

FUTURE ORIENTATION AS A MEDIATING FACTOR IN THE RELATION
BETWEEN FAMILY INSTABILITY AND ADOLESCENT PROBLEM BEHAVIOR:
A MODERATED MEDIATION MODEL

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ABSTRACT

Adolescent delinquency represents a significant threat to the health and future of developing persons. Due to the important implications of adolescent problem behaviors, it is essential that we understand the complex mechanisms in the life and mind of a developing person that may lead to these behavior problems in adolescence. I proposed that early family instability, including residential moves and changes in household composition, would be a primary predictor of adolescent problem behaviors, including risk-taking and externalizing behaviors. This relation was predicted to be mediated by future orientation. When young children are faced with uncertainty, they may develop a shorter-term view of their own life. Therefore, family instability is predicted to influence the developing orientation to the future, which is predicted to be related to problem behaviors in adolescence. Deviant peer association and family routine were predicted to be moderators in the model.

The results reveal a significant association between early family instability and adolescent externalizing behavior. This association is significant while controlling for later family instability and other demographic variables, such as socioeconomic status, ethnicity, and child IQ. This indicates that early family instability is directly related to adolescent behavior beyond the effects of continuing instability and other individual factors. Additionally, the level of future orientation was associated with adolescent risk-taking behavior for boys but not for girls. This indicates that for boys, lack of thoughts about one's future is predictive of risky behaviors in adolescence. Early family instability was not significantly related to future orientation, precluding future orientation as a mediator in the relation between early family instability and later problem behaviors.

Family routine and peer deviance were not found to be significant moderators in this study.

The results of this study indicate the important role family instability plays in adolescent behavior problems. These results demonstrate that experiences in the first five years of a child's life have potentially long-term effects on the individual. Additionally, future orientation appears to be a significant predictor of adolescent risk-taking behavior for boys. As risk-taking behavior may be detrimental to the individual's life and future, it is important to understand factors that predict risk taking. Future studies should examine the development of future orientation and its role in adolescent adjustment.

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TABLE OF CONTENTS

ABSTRACT	iii
DEDICATION AND ACKNOWLEDGEMENTS.....	v
LIST OF TABLES	xi
CHAPTER 1	
INTRODUCTION	1
Adolescence as a Time of Transformation.....	5
Problem Behaviors in Adolescence.....	9
Risk-Taking Behaviors	9
Externalizing Behaviors.....	11
Family Instability.....	12
Family Instability as a Distinct Construct.....	13
Timing of Family Instability.....	16
Future Orientation	19
Family Instability and Future Orientation.....	21
Future Orientation and Problem Behaviors	22
Family Routine as Moderator	25
Deviant Peer Association as Moderator	26
Conclusion.....	29
Current Study.....	32

Hypothesis 1: Early Family Instability and Adolescent Problem Behaviors.....	32
Hypothesis 2: Mediating Role of Future Orientation	35
Hypothesis 3: Family Routine and Peer Deviance as Moderators.....	37
CHAPTER 2	
METHOD	40
Participants	40
Procedure.....	40
Measures	42
Demographic Variables	42
Pre-natal Substance Exposure	42
IQ	42
Family Instability	42
Family Routine.....	43
Future Orientation.....	43
Deviant Peer Association.....	44
Adolescent Problem Behavior	45
Externalizing Behavior	45
Risk-taking Behavior	46
CHAPTER 3	
RESULTS	48

Preliminary Analyses.....	48
Family Instability and Adolescent Risk-taking	50
Family Instability and Adolescent Externalizing Behaviors.....	52
Family Instability and Future Orientation	54
Future Orientation as Mediator of the Relation between Family Instability and Adolescent Problem Behaviors	55
Future Orientation and Risk-taking Behavior	56
Future Orientation and Externalizing Behaviors.....	57
Family Routine as Moderator of the Relation between Family Instability and Externalizing Behavior.....	58
Deviant Peers as Moderator of the Relation between Family Instability and Externalizing Behavior.....	60
Deviant Peers as Moderator of the Relation between Future Orientation and Risk- Taking.....	62
Summary.....	63
 CHAPTER 4	
DISCUSSION.....	65
Strengths	75
Limitations.....	78
Implications and Future Directions	79

