniquely associated with adolescent drug use. In this study, adolescents reported about the drug use of each of these relationship partners (i.e., parents, peers, and siblings) so it is possible that some of these effects emerged because of shared method biases. Future work should continue to assess the relative influence of different relational subsystems in the prediction of adolescent risk-taking, particularly using longitudinal studies and independent reports to capture these unique sources of influence.

Future Directions

Research on the links between adolescents' close relationships and risk-taking behaviors firmly suggests that these relationships play a role in influencing adolescent risk behavior. Yet despite the wealth of studies examining these interconnections, there are still numerous opportunities for expanding our current knowledge about the ways that adolescents' close relationships contribute to their risky behavior. Below, I highlight several ways that researchers can build on the current state of the field.

Research methodologies for measuring relationships. To date, research on the connections between adolescents' relationships and risk-taking has relied almost exclusively on informants to provide assessments about the relationship. This work has merit in that it captures informant perceptions about the relationship, yet significant

limitations exist when researchers rely on informants as the sole basis of measuring qualities about the relationship. Future studies should incorporate the use of behavioral observations of relationships to gain a unique perspective on the quality of the relationship (e.g., Dishion & Owen, 2002). These studies will be not only methodologically sophisticated in their designs but may yield much richer insight into the complex ways in which adolescents' relationships may contribute to the development of risk-taking behaviors.

Similarly, study designs should include assessment of multiple relationships to examine whether positive relationships in one context may buffer adolescents from any negative outcomes related to hostile relationships in other contexts. As discussed earlier, adolescents interact with and become involved in numerous relationships, and examination of the relative influence of these different relationships will capture a more complete picture of the interconnections among relationships and risky behavior in adolescence.

Statistical design and analysis. Our current understanding of connections between adolescents' relationships and risky behavior is based primarily on linear models that examine how a relationship may be correlated with a particular risk outcome. Recent evidence, however, suggests that linear models may not always be appropriate, and there is a need to expand on our statistical approaches for predicting risk behavior. For example, curvilinear models may shed light on conditions under which positive relationship experiences may be associated with more, rather than less, risky behavior (e.g., Prinstein et al., 2011). In addition, researchers should consider incorporating the use of person-oriented statistical approaches that remove emphasis of links between variables

in favor of identification of clusters of adolescents who may be more likely than others to engage in risk behavior (e.g., von Eye, Bogat, & Rhodes, 2006).

Gender differences. Future research should examine the ways in which gender may moderate the links between adolescents' close relationships and their risky behaviors. A number of gender differences have emerged across the studies reviewed in this paper, but there does not appear to be a systematic pattern to explain these findings. Do certain relationships influence girls' risk-taking behavior more than boys' behavior? More work is needed to identify the relationship contexts that matter most for boys and girls' risk-taking behaviors.

Explanatory mechanisms. To date, mechanisms explaining the link between relationships and risk behaviors have not been thoroughly established (Pequegnat & Bray, 1997; Tinsley et al., 2004). In this next chapter of research on the links between relationships and risk-taking, researchers should test possible explanatory mechanisms that can account for these robust associations between relationship experiences and risk behavior. This work will be especially important for the development of interventions, as findings from these studies can provide insight into possible points of intervention.

Appendix B

2/27/12

Gmail - IRB Renewal Approval



Katie Ehrlich <katie.b.ehrlich@gmail.com>

IRB Renewal Approval

University of Maryland IRB <no-reply@umresearch.umd.edu> Fri, Dec 23, 2011 at 8:13 AM
 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>



UNIVERSITY OF
 MARYLAND
 INSTITUTIONAL REVIEW BOARD

Renewal 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: December 23, 2011

Expiration Date: February 09, 2013

Application: Renewal

Review Path: Expedited

The University of Maryland, College Park Institutional Review Board (IRB) Office approved your Renewal 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.

2/27/12

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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](tel:301-405-0678) or jsmith@umresearch.umd.edu

Additional Information: Please contact the IRB Office at [301-405-4212](tel: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](tel:301.405.4212)
FAX [301.314.1475](tel:301.314.1475)
irb@umd.edu
<http://www.umresearch.umd.edu/IRB>

Appendix C

THE TEEN CONFLICT TASK SCALES**General Description**

The conflict task scales include 4 (7-point) scales on which various behaviors of the teen are coded. For each scale, the teen receives a score ranging from 1 to 7. The scales are identified below, and then defined in detail on the pages that follow. Coders must be thoroughly familiar with this manual.

The teen scales are:

1. Avoidance of Discussing Disagreement
2. Maintaining Secure Relatedness/Secure Base Use
3. Autonomous Assertiveness and Clarity of Position
4. Hostility

This coding system drew on the work of Kobak et al. (1993) and Crowell et al. (2002).
Yair Ziv, Jude Cassidy, and Fatima Ramos-Marcuse
Draft date: October 25, 2002

Revised coding system

Authors: Katherine Ehrlich, Jude Cassidy, and Shaina Wamsley
Draft date: February 4, 2010

General procedure

1. Write your initials and the participant's ID number at the top of each scoring sheet. Write the date the original interaction took place and specify, by circling, whether the parent is the mother or father. Provide a description of the parent and the teen (e.g., African-American, short hair).

2. Watch each videotaped interaction twice – first to get a general sense of the interaction (watch the entire interaction without stopping the tape), then again focusing on the teen and coding all 4 scales. You may, however, need to watch each interaction more than twice if you feel you missed something. The start time should already be listed on your coding sheet. Note: If the teen rates the issue as a 4 or 5, turn to the “Truthfulness guide” in your coding manual for further instructions.

3. Begin watching the video tape at the indicated start time. Stop the video every minute to take notes for each individual scale—these notes will help you remember details of the interaction when you make your final scores later. While you will not provide a separate code for each topic, please note the topic that is being discussed each minute in the provided space on the coding sheet. At the end of the discussion, give an overall score for each of the scales. This score is for the **entire** interaction focusing on the person you are assigned to code. Record the stop time at the end of the discussion. (Note: If you are having a hard time deciding between two scores, then round down in your final score.) Record the end time of the task.

4. If the dyad *clearly* indicates that they have finished discussing the 3 topics before the 9 minutes have passed, consider the discussion to be over. Indicate on your coding sheet the time when you stopped coding. However, be careful not to stop watching too early. Many dyads go off-task for a minute or two, and then return to the task. In order to stop watching the video, the dyad must clearly end the discussion, and you must be completely certain that the dyad is not going to return to the task. You will need to watch the entire interaction once in order to determine whether or not the dyad returns to the task. Some dyads will choose other topics of disagreement to discuss. Code this part of the discussion.

5. Because of the complicated nature of this coding project, whenever a coder is unsure about a particular score, the coder is encouraged to bring it up for discussion at consensus meetings. All questions are appropriate.

1. ACTIVE AVOIDANCE OF DISCUSSING DISAGREEMENT SCALE

This scale measures the extent to which the teen **actively** avoids discussing areas of conflict or disagreement with his/her parent. Avoidance may become evident in a variety of non-verbal and verbal cues. The affective tone of avoidance can vary widely. It can be neutral, bored, evasive, or condescending.

Several behaviors should specifically NOT be counted as avoidance. These include:

- Teen says that the issue is not resolvable
- Teen moves away from the parent's preferred topic to get back to the topic the experimenter assigned
- Teen discusses an underlying issue that is directly related to the selected topic
- Teen acknowledges that the topic was once one of disagreement but has since been resolved
- The teen may argue that the parent's points are unrelated to the current discussion—this behavior does not necessarily count as avoidance. (For example: The topic is chores, and the parent says “but that’s your job” and the teen says “that’s irrelevant because I’m upset that people don’t clean up their own messes.”)

A special case: When one or both people say that there is no disagreement about the issue

Sometimes, denying that a problem exists can count as avoidance, and other times, it will not be counted as avoidance.

It IS avoidance when:

- Teen rates the issue as a 3 or greater, but then states/implies that there is no disagreement.
- Teen rates the issue as a 3 or greater, but when the parent denies there is a disagreement, the teen minimizes the disagreement or agrees to move on.

It IS NOT avoidance when:

- The teen states that there is no disagreement and his/her Issues Checklist score is a 2 or below. (Note: If the parent explains why he/she thinks there is a disagreement and the teen continues to deny that a disagreement exists,

then the teen would be considered avoiding the discussion.)

Non-Verbal Cues that indicate avoidance of discussing areas of conflict or disagreement:

- Avoids eye contact for 10 or more seconds while other person is talking
- Turns body away (or distracts from conversation with swivel chair)
- Covers face
- Focuses attention away from parent
- Engages in behavior that distracts the dyad from discussing the disagreement
- Conveys boredom or lack of interest (indicating a desire to stop discussing the topic)

Note: Two instances of the same non-verbal indicator of avoidance (e.g., two periods of gaze avoidance) count as two non-verbal signs of avoidance. In other words, the two (or more) non-verbal signs of avoidance do not have to differ in type.

Verbal Cues that indicate avoidance from discussing areas of conflict or disagreement:

- Prematurely attempts to end discussion or successfully ends discussion without closure
- Conveys lack of interest by using short responses (e.g., “Guess so,” “I don’t know”)
- Moves quickly to a resolution of a problem, when clearly the parent continues to discuss the content of the problem (e.g., a teen may say “I want you to know what my position is on this issue. Now, what you need to do is figure out how to improve this and we’re fine. I think we have pretty much reached a resolution here.”)
- Shifts to an unrelated topic
- Redefinitions of the problem that minimize differences in the content
- Denies involvement or personal responsibility for problem *as a way of avoiding discussion*
- Tries to minimize problem or disagreement with parent
- Teen refuses to discuss a sub-topic that is closely connected to the assigned topic
- Talks about or blames the problem on a third party as a means of avoiding discussion (e.g., the disagreement is actually with the other parent; comments about how they must have filled out the questionnaire incorrectly)
- Cuts parent off with curt responses in an attempt to end the discussion
- Frank refusals to discuss a topic further or to discuss it at all
- Remains silent for a rather long, awkward period when parent is seeking a response

7. Active and Sustained Effort to Avoid Discussing Disagreement with Parent

For most or all of the period of interaction, the teen consistently engages in both verbal and non-verbal avoidance behaviors. Consequently, the level of avoidance must include repeated or sustained non-verbal cues that the teen is not available for interaction or not interested in discussing the disagreement. The teen may, however, receive this score if h/she makes every attempt to avoid discussion of the issue by verbally changing the subject or shutting out the discussion (e.g., a teen may say, “I don’t like to gab about a problem. I don’t really think it’s that big of a deal anyway”).

5. Consistently Active Effort to Avoid Discussing Disagreements with Parent

The main distinction between a 5 and a 7 on this scale is the frequency and pervasiveness of the avoidant behaviors. To receive a 5, the teen must make at least 1 direct or harsh avoidant behavior (e.g., frank refusal to continue the discussion) and he/she is likely to consistently display mildly avoidant behaviors (e.g., looking away, getting distracted with other topics or items in the room).

3. Slight Avoidance

Several examples of teen behavior that merit a 3 on this scale are listed below:

- (a) The teen makes a few (i.e., more than two) obvious, but isolated, verbal and/or non-verbal attempts to avoid discussing disagreements.
- (b) The teen seems uncomfortable with the interaction and displays some non-verbal signs of avoidance during the course of the interaction, but does not disengage at a verbal level.

To receive a score of 3, **the teen cannot display any harsh signs of avoidance** (e.g., direct refusals to continue the discussion) but can display several mild signs of avoidance (e.g., looking away for 10 or more seconds).