REFERENCES CITED.....83

LIST OF TABLES

1. Means, Standard Deviations, and Correlations of Key Variables	49
2. Means and Standard Deviations of Key Variables by Gender	50
3. Regression Analysis Evaluating the Relation Between Early Family Instability and Adolescent Risk-Taking Behavior.....	51
4. Regression Analysis Evaluating the Relation Between Early Family Instability and Adolescent Externalizing Behavior.....	53
5. Regression Analysis Evaluating the Relation Between Family Instability and Future Orientation	55
6. Regression Analysis Evaluating the Relation Between Future Orientation and Adolescent Risk-Taking Behavior.....	56
7. Regression Analysis Evaluating the Relation Between Future Orientation and Adolescent Externalizing Behavior	57
8. Regression Analysis Evaluating Family Routine as a Moderator of the Relation Between Family Instability and Externalizing Behavior	59
9. Regression Analysis Evaluating Deviant Peers as a Moderator of the Relation Between Family Instability and Externalizing Behavior (N = 843)	61
10. Regression Analysis Evaluating Deviant Peers as a Moderator of the Relation Between Future Orientation and Risk-Taking Behavior for Boys (N = 395).....	62

CHAPTER 1

INTRODUCTION

Adolescence is a period in the life span marked by various psychological and physiological changes in conjunction with normative developmental tasks. Among these transitions are a shift in social relations, a focus on career development, and advancement of cognitive development. These transitions serve to transform the child into an adult psychologically, socially, and legally. The goal of this period is to move into adulthood and adult roles safely and in good health. Given the magnitude of these transitions, there are significant risks associated with this developmental stage. There are several well-known antecedents of this new-found independence of adolescence that may hinder the outcomes of these various transformations.

One frequently studied threat to the developing adolescent is engagement in delinquent behavior. Delinquency includes a variety of problem behaviors, both risk-taking behaviors and externalizing behaviors. Risk-taking behaviors are defined as those that have the potential for causing bodily damage, such as substance use and reckless driving, and externalizing behaviors include a variety of aggressive behaviors, such as fighting and stealing. Because this developmental period is marked by a variety of transitions into adult status, problem behaviors during this time may have lifelong implications. The incidence of problem behaviors has been shown to be higher among adolescents than children or adults, and taking risks during this critical time may have damaging long-term consequences. The identification of antecedent risk and protective factors are critical for the long term well-being of these individuals.

Previous research has shown that delinquency in adolescence has a significant influence on the person, their future, and society at large. There is consistent empirical support that adolescent adjustment problems predict adverse adult outcomes (Dishion & Owen, 2002; Reid, Patterson, & Snyder, 2002). Engaging in these problem behaviors in adolescence can have lasting detrimental effects; however, many adolescents who transition to adulthood are in fact well-adjusted and prepared to take on adult roles and responsibilities (Furstenberg, 2000; Jessor, 1993; Wyman, Cowen, Work, & Kerley, 1993) indicating that along with risk, resilience plays a key role in development. It is important to understand the complex aspects of the developing person and their various contexts that lead to either more or less problem behaviors in adolescence. Therefore, when examining outcomes of development, one must take into account the interplay of risk and protective factors.

Currently, there is a great deal of research being conducted to understand why adolescents as a group exhibit more problem behavior than do adults or children. However, much less research has investigated individual differences within various adolescent groups or delineated the processes contributing to varying levels of delinquency among adolescents. Although adolescents are in fact more likely to exhibit problem behaviors than either children or adults, within the group of all adolescents and in each subgroup of adolescents, some will exhibit higher levels of problem behaviors than others. It is these differences that this study addresses – what is it about the adolescents who exhibit more delinquent behaviors that differentiates them from the less delinquent adolescents? The current study is investigating possible inter-related mechanisms through which adolescent problem behavior is more or less likely to emerge,

including risk and protective factors of adolescent delinquency in the forms of predictors, mediators, and moderators.