1. No Avoidance

The teen displays no evidence of verbal or non-verbal avoidance behaviors while discussing conflicts or disagreements.

2. MAINTAINING SECURE RELATEDNESS/SECURE BASE USE

This scale measures the teen's maintenance of secure relatedness and use of the parent as a secure base. Secure relatedness means that the teen shows a clear wish to maintain the relationship even under the stress of conflict (presumably so that the relationship is not damaged and the parent is therefore available when needed for support in times of trouble). Secure base use means that the teen can use the parent as a resource to explore and discuss the emotionally powerful conflictual topic. At the heart of secure base use is the teen's feeling understood by the caregiver. In addition, secure base use means that the teen is comfortable discussing his/her thoughts, feelings, and concerns. This means that the teen can explore negative, conflictual thoughts and feelings.

Note: When there is low disagreement in the dyad, do not punish the teen for failing to seek emotional support. Instead, focus on other cues, such as shared meaning, laughter, and a sense of the underlying connection between the parent and teen.

Evidence of maintaining secure relatedness/secure base provision may be demonstrated in the following examples.

- The coder gets a clear indication that the teen can state his/her position and concerns in a positive, respectful way that shows an underlying caring for the parent and a desire to maintain the relationship.
- The teen may seek care from the parent. There may be a request for help rather than a demand or insistence on a position (Can you help me talk to Dad so that I can get the car sometimes?)
- The teen may also the parent for advice on an issue (e.g., "How do I go about finding a job?"). By entrusting in the parent, the teen is demonstrating relatedness.
- The teen derives comfort from the parent. In particular, if the parent offers any comfort, the teen, even if not agreeing with the parent, is not hostile, sarcastic, or rejecting of this attempt to comfort. If, however, these behaviors are not seen, the teen's score is not lowered.
- The teen is willing or open to discuss a topic and find a shared solution to the conflict. Although the teen may be adamant about his/her position, he/she goes about it in a respectful way. A high score reflects the teen's ability to listen to the parent and willingness to understand (but not necessarily agree with) his/her point of view. That is, the teen demonstrates

the ability to maintain the channels of communication with the parent and to negotiate and potentially reach a solution.

- Teens who receive a high score may also make statements that indicate positive shared-meaning between the teen and parent. That is, a teen may bring up an example that illustrates special meaning for the dyad. The rater might not understand this meaning, but it is obvious that the two sides share a special understanding of it.
- The coder gets a clear sense that the teen knows that he/she is being understood or accepted by the parent, and no matter what the disagreement is about, the teen is not made to feel badly or shamed during the interaction. High scores indicate that the teen maintains a comfort level with the parent, as if he/she were able to argue a differing position while knowing the parent has a high regard for his/her thoughts and feelings

Note: To receive a high score, a teen does not necessarily need to connect with the parent in a gregarious manner. A teen may connect with a parent in a shy kind of way. However, there needs to be evidence of a definite positive connection between the teen and the parent.

Note: Scores for teen's secure base use are not necessarily related to the dyads' ability to compromise or resolve the issue. For instance, a teen who receives a high score on this scale is determined to keep the disagreement at a level that would not disrupt his or her positive relatedness to the parent.

Instrumental versus emotional caregiving and request for support: A teen who asks for instrumental support might say to a parent, "I think I should only take out the trash once a month because I am $\frac{1}{4}$ of the family." A teen who asks for emotional support might say to a parent, "I am **worried** about my performance in school" or "It **annoys** me that my little sister wants to be just like me." To receive a high score on this scale, the teen must go beyond requests for instrumental help, and must display some amount of emotional relatedness with the parent.

Non-Verbal Cues

- Is attentive and responsive to parent
- Maintains high level of eye contact
- Body is relaxed and oriented toward the parent (without fidgeting or tense arms/shoulders)

- Expressive voice (e.g. variations in rhythm and intonation) accompanies supportive statements
- Indicates continuing attention by nodding or saying “mm-hm,” “yes,” “OK,” or other similar utterances.
- Teen appears comfortable with the interaction (including times of heated conflict)
- Teen smiles at parent when parents talks
- Refrains from abruptly interrupting parent while parent is speaking

Verbal Cues or Statements that Convey Relatedness to Parent

- Expresses warmth toward parent
- Acknowledges what parent is saying or trying to say
- Uses phrases like “mmhmm,” “yes,” or “OK”
- Incorporates parent’s ideas into constructive suggestions, statements, or inquiries
- Displays positive mind-reading (i.e. attributes thoughts, feelings or motives that facilitates parent’s expressing his or her views or reasons)
- Accepts the parent’s mind-reading
- States that he/she values parent’s views regarding the issue (but may not agree)
- If necessary, demonstrates the ability to disagree with the parent in a respectful way
- Displays attunement toward what the parent is saying (i.e., teen is “in sync” with parent)
- Uses language that indicates like-mindedness (e.g., discussion that leaves the coder thinking that this dyad has had numerous such discussions)
- Engages in fluid discussion with initiations and expansions related to the topic
- Explains own thought process as a way of helping the parent understand the disagreement

7. Teen Displays High Effort Toward Maintaining Secure Relatedness with Parent

The teen consistently displays **non-verbal and verbal** cues that indicate an effort to maintain relatedness throughout the discussion with parent. The teen's affect is generally warm (even when discussing matters that are clearly in dispute with the parent). The teen does not have to verbally state that maintaining a positive relationship with the parent is more important than getting his/her own way in their disagreement but his/her behavior suggests a wish to keep the relationship balanced. This teen is tactful in discussing varying opinions with a parent, even if the parent's position angers the teen. The teen appears comfortable discussing both emotional and instrumental issues related to the disagreement (when present).

5. Teen Displays Moderate Effort Toward Maintaining Secure Relatedness with Parent

Compared to a teen who receives a 6 or 7, the teen who receives a 5 may appear more comfortable discussing his/her instrumental needs than his/her emotional needs (when present). The teen may display a connection with the parent in a shyly pleased way (i.e., the teen may be apprehensive in discussing some emotional needs with the parent). The teen indicates continuing attention by sustaining eye contact and/or nodding or saying mm-hm, yes, OK, or similar utterances. The teen may indicate *some* non-verbal cues distancing him/herself from the parent (e.g., arms crossed, inconsistent eye contact), but the teen is still invested in the discussion.

3. The Teen Makes Some Effort Toward Maintaining Secure Relatedness with Parent

Teens who receive this score display few verbal and non-verbal cues of relatedness/secure base use, and these cues may be of low quality. The rater gets a sense that the teen is comfortable with the parent in some ways, but is unable to connect with the parent in other ways. That is, the teen may be able to discuss only superficial or instrumental needs with the parent, but may be apprehensive or refuse to discuss issues of emotional needs.

1. The Teen Does Not Show Any Signs of Positive Relatedness.

The teen may frequently miss or ignore the parent's attempts to be supportive and understanding about the disagreement. The teen may focus on expressing his/her own views without acknowledging the parent's perspective and show no interest in connecting with the parent. The teen may demonstrate non-verbal behaviors that indicate a lack of positive relatedness (e.g., body oriented away, no eye contact, and/or tense body posture).

3. AUTONOMOUS ASSERTIVENESS AND CLARITY OF POSITION

This scale assesses the extent to which a teen actively and effectively conveys his or her point of view about the problem under discussion. High scores reflect a teen with an autonomous mind – he or she demonstrates a level of comfort and competence in having a differing opinion from the parent. High scores occur only when the teen has made an effort to effectively convey his or her point of view regarding the problem. Low scores indicate ineffectiveness in the teen’s communication about his/her position on the assigned problem or on another problem which the parent is also interested in discussing. Low scores should be assigned to a teen who is passive about his/her views (e.g., the teen agrees with what the parent says even though an issue of disagreement was clearly present as evidenced by an original rating), and/or who puts forth very little effort to communicate his/her views about the problem.

Note: Do not penalize teen for lack of heated discussion. In addition, agreement with the parent’s position may not necessarily lower the teen’s score (e.g., as in cases when the parent makes a convincing argument).

Note: The teen may or may not be compromise-focused during the discussion. High scores reflect clarity and confidence in the teen’s position and feelings about the disagreement, even if willing to compromise. That is, do not give a lower score just because the teen compromises.

Non-Verbal Cues of Confidence in Own Position

Maintains attentive posture when discussing disagreement

Emphasizes own position with expressive voice (e.g. variations in rhythm and intonation)

Verbal Cues of Confidence and Clarity

Verbally displays a high level of confidence regarding his/her views

Expresses opinions in a clear and direct manner

Is assertive in terms of interjecting his or her opinion

Clearly expresses wishes or desired outcomes

Provides enough details in the discussion to be understood by rater, even when not focused on resolving the problem

Does a good job advocating for himself/herself

7. Active Effective Effort with Clear Communication of Views about the Problem

This score is assigned when the teen makes an active effort to advance his/her views of the problem and succeeds in communicating his or her position. The teen has **both confidence and a detailed description** of what is bothering the teen (or what their position is about the disagreement). For instance, in discussing an issue involving “Respecting Privacy,” a teen may say to the parent, “I know I don’t talk to you that much....But you listened to my telephone conversation with my friend. It doesn’t matter to me that you heard what you heard. What made me mad is that you’d listen without my permission. You have no right to do that...”

5. Some Effort and Some Effectiveness and Clarity in Communicating his/her Views about the Problem

This score is assigned when a teen makes an effort to discuss problems and at least partially succeeds in communicating his/her position. What is lacking in this teen’s discussion is some elaboration/detail in advancing his/her views. For example, the teen may say “I should be allowed to stay up past 10 p.m., so I will and this discussion is over.” In this example, the teen gives no extra information about **why** the teen has this view.

3. Some Effort to Discuss Problem.

The teen makes an effort to communicate his/her views about the problem, but may lack confidence or clarity during the conversation. The teen may also look uncomfortable during the interaction. For example, the teen may state his/her opinion unconvincingly and with hesitation (e.g., when the teen explains his/her position, it may sound more like a question than a statement). The teen’s assertion is ineffective for advancing his/her views.

1. No Effort to Discuss Problem

The teen makes no effort to assert his/her own views about the disagreement. Although he/she may participate in the interaction, this participation does not involve communicating views of problem. The rater has very little sense about the teen’s real underlying thoughts about the topic.

Teen Assertiveness Guide

When thinking about assertiveness, try to focus on:

- How much the teen actively participates in the discussion
- What you know about the teen's point of view (beyond what you might expect *any* teen to say)
- Whether the teen can clearly and effectively state his/her opinions, thoughts, etc.

Teens who score from a 1 to 3:

- Are likely to be mostly silent or monosyllabic (“yeah,” “uh huh”) during the interaction
- If they assert any point of view, they are likely to be generic or superficial (e.g., “I do my homework”) without much context, clarity, or additional information

Teens who score a 4 or 5:

- Participate in the discussion for at least 1 or 2 topics. These teens go beyond the one-word/short statements.
- There may be some minor inconsistencies in their assertiveness (e.g., they may have little to say about one topic, but more to say about another topic)
- In general, you should know how they feel about the disagreements. What may be lacking is either (a) consistency across topics or (b) details, clarity, confidence

Teens who score a 6 or 7:

- Give clear, full descriptions of their points of view. They will probably use phrases like “I feel that” or “My opinion is.”
- Give clear examples, relate issues across contexts, or connect 2 distinct issues into 1 underlying problem

- Are consistent across topics and do not appear to withhold their feelings.

Note: To receive a high assertiveness score, teens do not necessarily need to be loud or commanding during the interaction. In fact, they may actually speak less than the parent. Nevertheless, when they do speak, they should be clear, thoughtful, and explain their position.

Two instances in which assessing assertiveness can be difficult:

Low conflict: When the dyad has low conflict (as evidenced by low Issues Checklist scores or clear low disagreement during the interaction), you will likely see very little overt instances of the teen stating his/her point of view. When this happens, focus instead on whether the teen can state his/her thoughts about why they might disagree (e.g., with an example) or why that issue is not really a problem for them. The teen should be convincing during the disagreement.

Parent dominating the conversation: Some parents take over the conversation (by lecturing, sermonizing, etc.). As a result, the teens often end up saying *relatively* little. When this scenario happens, focus on whether the teen makes an effort to contribute to the discussion when he/she has an opportunity. Also focus on whether they deflect giving an opinion in favor of asking the parent how he/she feels. Pay attention to whether the teen can discuss specific examples or past situations that are related to the topic.

4. HOSTILITY

This scale is designed to assess the extent to which a teen responds in a hostile/rejecting manner to his or her parent. Take note, however, that the teen may display very active and energetic communications or become angry, but these behaviors serve to define positions or reasons and express those without either insulting the parent or making the parent feel rejected (e.g., in addressing a problem with chores around the house, a teen might say, “I would like you to pitch in around the house because I’m tired of being the only person who always takes out the trash, loads the dishwasher, and folds the laundry.”). This type of behavior by the teen would not be regarded as hostile or rejecting because the teen is expressing his opinion, NOT intending to make the parent feel badly. **Remember that anger itself is not hostility.** Although in another similar example the teen’s behavior would be viewed as hostile, where a teen shouts, “I would like you to pitch in around here, for that matter (arms flailing), I’m tired of being the only person who always takes out the trash, loads the dishwasher, folds the laundry and takes care of all crap.” These two examples serve to illustrate the subtleties that would lead a coder to code behavior by the teen either as hostile or non-hostile. Also, it is important to recognize that **hostility is not necessarily loud or harsh—it could be quiet and subtle too.** Thus, it is important to distinguish between the content, tone, and affective quality of the behaviors/cues when considering teen hostility.

Special case: When teens “personally attack.” In this case, the teen’s discussion goes well beyond the scope of the actual topic under discussion. The teen may engage in belittling or “character assassination,” where the teen tries to make the parent look or feel badly. For example, when discussing chores, the teen may say “**you’re a lazy/selfish/greedy parent.**” In other words, the teen is globalizing the parent’s behavior as opposed to staying focused on the actual problem.

*Sometimes, it can be helpful to take a step back and try to understand the teen’s goals and intentions during the conversation. Is he/she trying to berate the parent and make him/her feel badly? Is the teen attacking the parent? Understanding the teen’s **motive** might help clarify the nature of his/her hostility during the interaction.

Non-Verbal Cues:

- Has critical or accusatory tone of voice
- Displays tension or negative affect in facial expressions (e.g., eyes tightly shut, disgust, frowning, sneers, sarcastic smile)
- Speaks with negative tone of voice (e.g., irritated, impatient, frustrated, or cold)
- Rolling of the eyes
- Shows tension in body positions
- Uses negative breathing patterns (e.g. sighing in exasperation)
- Tunes parent out (e.g., ignores, refuses to listen- actively)
- Taking things away from the parent (e.g., instructions sheet/envelope, food, pens)
- Mimics parent
- Shows aggressive posturing (e.g., fists clenched, overbearing body posture)
- Raises voice in dysfunctional anger
- Speaks with furious tone of voice
- Makes hostile or threatening physical gestures (e.g., hits one fist into the palm of the other hand or raises hand to parent to make him/her stop talking)
- Purposefully throws something on the floor or at the parent

Verbal Cues:

- Insults or denigrates parent's comments or ideas
- Uses sarcasm
- Attributes negative feelings, attitudes, beliefs or motives to parent
- Engages in hostile questioning (e.g., "What do you mean, you don't know?")
- Engages in loaded questioning (e.g., "Do you think you should be watching TV instead of helping me with the dishes")
- Blames parent for creating the problem or blowing it out of proportion
- Threatens parent with emotional or physical harm
- Makes empty threats (e.g., "This issue cannot be resolved. I think the only way to deal with issue is to get rid of the internet")
- Verbally attacks parent
- Uses insults
- Uses persistent criticism and belittling or discrediting of parent (e.g., disrespectful)

- Tries to make parent feel badly about himself/herself, shames parent
- Expressing hopelessness about parent's ability to change behavior
- Purposefully embarrassing the parent (perhaps to "get back at" the parent)
- Laughter after saying something hurtful
- Interrupting or ignoring
- Mimics parent
- Parodies parent- (e.g., the topic is chores and the teen says "When I ask you for help with the trash out and you just go 'waaa waaa'")
- Tries to be hurtful

Understanding "Mild" versus "Harsh" Hostility

As a coder, you will need to determine whether a hostile behavior is considered to be mild or harsh. **This process can be complicated because the same behavior/cue can be mild or harsh, depending on context, tone, and affect.** For instance, you might observe a person sighing in frustration. A sigh that is not accompanied with any body movements, threatening postures, cold stares, or verbal attacks would probably be considered a mildly hostile behavior.

On the other hand, a sigh that is accompanied with other negative characteristics (e.g., body movements, hurtful emotional tone) may be considered harsh. In addition, if the person makes any character assassinations or globally negative comments (e.g., "You're a lazy person," rather than "I wish you would help with the cleaning") then that would automatically count as a harsh hostile comment.

7. Very Intense and Persistent Hostility

The teen shows a persistent and high level of hostility toward parent throughout the discussion. The teen frequently displays verbal and/or non-verbal hostile behaviors. For example, teen may make several *harsh* or *critical* comments (“You’re always going to be a terrible mom if you don’t buy me clothes”), along with persistent negative non-verbal behaviors (e.g., eye-rolling, sighing, agitated body movements). To receive a 7, the teen does not necessarily have to engage in globalizing statements; any teen who uses globalizing statements or character assassinations would receive a 7.

5. Marked Hostility or Persistent Negative Affect toward Parent

Persistent but less intense hostility. In this instance, the teen may make (a) several harsh hostile behaviors or (b) hostile behaviors that occur fairly regularly throughout the interaction.

Note: ONE harsh or critical comment that is not continued merits a 4 on this scale.

3. Slight Hostility.

The teen may exhibit a few *mildly* hostile behaviors (either verbal or non-verbal). For example, the teen may insult the parent or make him/her feel badly about the disagreement (e.g., “It’s really annoying to me that you never do your chores” said with an irritated tone). The teen does NOT, however, use any harshly critical (or global) verbal comments. Compared to teens who receive a 4 or 5, parents who receive a 3 on this scale are less likely to show intent to hurt, embarrass, or shame the parent (or make him/her feel badly).

1. No Signs of Hostility.

The teen shows neither negative affect toward the parent nor underlying tension. NOTE: To receive a 1 on this scale, the teen cannot exhibit ANY hostile behaviors (verbal or non-verbal).

Truthfulness Guide

This scale is designed to capture an assessment of whether or not the teen is being truthful about his/her feelings of disagreement related to the topic of discussion. When a teen rates a topic of disagreement as a 4 or 5, raters are asked to determine whether the teen makes an attempt to acknowledge that a disagreement exists, or if the teen actively denies that there is disagreement. Similarly, when a teen rates a topic of disagreement as a 1 or 2, raters are asked to determine whether the teen behaves truthfully about his/her initial rating.

Example of truthfulness when teens rate a topic of disagreement as a 4 or 5:

For instance, when the dyad learns the focus of the next topic, the teen might make a comment that clearly indicates an affirmation that the topic is one in which the parent and teen have disagreed about (e.g., “oh, yeah, we really struggle with this issue,” “I knew this would be a topic,” “You know my feelings about this issue,” etc). A teen who makes such statements is being truthful, and receives a “Yes.”

Conversely, a teen who would receive a “No” on the truthfulness scale might say something like “Do we disagree about this?” or “I don’t think this is really an issue” (even though the parent rated it as a 4 or 5 on the Issues Checklist). Similarly, a teen may say “I must have filled out the questionnaire wrong” in an attempt to avoid discussion of the topic.

Example of truthfulness when teens rate a topic of disagreement as a 1 or 2:

In this case, the teen might make a comment that clearly indicates that the topic is one in which he/she did not view as an area of disagreement (e.g., “oh, I didn’t think we disagreed about that,” or “I’m surprised this was an issue for us.”). A teen who makes such statements is being truthful, and receives a “Yes.”

Conversely, a teen who would receive a “No” on the truthfulness scale might say something like “Oh yeah, we really disagree about this” or “I think this is a big problem for us” (even though the teen rated it as a 1 or 2 on the Issues Checklist).

In every case, context and tone are important to consider when making a decision about the parent’s truthfulness. (For instance, it would not be considered untruthful if a teen sarcastically said “I don’t think we disagree about this,” but it would be considered untruthful if the teen made that comment seriously when the teen rated the issue 4-5.)

Procedure:

1. Prior to watching the interaction, check to see if the teen rated any of the discussion topics as a 4 – 5 or 1 – 2. If so, you will need to pay particular attention to the beginning of these discussions.
2. If a discussion topic was rated as a 1-2 or 4-5, watch the beginning of the discussion of that topic to determine whether the teen is being truthful about his/her feelings regarding the disagreement.

- a. If the teen makes any comment suggesting an acknowledgement about the presence of disagreement related to the issue, then circle “Yes” for that discussion topic.
 - b. If the teen makes any one of a number of untruthful comments (e.g., that he/she filled out the form incorrectly, or that the RAs made a mistake in choosing the topic, or that they did *not* rate the topic as an issue of disagreement), then circle “No” for that discussion topic.
3. If the teen makes no statement that falls into either category, then simply participating in the discussion about how to resolve the issue counts as truthfulness by default.
 4. If the teen rated the topic as a 3, then **do not rate** the teen on his/her truthfulness about the disagreement. Circle “N/A” on the guide.

Note: You may provide these ratings during the initial viewing of the interaction *if* the teen makes a clear statement about the presence of conflict (or makes a clear denial about the presence of conflict). If you are unsure, wait to make a decision until your second viewing of the interaction.

Adolescent Coding Sheet

Coding date: _____ Original discussion date: _____

Description of Teen: _____ Circle one: Boy Girl

Description of Parent: _____ Circle one: Mother Father

TRUTHFUL

Discussion Topic #1: _____ (P)=__ (T)=__ YES NO N/A

Discussion Topic #2: _____ (P)=__ (T)=__ YES NO N/A

Discussion Topic #3: _____ (P)=__ (T)=__ YES NO N/A

We need to make sure that coders are focused when rating the interactions so that we can make accurate scientific statements about parent-adolescent interactions. By signing below, you promise that you used your coding manual while coding this interaction and were focused so that you could provide an accurate rating. You should not code more than 3 interactions in one sitting, or 6 interactions in one day.

We promise our participants that we will respect their confidentiality. By signing below, you agree that you will not discuss this interaction with anyone outside of the Maryland Child and Family Development Lab.

X _____

Adolescent Behavior Scores

Avoidance	Secure Base Use	Assertiveness	Hostility

Start time:

Notes

Topic	End time	Avoidance	Secure Base	Assertiveness	Hostility
	1				
	2				
	3				
	4				
	5				
Topic	End	Avoidance	Secure Base	Assertiveness	Hostility

	time				
	6				
	7				
	8				
	9				
	10				

Stop time: _____

Appendix D

Network of Relationships Inventory

Everyone has a number of people who are important in his or her life. These questions ask about your relationship with a same-sex friend.

Think about your best same-sex friend, and respond to the following questions while thinking about your friendship with that person.

The first question asks you to identify your friend about whom you will be answering the questions.

- Please respond to the following questions while thinking about the person you feel is your best same-sex friend.**

Person's First and Last Name _____

How long have you been friends? ____ years ____ months (*please fill in numbers*)

Now we would like you to answer the following questions about the person you have selected above.

- How much free time do you spend with this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

- How much do you and this person get upset with or mad at each other?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

- How much does this person teach you how to do things that you don't know?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

- How much do you and this person get on each other's nerves?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

6. How much do you talk about everything with this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

7. How much do you help this person with things she/he can't do by her/himself?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

8. How much does this person like or love you?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

9. How much does this person treat you like you're admired and respected?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

10. Who tells the other person what to do more often, you or this person?

S/he always does	S/he often does	About the same	I often do	I always do
1	2	3	4	5

11. How sure are you that this relationship will last no matter what?

Little or None	Some-what	Very Much	Extremely Much	The Most
1	2	3	4	5

12. How much do you play around and have fun with this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

13. How much do you and this person disagree and quarrel?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

14. How much does this person help you figure out or fix things?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

15. How much do you and this person get annoyed with each other's behavior?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

16. How much do you share your secrets and private feelings with this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

17. How much do you protect and look out for this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

18. How much does this person really care about you?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

19. How much does this person treat you like you're good at many things?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

20. Between you and this person, who tends to be the BOSS in this relationship?

S/he always does	S/he often does	About the same	I often do	I always do
1	2	3	4	5

21. How sure are you that your relationship will last in spite of fights?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

22. How much do you go places and do enjoyable things with this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

23. How much do you and this person argue with each other?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

24. How much does this person help you when you need to get something done?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

25. How much do you and this person hassle or nag one another?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

26. How much do you talk to this person about things that you don't want others to know?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

27. How much do you take care of this person?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

28. How much does this person have a strong feeling of affection (loving or liking) toward you?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

29. How much does this person like or approve of the things you do?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

30. In your relationship with this person, who tends to take charge and decide what should be done?

S/he always does	S/he often does	About the same	I often do	I always do
1	2	3	4	5

31. How sure are you that your relationship will continue in the years to come?

Little or None	Somewhat	Very Much	Extremely Much	The Most
1	2	3	4	5

Appendix E

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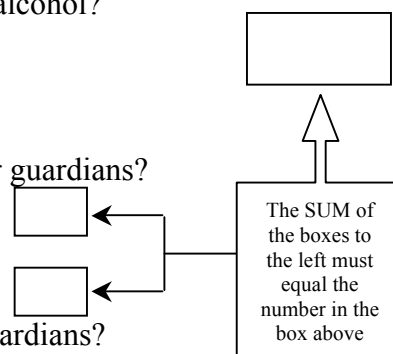
- How many total times have you had a drink of alcohol?

(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)



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
---------	--------------	--------------	----------------	----------------	------------------

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
----------------	---------------------	---------------------	-----------------------	-----------------------	-------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

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
-------------	-------------	--------------------	----------------------------	---------------------------	---------------------------------

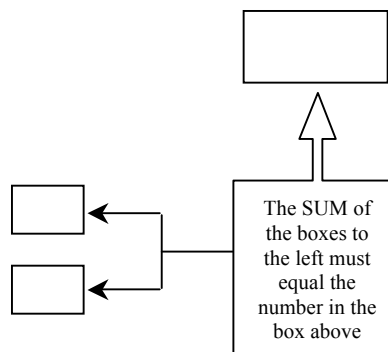
52. In the past year, how many times have you given or received oral sex?

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

- 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?



53. Have you ever had sexual intercourse?

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

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

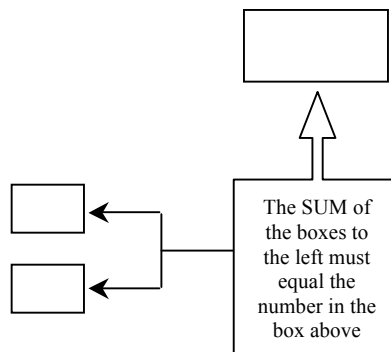
58. In the past year, how many times have you had sexual intercourse?

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

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?



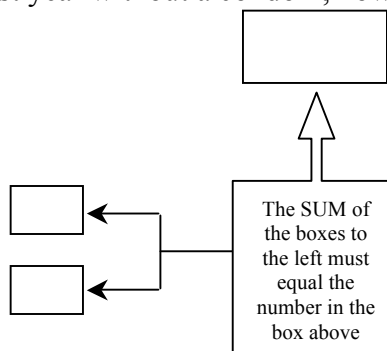
59. In the past year, how many times have you had intercourse with no condom?

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

• 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?



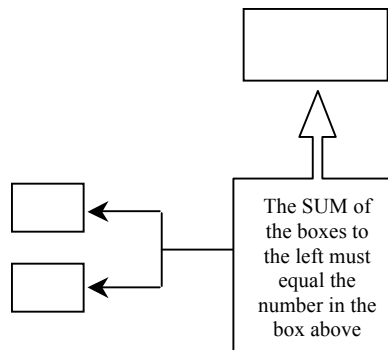
60. In the past year, how many times have you kissed someone on the lips (not including family)?

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

- 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**)?



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
-----	----

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
-----	----

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
-----	----

69. During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose?

Yes	No
-----	----

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

References

- Acock, A. C., & Kiecolt, K. J. (1989). Is it family structure or socioeconomic status? Family structure during adolescence and adult adjustment. *Social Forces*, *68*, 553-571.
- Adams, R. E., & Laursen, B. (2007). The correlates of conflict: Disagreement is not necessarily detrimental. *Journal of Family Psychology*, *21*, 445-458.
- Allen, J. P. (2008). The attachment system in adolescence. In J. Cassidy & P. R. Shaver (Eds.), *The handbook of attachment: Theory, research and clinical applications* (2nd ed., pp. 419-435). New York, NY: Guilford.
- Allen, J. P., Marsh, P. A., McFarland, F. C., McElhaney, K. B., Land, D. J., Jodl, K., & Peck, S. D. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during mid-adolescence. *Journal of Consulting and Clinical Psychology*, *70*, 56-66.
- Allen, J. P., Moore, C., Kuperminc, G., & Bell, K. (1998). Attachment and adolescent psychosocial functioning. *Child Development*, *69*, 1406-1419.
- Allen, J. P., Porter, M. R., & McFarland, F. C. (2006). Leaders and followers in adolescent close friendships: Susceptibility to peer influence as a predictor of risky behavior, friendship instability, and depression. *Development and Psychopathology*, *18*, 155-172.
- Allen, J. P., Porter, M. R., McFarland, F. C., Marsh, P., & McElhaney, K. B. (2005). The two faces of adolescents' success with peers: Adolescent popularity, social adaptation, and deviant behavior. *Child Development*, *76*, 747-760.

- Allen, J. P., Porter, M. R., McFarland, F. C., McElhaney, K. B., & Marsh, P. (2007). The relation of attachment security to adolescents' paternal and peer relationships, depression, and externalizing behavior. *Child Development, 78*, 1222–1239.
- Anderson, A. R., & Henry, C. S. (1994). Family system characteristics and parental behaviors as predictors of adolescent substance use. *Adolescence, 29*, 405-420.
- Arbona, C., & Power, T. G. (2003). Parental attachment, self-esteem, and antisocial behaviors among African American, European American, and Mexican American adolescents. *Journal of Counseling Psychology, 50*, 40-51.
- Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: The influence of parents and peers. *Behaviour Research and Therapy, 37*, 217-230.
- Ary, D. V., Tildesley, E., Hops, H., & Andrews, J. (1993). The influence of parent, sibling, and peer modeling and attitudes on adolescent use of alcohol. *The International Journal of the Addictions, 28*, 853-880.
- Bahr, S. J., Hoffmann, J. P., & Yang, X. (2005). Parental and peer influences on the risk of adolescent drug use. *The Journal of Primary Prevention, 26*, 529-551.
- Bahr, S. J., Marcos, A. C., & Maughan, S. L. (1995). Family, educational and peer influences on the alcohol use of female and male adolescents. *Journal of Studies on Alcohol, 56*, 457-469.
- Baker, T. B., Piper, M. E., McCarthy, D. E., Majeskie, M. R., & Fiore, M. C. (2004). Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychological Review, 111*, 33-51.

- Bank, L., Patterson, G. R., & Reid, J. B. (1996). Negative sibling interaction patterns as predictors of later adjustment problems in adolescent and young adult males. In G. H. Brody (Ed.), *Advances in applied developmental psychology: Sibling relationships* (pp. 197-229). Norwood, NJ: Ablex.
- Barnes, G. M., Farrell, M. P., & Windle, M. (1990). Parent-adolescent interactions in the development of alcohol abuse and other deviant behaviors. In B. K. Barber & B. C. Boyd (Eds.), *Parent-adolescent relationships* (pp. 121-140). Lanham, MD: University Press of America.
- Bauman, K. E., & Ennett, S. T. (1996). On the importance of peer influence for adolescent drug use: Commonly neglected considerations. *Addiction, 91*, 185-198.
- Bauman, K. E., & Fisher, L. A. (1986). On the measurement of friend behavior in research on friend influence and selection: Findings from longitudinal studies of adolescent smoking and drinking. *Journal of Youth and Adolescence, 15*, 345-353.
- Belendiuk, K. A., Molina, B. S. G., & Donovan, J. E. (2010). Concordance of adolescent reports of friend alcohol use, smoking, and deviant behavior as predicted by quality of relationship and demographic variables. *Journal of Studies on Alcohol and Drugs, 71*, 253-257.
- Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive structure: An evolutionary theory of socialization. *Child Development, 62*, 647-670.
- Belsky, J., Steinberg, L., Houts, R. M., Halpern-Felsher, B. L., & the NICHD Early Child Care Research Network. (2010). The development of reproductive strategy in females: Early maternal harshness → earlier menarche → increased sexual risk taking. *Developmental Psychology, 46*, 120-128.

- Bergman, L. R., Magnusson, D., & El-Khoury, B. M. (2003). *Studying individual development in an interindividual context*. Mahwah, NJ: Erlbaum.
- Berndt, T. J. (1981). Effects of friendship on prosocial intentions and behavior. *Child Development, 52*, 636-643.
- Berndt, T. J. (1982). The features and effects of friendship in early adolescence. *Child Development, 53*, 1447-1460.
- Boden, J. M., Fergusson, D. M., & Horwood, L. J. (2010). Risk factors for conduct disorder and oppositional/defiant disorder: Evidence from a New Zealand birth cohort. *Journal of the American Academy of Child & Adolescent Psychiatry, 49*, 1126-1133.
- Boislard, P. M. A., & Poulin, F. (2011). Individual, familial, friends-related and contextual predictors of early sexual intercourse. *Journal of Adolescence, 34*, 289-300.
- Boislard, P. M. A., Poulin, F., Kiesner, J., & Dishion, T. J. (2009). A longitudinal examination of risky sexual behaviors among Canadian and Italian adolescents: Considering individual, parental, and friend characteristics. *International Journal of Behavioral Development, 33*, 265-276.
- Bot, S. M., Engels, R. C. M. E., Knibbe, R. A., & Meeus, W. H. J. (2005). Friend's drinking behaviour and adolescent alcohol consumption: The moderating role of friendship characteristics. *Addictive Behaviors, 30*, 929-947.
- Bowlby, J. (1969/1982). *Attachment and loss: Vol. 1. Attachment*. New York, NY: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation*. New York, NY: Basic Books.

- Boyer, T. W. (2006). The development of risk-taking: A multi-perspective review. *Developmental Review, 26*, 291-345.
- Bradford, K., Vaughn, L. B., & Barber, B. K. (2008). When there is conflict: Interpersonal conflict, parent-child conflict, and youth problem behaviors. *Journal of Family Issues, 29*, 780-805.
- Brandon, T. H., Herzog, T. A., Juliano, L. M., Irvin, J. E., Lazev, A. B., & Simmons, V. N. (2003). Pretreatment task persistence predicts smoking cessation outcome. *Journal of Abnormal Psychology, 112*, 448-456.
- Branje, S. J. T., van Lieshout, C. F. M., van Aken, M. A. G., & Haselager, G. J. T. (2004). Perceived support in sibling relationships and adolescent adjustment. *Journal of Child Psychology and Psychiatry, 45*, 1385-1396.
- Branstetter, S. A., Furman, W., & Cottrell, L. (2009). The influence of representations of attachment, maternal-adolescent relationship quality, and maternal monitoring on adolescent substance use: A 2-year longitudinal examination. *Child Development, 80*, 1448-1462.
- Brener, N. D., Collins, J. L., Kann, L., Warren, C. W., & Williams, B. I. (1995). Reliability of the Youth Risk Behavior Survey questionnaire. *American Journal of Epidemiology, 141*, 575-580.
- Brody, G. H. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review of Psychology, 49*, 1-24.
- Brody, G. H., & Forehand, R. (1993). Prospective associations among family form, family processes, and adolescents' alcohol and drug use. *Behaviour Research and Therapy, 31*, 587-593.

- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Brook, J. S., Brook, D. W., Gordon, A. S., Whiteman, M., & Cohen, P. (1990). The psychosocial etiology of adolescent drug use: A family interactional approach. *Genetic, Social, and General Psychology Monographs, 116*, 113-267.
- Brook, J. S., Whiteman, M., Gordon, A. S. & Brenden, C. (1983). Older brother's influence on younger sibling's drug use. *Journal of Psychology, 114*, 83-90.
- Brook, J. S., Whiteman, M., Gordon, A. S., & Brook, D. W. (1990). The role of older brothers in younger brothers' drug use viewed in the context of parent and peer influences. *Journal of Genetic Psychology, 151*, 59-75.
- Brown, B. B. (2004). Adolescents' relationships with peers. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology*, (2nd ed., pp. 363-394). New York, NY: Wiley.
- Brown, B. B., Clasen, D. R., & Eicher, S. A. (1986). Perceptions of peer pressure, peer conformity dispositions, and self-reported behavior among adolescents. *Developmental Psychology, 22*, 521-530.
- Brown, R. A., Lejuez, C. W., Kahler, C. W., & Strong, D. R. (2002). Distress tolerance and duration of past smoking cessation attempts. *Journal of Abnormal Psychology, 111*, 180-185.
- Buchanan, C. M., Maccoby, E. E., and Dornbusch, S. M. (1991). Caught between parents: Adolescents' experience in divorced homes. *Child Development, 62*, 1008-1029.

- Buhi, E. R., & Goodson, P. (2007). Predictors of adolescent sexual behavior and intention: A theory-guided systematic review. *Journal of Adolescent Health, 40*, 4-21.
- Burge, D., Hammen, C., Davila, J., Daley, S. E., Paley, B., Lindberg, N., . . . & Rudolph, K. D. (1997). The relationship between attachment cognitions and psychological adjustment in late adolescent women. *Development and Psychopathology, 9*, 151-167.
- Burk, W. J., van der Vorst, H., Kerr, M., & Stattin, H. (2012). Alcohol use and friendship dynamics: Selection and socialization in early-, middle-, and late-adolescent peer networks. *Journal of Studies on Alcohol and Drugs, 73*, 89-98.
- Burt, S. A., Barnes, A. R., McGue, M., & Iacono, W. G. (2008). Parental divorce and adolescent delinquency: Ruling out the impact of common genes. *Developmental Psychology, 44*, 1668-1677.
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk-taking: A meta-analysis. *Psychological Bulletin, 125*, 367-383.
- Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. In N. A. Fox (Ed.), *The development of emotion regulation, Monographs of the Society for Research in Child Development, 59*, (2-3, Serial No. 240), 228-249.
- Cassidy, J., & Shaver, P. R. (Eds.). (1999). *Handbook of attachment: Theory, research, and clinical applications*. New York, NY: Guilford.
- Cassidy, J., & Shaver, P. R. (Eds.). (2008). *Handbook of attachment: Theory, research, and clinical applications* (2nd ed.). New York, NY: Guilford.

- Cauffman, E., & Steinberg, L. (2000). Researching adolescents' judgment and culpability. In T. Grisso & R. G. Schwartz (Eds.), *Youth on trial: A developmental perspective on juvenile justice* (pp. 325-343). Chicago, IL: The University of Chicago.
- Centers for Disease Control and Prevention. (2001). *Youth risk behavior surveillance*. Atlanta: Author.
- Centers for Disease Control & Prevention (2010). Youth risk behavior surveillance summaries. *Morbidity and Mortality Weekly Report*, 59, (SS-5).
- Chassin, L., Hussong, A., Barrera, M., Molina, B., Trim, R., & Ritter, J. (2004). Adolescent substance use. In R. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 665-696). New York, NY: Wiley.
- Chilcoat, H. D., & Anthony, J. C. (1996). Impact of parental monitoring on initiation of drug use through late childhood. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 91-100.
- Chilcoat, H. D., Dishion, T. J., & Anthony, J. C. (2001). Parent monitoring and the incidence of drug sampling in urban elementary school children. *American Journal of Epidemiology*, 141, 25-31.
- Cole, P., Martin, S., & Dennis, T. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development*, 75, 317-333.
- Collins, W. A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence*, 13, 1-25.

- Collins, W. A., & Laursen, B. (1992). Conflict and relationships during adolescence. In C. U. Shantz & W. W. Hartup (Eds.), *Conflict in child and adolescent development* (pp. 216-241). New York, NY: Cambridge University Press.
- Collins, W. A., & Laursen, B. (2004). Parent-adolescent relationships and influences. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 331-361). New York, NY: Wiley.
- Collins, W. A., Welsh, D. P., & Furman, W. (2009). Adolescent romantic relationships. *Annual Review of Psychology, 60*, 631-652.
- Connolly, J. A., & Konarski, R. (1994). Peer self-concept in adolescence: Analysis of factor structure and of associations with peer experience. *Journal of Research on Adolescence, 4*, 385-403.
- Cooper, M. L., Shaver, P. R., & Collins, N. L. (1998). Attachment styles, emotion regulation, and adjustment in adolescence. *Journal of Personality and Social Psychology, 74*, 1380-1397.
- Cottrell, L., Li, X., Harris, C., D'Alessandri, D., Atkins, M., Richardson, B., & Stanton, B. (2003). Parent and adolescent perceptions of parental monitoring and adolescent risk involvement. *Parenting: Science and Practice, 3*, 179-195.
- Crawford, L. A., & Novak, K. B. (2008). Parent-child relations and peer associations as mediators of the family structure-substance use relationship. *Journal of Family Issues, 29*, 155-184.
- Creemers, H. E., Dijkstra, J. K., Vollebergh, W. A. M., Ormel, J., Verhulst, F. C., & Huizink, A. C. (2010). Predicting life-time and regular cannabis use during

- adolescence; The roles of temperament and peer substance use: The TRAILS study. *Addiction*, *105*, 699-708.
- Criss, M. M., & Shaw, D. S. (2005). Sibling relationships as contexts for delinquency training in low-income families. *Journal of Family Psychology*, *19*, 592-600.
- Crouter, A. C., & Head, M. R. (2002). Parental monitoring and knowledge of children. In M. Bornstein (Ed.), *Handbook of parenting: Vol. 3: Being and becoming a parent* (2nd ed., pp. 461-483). Mahwah, NJ: Erlbaum.
- Crowell, S. E., Beauchaine, T. P., McCauley, E., Smith, C., Vasilev, C. A., & Stevens, A. L. (2008). Parent-child interactions, peripheral serotonin, and self-inflicted injury in adolescents. *Journal of Consulting and Clinical Psychology*, *76*, 15-21.
- Csikszentmihalyi, M., & Larson, R. (1984). *Being adolescent: Conflict and growth in the teenage years*. New York, NY: Basic Books.
- Cummings, E. M., & Davies, P. T. (2002). Effects of marital conflict on children: Recent advances and emerging themes in process-oriented research. *Journal of Child Psychology and Psychiatry*, *43*, 31-63.
- Cummings, E. M., & Davies, P. T. (2010). *Marital conflict and children: An emotional security perspective*. New York, NY: Guilford.
- Cummings, E. M., & Keller, P. S. (2006). Marital discord and children's emotional self-regulation. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 163-182). Washington, DC: American Psychological Association.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, *113*, 487-496.

- Daughters, S. B., Lejuez, C. W., Bornoalova, M. A., Kahler, C. W., Strong, D. R., & Brown, R. A. (2005). Distress tolerance as a predictor of early treatment dropout in a residential substance abuse treatment facility. *Journal of Abnormal Psychology, 114*, 729-734.
- Daughters, S. B., Lejuez, C. W., Kahler, C. W., Strong, D. R., & Brown, R. A. (2005). Psychological distress tolerance and duration of most recent abstinence attempt among residential treatment-seeking substance abusers. *Psychology of Addictive Behaviors, 19*, 208-211.
- Daughters, S. B., Sargeant, M., Bornoalova, M. A., Gratz, K. L., & Lejuez, C. W. (2008). The relationship between distress tolerance and antisocial personality disorder among male residential treatment seeking inner-city substance users. *Journal of Personality Disorders, 22*, 509-524.
- Daughters, S. B., Lejuez, C. W., Danielson, C. W., & Sargeant, M. N. (2006, November). The use of an adolescent appropriate computerized measure of distress tolerance to identify alcohol use among early adolescents. In E. W. Leen-Feldner (Chair), *State-of-the-Art Methodology and Technology for the Study of Psychopathology Among Youth: A Discussion of Contemporary Approaches for the Active Researcher*. Symposium conducted at the 40th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago.
- Daughters, S. B., Reynolds, E. K., MacPherson, L., Kahler, C. W., Danielson, C. K., Zvolensky, M., & Lejuez, C. W. (2009). Distress tolerance and early adolescent externalizing and internalizing symptoms: The moderating role of gender and ethnicity. *Behaviour Research and Therapy, 47*, 198-205.

- Davies, P. T., & Cummings, E. M. (1994). Marital conflict and child adjustment: An emotional security hypothesis. *Psychological Bulletin, 116*, 387-411.
- Davies, P. T., Harold, G. T., Goeke-Morey, M. C., & Cummings, E. M. (2002). Child emotional security and interparental conflict. *Monographs of the Society for Research in Child Development, 67*, vii-viii.
- Davies, P. T., & Windle, M. (2001). Interparental discord and adolescent adjustment trajectories: The potentiating and protective role of intrapersonal attributes. *Child Development, 72*, 1163-1178.
- Dekovic, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence, 28*, 667-685.
- Dekovic, M., Wissink, I. B., & Meijer, A. M. (2004). The role of family and peer relations in adolescent antisocial behavior: Comparison of four ethnic groups. *Journal of Adolescence, 27*, 497-514.
- De Los Reyes, A., Goodman, K. L., Kliewer, W., & Reid-Quinones, K. (2010). The longitudinal consistency of mother-child reporting discrepancies of parental monitoring and their ability to predict child delinquent behaviors two years later. *Journal of Youth and Adolescence, 39*, 1417-1430.
- DiClemente, R. J., Wingood, G. M., Crosby, R., Sionean, C., Cobb, B. K., Harrington, K., . . . & Oh, M. K. (2001). Parental monitoring: Association with adolescents' risk behaviors. *Pediatrics, 107*, 1363-1368.
- DiIorio, C., Dudley, W. N., Kelly, M., Soet, J. E., Mbwara, J., & Potter, J. S. (2001). Social cognitive correlates of sexual experience and condom use among 13-through 15-year-old adolescents. *Journal of Adolescent Health, 29*, 208-216.

- Dishion, T. J., Andrews, D. W., & Crosby, L. (1995). Antisocial boys and their friends in adolescence: Relationship characteristics, quality, and interactional processes. *Child Development, 66*, 139-151.
- Dishion, T. J., & McMahon, R. J. (1998). Parental monitoring and the prevention of child and adolescent problem behavior: A conceptual and empirical formulation. *Clinical Child and Family Psychology Review, 1*, 61-75.
- Dishion, T. J., Nelson, S. E., & Bullock, B. M. (2004). Premature adolescent autonomy: Parent disengagement and deviant peer process in the amplification of problem behaviour. *Journal of Adolescence, 27*, 515-530.
- Dishion, T. J., Nelson, S. E., & Kavanagh, K. (2003). The family check-up with high-risk young adolescents: Preventing early-onset substance use by parent monitoring. *Behavior Therapy, 34*, 553-571.
- Dishion, T. J., & Owen, L. D. (2002). A longitudinal analysis of friendships and substance use: Bidirectional influence from adolescence to adulthood. *Developmental Psychology, 38*, 480-491.
- Dishion, T. J., & Patterson, G. R. (1999). Model-building in developmental psychopathology: A pragmatic approach to understanding and intervention. *Journal of Clinical Child Psychology, 28*, 502-512.
- Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescent friendships. *Behavior Therapy, 27*, 373-390.
- DiStefano, C. (2012). Cluster analysis and latent class clustering techniques. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (pp. 645-666). New York, NY: Guilford.

- Dodge, K. A., Malone, P. S., Lansford, J. E., Miller-Johnson, S., Pettit, G. S., & Bates, J. E. (2006). Toward a dynamic developmental model of the role of parents and peers in early onset substance use. In A. Clarke-Steward & J Dunn (Eds.), *Families count: Effects on child and adolescent development* (pp. 104-131). New York, NY: Cambridge University.
- Doherty, W. J., & Needle, R. H. (1991). Psychological adjustment and substance use among adolescents before and after a parental divorce. *Child Development, 62*, 328-337.
- Drapela, L. A., & Mosher, C. (2007). The conditional effect of parental drug use on parental attachment and adolescent drug use: Social control and social development model perspectives. *Journal of Child & Adolescent Substance Abuse, 16*, 63-87.
- Duncan, S. C., Duncan, T. E., & Hops, H. (1998). Progressions of alcohol, cigarette, and marijuana use in adolescence. *Journal of Behavioral Medicine, 21*, 375-388.
- Duncan, T. E., Tildesley, E., Duncan, S. C., & Hops, H. (1995). The consistency of family and peer influences on the development of substance use in adolescence. *Addiction, 90*, 1647-1660.
- Dunn, J. (1988). Relations among relationships. In S. Duck, D. F. Hay, S. E. Hobfoll, W. Ickes, & B. M. Montgomery (Eds.), *Handbook of personal relationships: Theory, research, and interventions* (pp. 193-209). Oxford, England: Wiley.
- Dykas, M. J., Woodhouse, S. S., Ehrlich, K. B., & Cassidy, J. (2010). Do adolescents and parents reconstruct memories about their conflict as a function of adolescent attachment? *Child Development, 81*, 1445-1459.

- Dykas, M. J., Ziv, Y., & Cassidy, J. (2008). Attachment and peer relations in adolescence. *Attachment & Human Development, 10*, 123-141.
- East, P. L., & Khoo, S. T. (2005). Longitudinal pathways linking family factors and sibling relationship qualities to adolescent substance use and sexual risk behaviors. *Journal of Family Psychology 19*, 571-580.
- Ehrlich, K. B., Cassidy, J., & Dykas, M. J. (2011). Reporter discrepancies among parents, adolescents, and peers: Adolescent attachment and informant depressive symptoms as explanatory factors. *Child Development, 82*, 999-1012.
- Ehrlich, K. B., Dykas, M. J., & Cassidy, J. (in press). Tipping points in adolescent adjustment: Predicting social functioning from adolescents' conflict with parents and friends. *Journal of Family Psychology*.
- Eklund, J. M., Kerr, M., & Stattin, H. (2010). Romantic relationships and delinquent behaviour in adolescence: The moderating role of delinquency propensity. *Journal of Adolescence, 33*, 377-386.
- Elliott, G. C., Avery, R., Fishman, E., & Hoshiko, B. (2002). The encounter with family violence and risky sexual activity among young adolescent females. *Violence and Victims, 17*, 569-592.
- Ellis, B. J. (2004). Timing of pubertal maturation in girls: An integrated life history approach. *Psychological Bulletin, 130*, 920-958.
- Engels, R. C. M. E., & Knibbe, R. A. (2000). Alcohol use and intimate relationships in adolescence: When love comes to town. *Addictive Behaviors, 25*, 435-439.

- Engels, R. C. M. E., Knibbe, R. A., & Drop, M. J. (1997). Inconsistencies in adolescents' self-reports of initiation of alcohol and tobacco use. *Addictive Behaviors, 22*, 613-623.
- Ennett, S. T., & Bauman, K. E. (1994). The contribution of influence and selection to adolescent peer group homogeneity: The case of adolescent cigarette smoking. *Journal of Personality and Social Psychology, 67*, 653-663.
- Fallu, J. S., Janosz, M., Briere, F. N., Descheneaux, A., Vitaro, F., & Tremblay, R. E. (2010). Preventing disruptive boys from becoming heavy substance users during adolescence: A longitudinal study of familial and peer-related protective factors. *Addictive Behaviors, 35*, 1074-1082.
- Farrell, A. D., & White, K. S. (1998). Peer influences and drug use among urban adolescents: Family structure and parent-adolescent relationship as protective factors. *Journal of Consulting and Clinical Psychology, 66*, 248-258.
- Fergusson, D. M., Boden, J. M., & Horwood, L. J. (2008). The developmental antecedents of illicit drug use: Evidence from a 25-year longitudinal study. *Drug and Alcohol Dependence, 96*, 165-177.
- Fisher, L. A., & Bauman, K. E. (1988). Influence and selection in the friend-adolescent relationship: Findings from studies of adolescent smoking and drinking. *Journal of Applied Social Psychology, 18*, 289-314.
- Fletcher, A. C., Darling, N., & Steinberg, L. (1995). Parental monitoring and peer influences on adolescent substance use. In J. McCord (Ed.), *Coercion and punishment in long-term perspectives* (pp. 259-271). New York, NY: Cambridge University Press.

- Flewelling, R. L., & Bauman, K. E. (1990). Family structure as a predictor of initial substance use and sexual intercourse in early adolescence. *Journal of Marriage and the Family, 52*, 171-181.
- Florsheim, P. (2003). *Adolescent romantic relations and sexual behavior: Theory, research, and practical implications*. Mahwah, NJ: Erlbaum.
- Fuligni, A. J., & Stevenson, H. W. (1995). Time use and mathematics achievement among American, Chinese, and Japanese high school students. *Child Development, 66*, 830-842.
- Furman, W. (1996). The measurement of friendship perceptions: Conceptual and methodological issues. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendships in childhood and adolescence* (pp. 41-65). New York, NY: Cambridge University Press.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*, 1016-1022.
- Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology, 41*, 625-635.
- Ge, X., Best, K. M., Conger, R., D., & Simons, R. L. (2008). Parenting behaviors and the occurrence and co-occurrence of adolescent depressive symptoms and conduct problems. *Developmental Psychology, 32*, 717-731.
- George, C., Kaplan, N., & Main, M. (1984). *Adult Attachment Interview Protocol*. Unpublished manuscript, University of California at Berkeley.

- George, C., Kaplan, N., & Main, M. (1985). *Adult Attachment Interview Protocol* (2nd ed.). Unpublished manuscript, University of California at Berkeley.
- George, C., Kaplan, N., & Main, M. (1996). *Adult Attachment Interview Protocol* (3rd ed.). Unpublished manuscript, University of California at Berkeley.
- Gillespie, N. A., Neale, M. C., Jacobson, K., & Kendler, K. S. (2009). Modeling the genetic and environmental association between peer group deviance and cannabis use in male twins. *Addiction, 104*, 420-429.
- Gonzales, N. A., Cauce, A. M., & Mason, C. A. (1996). Interobserver agreement in the assessment of parental behavior and parent-adolescent conflict: African American mothers, daughters, and independent observers. *Child Development, 67*, 1483-1498.
- Griffin, K. W., Botvin, G. J., Scheier, L. M., Diaz, T., & Miller, N. L. (2000). Parenting practices as predictors of substance use, delinquency, and aggression among urban minority youth: Moderating effects of family structure and gender. *Psychology of Addictive Behaviors, 14*, 174-184.
- Griffin, K. W., Samuolis, J., & Williams, C. (2011). Efficacy of a self-administered home-based parent intervention on parenting behaviors for preventing adolescent substance use. *Journal of Child and Family Studies, 20*, 319-325.
- Grych, J. H., & Fincham, F. D. (1993). Children's appraisals of marital conflict: Initial investigations of the cognitive-contextual framework. *Child Development, 64*, 215-230.

- Guidubaldi, J., & Perry, J. D. (1985). Divorce and mental health sequelae for children: A two-year follow-up of a nationwide sample. *Journal of the American Academy of Child Psychiatry, 24*, 531-537.
- Guo, J., Hill, K. G., Hawkins, J. D., Catalano, R. F., & Abbott, R. D. (2002). A developmental analysis of sociodemographic, family, and peer effects on adolescent illicit drug initiation. *Journal of the American Academy of Child Psychiatry, 41*, 838-845.
- Harold, G. T., & Conger, R. (1997). Marital conflict and adolescent distress: The role of adolescent awareness. *Child Development, 68*, 333-350.
- Harrison, G. W., Johnson, E., McInnes, M. M., & Rutström, E. E. (2005). Temporal stability of estimates of risk aversion. *Applied Financial Economics Letters, 1*, 31-35.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin, 112*, 64-105.
- Haynie, D. L., Giordano, P. C., Manning, W. D., & Longmore, M. A. (2005). Adolescent romantic relationships and delinquency involvement. *Criminology, 43*, 177-210.
- Henry, D. B., Schoeny, M. E., Deptula, D. P., & Slavick, J. T. (2007). Peer selection and socialization effects on adolescent intercourse without a condom and attitudes about the costs of sex. *Child Development, 78*, 825-838.
- Hetherington, E. M., Cox, M., & Cox, R. (1985). Long-term effects of divorce and remarriage on the adjustment of children. *Journal of the American Academy of Child & Adolescent Psychiatry, 24*, 518-530.

- Hirschi, (1969). *Causes of delinquency*. Berkeley, CA: University of California Press.
- Huebner, A. J., & Howell, L. M. (2003). Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication, and parenting styles. *Journal of Adolescent Health, 33*, 71–78.
- Iannotti, R. J., Bush, P. J., & Weinfurt, K. P. (1996). Perceptions of friends' use of alcohol, cigarettes, and marijuana among urban schoolchildren: A longitudinal analysis. *Addictive Behaviors, 21*, 615-632.
- Ingoldsby, E. M., Shaw, D. S., Winslow, E., Schonberg, M., Gilliom, M., & Criss, M. M. (2006). Neighborhood disadvantage, parent-child conflict, neighborhood peer relationships, and early antisocial behavior problem trajectories. *Journal of Abnormal Child Psychology, 34*, 303-319.
- Jaccard, J., Blanton, H., & Dodge, T. (2005). Peer influences on risk behavior: An analysis of the effects of a close friend. *Developmental Psychology, 41*, 135-147.
- Jackson, C., & Foshee, V. A. (1998). Violence-related behaviors of adolescents: Relations with responsive and demanding parenting. *Journal of Adolescent Research, 13*, 343-359.
- Jacobson, K. C., & Crockett, L. J. (2000). Parental monitoring and adolescent adjustment: An ecological perspective. *Journal of Research on Adolescence, 10*, 65-97.
- Johnson, R., & Gerstein, D. (1998). Initiation of use of alcohol, cigarettes, marijuana, cocaine, and other substances in US birth cohorts since 1919. *American Journal of Public Health, 88*, 27-33.
- Kerr, M., Stattin, H., & Burk, W. J. (2010). A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence, 20*, 39-64.

- Kiesner, J., & Pastore, M. (2005). Differences in relations between antisocial behavior and peer acceptance across contexts and across adolescence. *Child Development, 76*, 1278-1293.
- Kiuru, N., Burk, W. J., Laursen, B., Salmela-Aro, K. & Nurmi, J. E. (2010). Pressure to drink but not to smoke: Disentangling selection and socialization in adolescent peer networks and peer groups. *Journal of Adolescence, 33*, 801-812.
- Knecht, A. B., Burk, W. J., Weesie, J., & Steglich, C. (2011). Friendship and alcohol use in early adolescence: A multilevel social network approach. *Journal of Research on Adolescence, 21*, 475-487.
- Kobak, R. R., Cole, H. E., Ferenz-Gillies, R., Fleming, W. S., & Gamble, W. (1993). Attachment and emotion regulation during mother-teen problem solving: A control theory analysis. *Child Development, 64*, 231-245. doi:10.2307/1131448
- Krishnakumar, A., & Buehler, C. (2000). Interparental conflict and parenting behaviors: A meta-analytic review. *Family Relations, 49*, 25-44.
- Kupersmidt, J. B., & DeRosier, M. E. (2004). How peer problems lead to negative outcomes: An integrative mediational model. In J. B. Kupersmidt & K. A. Dodge (Eds.), *Children's peer relations: From development to intervention* (pp. 119-138). Washington, DC: American Psychological Association.
- Laird, R. D., Pettit, G. S., Dodge, K. A., & Bates, J. E. (2003). Change in parents monitoring knowledge: Links with parenting, relationship quality, adolescent beliefs, and antisocial behavior. *Social Development, 12*, 401-419.
- Laursen, B., Furman, W., & Mooney, K. S. (2006). Predicting interpersonal competence and self-worth from adolescent relationships and relationship networks: Variable-

centered and person-centered perspectives. *Merrill-Palmer Quarterly*, 52, 572-600.

- Laursen, B., Hafen, C. A., Kerr, M., & Stattin, H. (2012). Friend influence over adolescent problem behaviors as a function of relative peer acceptance: To be liked is to be emulated. *Journal of Abnormal Psychology*, 121, 88-94.
- Lejuez, C. W., Aklin, W., Daughters, S. B., Zvolensky, M., Kahler, C., & Gwadz, M. (2007). Reliability and validity of the youth version of the Balloon Analogue Risk Task (BART-Y) in the assessment of risk-taking behavior among inner-city adolescents. *Journal of Clinical Child and Adolescent Psychology*, 36, 106-111.
- Lejuez, C. W., Kahler, C. W., & Brown, R. A. (2003). A modified computer version of the Paced Auditory Serial Addition Task (PASAT) as a laboratory-based stressor. *Behavior Therapist*, 26, 290-293.
- Lejuez, C. W., Read, J. P., Kahler, C. W., Richards, J. B., Ramsey, S. E., Stuart, G. L. . . . & Brown, R. A. (2002). Evaluation of a behavioral measure of risk taking: The Balloon Analogue Risk Task (BART). *Journal of Experimental Psychology: Applied*, 8, 75-84.
- Li, X., Fiegelman, S., & Stanton, B. (2000). Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents. *Journal of Adolescent Health*, 27, 43-48.
- Li, X., Stanton, B., & Fiegelman, S. (2000). Impact of perceived parental monitoring on adolescent risk behavior over 4 years. *Journal of Adolescent Health*, 27, 49-56.
- Lippold, M., A., Greenberg, M. T., & Feinberg, M. E. (2011). A dyadic approach to understanding the relationship of maternal knowledge of youths' activities to

- youths' problem behavior among rural adolescents. *Journal of Youth and Adolescence*, *40*, 1178-1191.
- Lynskey, M. T., Fergusson, D. M., & Horwood, L. J. (1998). The origins of the correlations between tobacco, alcohol, and cannabis use during adolescence. *Journal of Child Psychology and Psychiatry*, *39*, 995-1005.
- MacPherson, L., Magidson, J. F., Reynolds, E. K., Kahler, C. W., & Lejuez, C. W. (2010). Changes in sensation seeking and risk-taking propensity predict increases in alcohol use among early adolescents. *Alcoholism: Clinical and Experimental Research*, *34*, 1400-1408.
- MacPherson, L., Reynolds, E. K., Daughters, S. B., Wang, F., Cassidy, J., Mayes, L. C., & Lejuez, C. W. (2010). Positive and negative reinforcement underlying risk behavior in early adolescence. *Prevention Science*, *11*, 331-342.
- Marcus, R. F., & Betzer, P. D. S. (1996). Attachment and antisocial behavior in early adolescence. *Journal of Early Adolescence*, *16*, 229-248.
- Marsh, P., McFarland, F. C., Allen, J. P., McElhaney, K., & Land, D. (2003). Attachment, autonomy, and multifinality in adolescent internalizing and risky behavioral symptoms. *Development and Psychopathology*, *15*, 451-467.
- Marshal, M. P., & Chassin, L. (2000). Peer influence on adolescent alcohol use: The moderating role of parental support and discipline. *Applied Developmental Science*, *4*, 80-88.
- Mayes, L. C., & Suchman, N. E. (2006). Developmental pathways to substance abuse. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology. Vol 3: Risk, disorder, and adaptation* (2nd ed., pp. 599-619). Hoboken, NJ: Wiley.

- McElhaney, K. B., Immele, A., Smith, F. D., & Allen, J. P. (2006). Attachment organization as a moderator of the link between friendship quality and adolescent delinquency. *Attachment & Human Development, 8*, 33-46.
- McHale, S. M., Bissell, J., & Kim, J. (2009). Sibling relationship, family, and genetic factors in sibling similarity in sexual risk. *Journal of Family Psychology, 23*, 562-572.
- Meeus, W., Branje, S., & Overbeek, G. J. (2004). Parents and partners in crime: A six-year longitudinal study on changes in supportive relationships and delinquency in adolescence and young adulthood. *Journal of Child Psychology and Psychiatry, 45*, 1288-1298.
- Miller, B. C., Benson, B., & Galbraith, K. A. (2001). Family relationships and adolescent pregnancy risk: A research synthesis. *Developmental Review, 21*, 1-38.
- Miller, B. C., & Bingham, C. R. (1989). Family configuration in relation to the sexual behavior of female adolescents. *Journal of Marriage and the Family, 51*, 499-506.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674-701.
- Moffitt, T. E. (1997). Adolescence-limited and life-course-persistent offending: A complementary pair of developmental theories. In T. P. Thornberry (Ed.), *Developmental theories of crime and delinquency* (pp.11-54). Piscataway, NJ: Transaction Publishers.

- Moffitt, T., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited pathways, among males and females. *Development and Psychopathology, 13*, 355-375.
- Moffitt, T., Caspi, A., Dickson, N., Silva, P. A., & Stanton, W. (1996). Childhood-onset versus adolescent-onset antisocial conduct in males: Natural history from age 3 to 18. *Development and Psychopathology, 8*, 399-424.
- Monahan, K. C., Steinberg, L., & Cauffman, E. (2009). Affiliation with antisocial peers, susceptibility to peer influence, and antisocial behavior during the transition to adulthood. *Developmental Psychology, 45*, 1520-1530.
- Needle, R. H., Su, S., & Doherty, W. J. (1990). Divorce, remarriage, and adolescent substance use: A prospective longitudinal study. *Journal of Marriage and the Family, 52*, 157-169.
- Newcomb, M. D., & Bentler, P. M. (1988). The impact of family context, deviant attitudes, and emotional distress on adolescent drug use: Longitudinal latent-variable analyses of mothers and their children. *Journal of Research in Personality, 22*, 154-176.
- Newcomer, S., & Udry, J. R. (1987). Parental marital status effects on adolescent sexual behavior. *Journal of Marriage and the Family, 49*, 235-240.
- Ollendick, T. H., Weist, M. D., Borden, M. C., & Greene, R. W. (1992). Sociometric status and academic, behavioral, and psychological adjustment: A five-year longitudinal study. *Journal of Consulting and Clinical Psychology, 60*, 80-87.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin, 102*, 357-389.

- Parker, J. S., & Benson, M. J. (2004). Parent-adolescent relations and adolescent functioning: Self-esteem, substance abuse, and delinquency. *Adolescence, 39*, 519-530.
- Parkhurst, J. T., & Hopmeyer, A. (1998). Sociometric popularity and peer-perceived popularity: Two distinct dimensions of peer status. *The Journal of Early Adolescence, 18*, 125-144.
- Pastor, D. A. (2010). Cluster analysis. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (pp. 41-54). New York, NY: Routledge.
- Patterson, G. R., Reid, J., & Dishion, T. J. (1992). *Antisocial boys*. Eugene, OR: Castalia.
- Pequegnat, W., & Bray, J. H. (1997). Families and HIV/AIDS: Introduction to the special section. *Journal of Family Psychology, 11*, 3-10.
- Petratis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin, 117*, 67-86.
- Poelen, E. P., Engels, R. C. M. E., van der Vorst, H., Scholte, R. J., & Vermulst, A. A. (2007). Best friends and alcohol consumption in adolescence: A within-family analysis. *Drug and Alcohol Dependence, 88*, 163-173.
- Popp, D., Laursen, B., Kerr, M., Stattin, H., & Burk, W. K. (2008). Modeling homophily over time with an actor-partner interdependence model. *Developmental Psychology, 44*, 1028-1039.

- Poulin, F., Dishion, T. J., & Haas, E. (1999). The peer influence paradox: Friendship quality and deviancy training within male adolescent friendships. *Merrill-Palmer Quarterly, 45*, 42-61.
- Poulin, F., Kiesner, J., Pedersen, S., & Dishion, T. J. (2011). A short-term longitudinal analysis of friendship selection on early adolescent substance use. *Journal of Adolescence, 34*, 249-256.
- Prinstein, M. J., Boergers, J., & Spirito, A. (2001). Adolescents' and their friends' health-risk behavior: Factors that alter or add to peer influence. *Journal of Pediatric Psychology, 26*, 287-298.
- Prinstein, M. J., Choukas-Bradley, S. C., Helms, S. W., Brechwald, W. A., & Rancourt, D. (2011). High peer popularity longitudinally predicts adolescent health risk behavior, or does it? An examination of linear and quadratic associations. *Journal of Pediatric Psychology, 36*, 980-990.
- Prinstein, M. J., & La Greca, A. M. (2004). Childhood peer rejection and aggression as predictors of adolescent girls' externalizing and health risk behaviors: A 6-year longitudinal study. *Journal of Consulting and Clinical Psychology, 72*, 103-112.
- Prinstein, M. J., Meade, C. S., & Cohen, G. L. (2003). Adolescent oral sex, peer popularity, and perceptions of best friends' sexual behavior. *Journal of Pediatric Psychology, 28*, 243-249.
- Prinz, R. J., Foster, S. L., Kent, R. N., & O'Leary, K. D. (1979). Multivariate assessment of conflict in distressed and non-distressed mother-adolescent dyads. *Journal of Applied Behavioral Analysis, 12*, 691-700.

- Quinn, E. P., Brandon, T. H., & Copeland, A. L. (1996). Is task persistence related to smoking and substance abuse? The application of learned industriousness theory to addictive behaviors. *Experimental and Clinical Psychopharmacology*, *4*, 186-190.
- Reynolds, E. K., MacPherson, L., Matusiewicz, A., Schreiber, W., & Lejuez, C. W. (2011). Discrepancy between mother and child reports of parental knowledge and the relation to risk behavior engagement. *Journal of Clinical Child & Adolescent Psychology*, *40*, 67-79.
- Rhule-Louie, D. M., & McMahon, R. J. (2007). Problem behavior and romantic relationships: Assortative mating, behavior contagion, and desistance. *Clinical Child and Family Psychology Review*, *10*, 53-100.
- Roisman, G. I., Holland, A., Fortuna, K., Fraley, C. Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology*, *92*, 678-697.
- Rosenstein, D. S., & Horowitz, H. (1996). Adolescent attachment and psychopathology. *Journal of Consulting and Clinical Psychology*, *64*, 244-253.
- Rowe, D. C., & Gulley, B. L. (1992). Sibling effects on substance use and delinquency. *Criminology*, *30*, 217-233.
- Samek, D. R., & Rueter, M. A. (2011). Considerations of elder sibling closeness in predicting younger sibling substance use: Social learning versus social bonding explanations. *Journal of Family Psychology*, *25*, 931-941.

- Scaramella, L. V., & Leve, L. D. (2004). Clarifying parent-child reciprocities during early childhood: The early childhood coercion model. *Clinical Child and Family Psychology Review, 7*, 89-107.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147-177.
- Schulenberg, J., Maggs, J. L., Dielman, T. E., Leech, S. L., Kloska, D. D., & Laetz, V. B. (1999). On peer influences to get drunk: A panel study of young adolescents. *Merrill-Palmer Quarterly, 45*, 108-142.
- Selfhout, M. H. W., Branje, S. J. T., & Meeus, W. H. J. (2008). The development of delinquency and perceived friendship quality in adolescent best friendship dyads. *Journal of Abnormal Child Psychology, 36*, 471-485.
- Shek, D. T. L. (1997). The relation of parent-adolescent conflict to adolescent psychological well-being, school adjustment, and problem behavior. *Social Behavior and Personality, 25*, 277-290.
- Shaver, P. R., & Mikulincer, M. (2007). *Attachment in adulthood: Structure, dynamics, and change*. New York, NY: Guilford.
- Shelton, K. H., Harold, G. T., Goeke-Morey, M. C., & Cummings, E. M. (2006). Children's coping with marital conflict: The role of conflict expression and gender. *Social Development, 15*, 232-247.
- Shelton, K. H., & van den Bree, M. B. M. (2010). The moderating effects of pubertal timing on the longitudinal associations between parent-child relationship quality and adolescent substance use. *Journal of Research on Adolescence, 20*, 1044-1064.

- Sieving, R. E., Perry, C. L., & Williams, C. L. (2000). Do friendships change behaviors, or do behaviors change friendships? Examining paths of influence in young adolescents' alcohol use. *Journal of Adolescent Health, 26*, 27-35.
- Simons, R. L., Conger, R. D., & Whitbeck, L. B. (1988). A multistage social learning model of the influences of family and peers upon adolescent substance abuse. *Journal of Drug Issues, 18*, 293-315.
- Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion, 29*, 83-102.
- Simons-Morton, B., & Chen, R. S. (2005). Over time relationships between early adolescent and peer substance use. *Addictive behaviors, 31*, 1211-1223.
- Slomkowski, C., Rende, R., Conger, K. J., Simons, R. L., & Conger, R. D. (2001). Sisters, brothers, and delinquency: Evaluating social influence during early and middle adolescence. *Child Development, 72*, 271-283.
- Smetana, J. G. (2008). Conflicting views of conflict. *Monographs of the Society for Research in Child Development, 73*, 161-168.
- Smetana, J. G., Campione-Barr, N., & Metzger, A. (2006). Adolescent development in interpersonal and societal contexts. *Annual Reviews of Psychology, 57*, 255-284.
- Smetana, J. G., Yau, J., & Hanson, S. (1991). Conflict resolution in families with adolescents. *Journal of Research on Adolescence, 1*, 189-206.
- Smith, K. A., & Forehand, R. (1986). Parent-adolescent conflict: Comparison and prediction of the perceptions of mothers, fathers, and daughters. *Journal of Early Adolescence, 6*, 353-367.

- Spooner, C. (1999). Causes and correlates of adolescent drug abuse and implications for treatment. *Drug and Alcohol Review, 18*, 453-475.
- Stanton, B. F., Li, X., Galbraith, J., Cornick, G., Feigelman, S., Kaljee, L., & Zhou, Y. (2000). Parental underestimates of adolescent risk behavior: A randomized, controlled trial of a parental monitoring intervention. *Journal of Adolescent Health, 26*, 18-26.
- Stattin, H., & Kerr, M. (2000). Parental monitoring: A reinterpretation. *Child Development, 71*, 1072-1085.
- Steinberg, L. (1986). Latchkey children and susceptibility to peer pressure: An ecological analysis. *Developmental Psychology, 22*, 433-439.
- Steinberg, L. (2001). We know some things: Adolescent-parent relationships in retrospect and prospect. *Journal of Research on Adolescence, 11*, 1-20.
- Steinberg, L. (2008a). A social neuroscience perspective on adolescent risk-taking. *Developmental Review, 28*, 78-106.
- Steinberg, L. (2008b). *Adolescence* (8th ed.). New York, NY: McGraw-Hill.
- Steinberg, L., Fletcher, A., & Darling, N. (1994). Parental monitoring and peer influences on adolescent substance use. *Pediatrics, 93*, 1-5.
- Steinberg, M. L., Krejci, J. A., Collett, K., Brandon, T. H., Ziedonis, D. M., & Chen, K. (2007). Relationships between self-reported task persistence and history of quitting smoking, plans for quitting smoking, and current smoking status in adolescents. *Addictive Behaviors, 32*, 1451-1460.

- Taris, T. W., & Semin, G. R. (1997). Parent-child interaction during adolescence, and the adolescent's sexual experience: Control, closeness, and conflict. *Journal of Youth and Adolescence, 26*, 373-398.
- Tinsley, B. J., Lees, N. B., & Sumartojo, E. (2004). Child and adolescent HIV risk: Familial and cultural perspectives. *Journal of Family Psychology, 18*, 208-224.
- Tschann, J. M., Flores, E., Martin, B. V., Pasch, L. A., Baisch, E. M., & Wibbelsman, C. J. (2002). Interparental conflict and risk behaviors among Mexican American adolescents: A cognitive-emotional model. *Journal of Abnormal Child Psychology, 30*, 373-385.
- Urberg, K. A., Degirmencioglu, S. M., & Pilgrim, C. (1997). Close friend and group influence on adolescent cigarette smoking and alcohol use. *Developmental Psychology, 33*, 834-844.
- Urberg, K. A., Luo, Q., Pilgrim, C., & Degirmencioglu, S. M. (2003). A two-stage model of peer influence in adolescent substance use: Individual and relationship-specific differences in susceptibility to influence. *Addictive Behaviors, 28*, 1243-1256.
- van der Vorst, H., Engels, R. C. M. E., & Burk, W. J. (2010). Do parents and best friends influence the normative increase in adolescents' alcohol use at home and outside the home? *Journal of Studies on Alcohol and Drugs, 71*, 105-114.
- van der Vorst, H., Engels, R. C. M. E., Meeus, W., Dekovic, M., & Vermulst, A. (2006). Parental attachment, parental control, and early development of alcohol use: A longitudinal study. *Psychology of Addictive Behaviors, 20*, 107-116.

- Van Doorn, M. D., Branje, S. J. T., & Meeus, W. H. J. (2008). Conflict resolution in parent-adolescent relationships and adolescent delinquency. *Journal of Early Adolescence, 28*, 503-527.
- von Eye, A. (2010). Developing the person-oriented approach: Theory and methods of analysis. *Development and Psychopathology, 22*, 277-285.
- von Eye, A., Bogat, A., & Rhodes, J. E. (2006). Variable-oriented and person-oriented perspectives of analysis: The example of alcohol consumption in adolescence. *Journal of Adolescence, 29*, 981-1004.
- Webster, R. A., Hunter, M., & Keats, J. A. (1994). Peer and parental influences on adolescents' substance use: A path analysis. *International Journal of the Addictions, 29*, 647-657.
- White, T. L., Lejuez, C. W., & de Wit, H. (2008). Test-retest characteristics of the Balloon Analogue Risk Task (BART). *Experimental and Clinical Psychopharmacology, 16*, 565-570.
- Wills, T. A., & Cleary, S. D. (1996). How are social support effects mediated? A test with parental support and adolescent substance use. *Journal of Personality and Social Psychology, 71*, 937-952.
- Wills, T. A., & Cleary, S. D. (1999). Peer and adolescent substance use among 6th-9th graders: Latent growth analyses of influence versus selection mechanisms. *Health psychology, 18*, 453-463.
- Wills, T. A., Resko, J. A., Ainette, M. G., & Mendoza, D. (2004). Role of parent support and peer support in adolescent substance use: A test of mediated effects. *Psychology of Addictive Behaviors, 18*, 122-134.

- Wills, T. A., Sandy, J. M., Yaeger, A., and Shinar, O. (2001). Family risk factors and adolescent substance use: Moderation effects for temperament dimensions. *Developmental Psychology, 37*, 283-297.
- Williams, P. G., Holmbeck, G. N., & Greenley, R. N. (2002). Adolescent health psychology. *Journal of Consulting and Clinical Psychology, 70*, 828-842.
- Windle, M. (2000). Parental, sibling, and peer influences on adolescent substance use and alcohol problems. *Applied Developmental Science, 4*, 98–110.
- Wissink, I. B., Dekovic, M., & Meijer, A. M. (2006). Parenting behavior, quality of the parent-adolescent relationship, and adolescent functioning in four ethnic groups. *Journal of Early Adolescence, 26*, 133-159.
- Woodward, L. J., & Fergusson, D. M. (1999). Child peer relationship problems and psychosocial adjustment in late adolescence. *Journal of Abnormal Child Psychology, 27*, 87-104.
- Ziv, Y., Cassidy, J., & Ramos-Marcuse, F. (2002). *The conflict task coding system*. Unpublished manuscript. University of Maryland, College Park.