The proposed model will consider interactive processes as mechanisms that may help to explain the development of behavior problems in adolescence. According to developmental theory, behavior problems develop as the result of interactions and changes in the individual and their environment (Magnusson & Cairns, 1996). Emphasis is placed on timing, transitions, and contexts affecting individual development. Specifically, this study will focus on the effects of family instability, the timing of the instability, the individual's understanding of the world based on experience, and contexts such as peers and family routine that may be mechanisms involved in amplifying or mitigating the risk for problem behaviors. The resulting theory incorporates multiple constructs at the individual and contextual levels as potential influences on the development of behavior problems, which have the potential for affecting development into the adult years.

In order to better understand what factors increase the likelihood of delinquency for some adolescents and decrease the likelihood for others, this study will examine hypothesized risk and protective factors in relation to one another as well as to the outcome of problem behaviors in adolescence. Early family instability is proposed as the primary factor predicting adolescent behavior problems. The term instability has been used to refer to various forms of change in different aspects of a child's life (e.g., change in family structure and instability of activities within the family). In this study, early instability will refer to the number of physical or structural changes the child experiences

over the first five years of life (e.g., changes in household composition and residential moves).

The model examined here proposes that early family instability will be related to an increase in behavior problems, both risk-taking and externalizing, in adolescence and that future orientation will be the primary mediator between the unpredictability in the home environment and later behavior problems. Normative adolescent development is characterized by dramatic transitions in cognitive development, social relations, identity, sexuality, and behavior. I propose that through these normative developmental tasks adolescents construct an understanding of their life in the future which will be based on previous experience and will dictate current and future behaviors. That is, I am proposing that early family instability will lead to a less structured future orientation, which will in turn lead the adolescent to have an increased likelihood of engagement in problem behaviors. By contrast, adolescents who have high levels of future orientation and thereby think about and plan for future goals are predicted to avoid problem behaviors because these behaviors would interfere with the achievement of these future goals. Additionally, I will examine possible moderators in this model. Therefore, I will be examining both possible risk factors as well as potential protective factors in the path to higher levels of problem behaviors in adolescence.

In the following sections, I briefly review the literature on adolescence as a key developmental period as well as the literature on adolescent problem behaviors, including risk-taking and externalizing behaviors, which are the outcomes examined in this study. Following this, I review the literature on family instability, which is proposed as a major factor predicting adolescent problem behavior, and future orientation, which is included

in the study as a mediator of the relation between family instability and problem behavior. Finally, the literature describing the two proposed moderators, family routine and deviant peer association, is reviewed.

Adolescence as a Time of Transformation

The physical and psychological changes during adolescence can be thought of as an interrelated and overlapping set of transitions. Biologically, adolescence begins with the onset of puberty and ends when a person feels ready for sexual reproduction (Steinberg, 2010). Emotionally, adolescence marks the beginning of self-conscious detachment from parents and ends with the attainment of a separate sense of identity (Dunkel & Anthis, 2001; Erikson, 1963; Guichard, 2005; Kunnen, Bosma, & van Geert, 2001). Cognitively, adolescence begins with the emergence of more abstract reasoning abilities and ends with the ability to consider and test hypotheses, weigh contingent possibilities, take the perspectives of others, and draw appropriate inferences based on evidence (Inhelder & Piaget, 1958; Overton & Dick, 2007). Interpersonally, adolescence continues a shift in interest from primary relations with family to peer relations, culminating in a capacity for deeper intimacy with peers and commitment to a partner (Yowell, 2000). Socially, adolescence begins with training for adult work and citizen roles, and ends with full attainment of adult status, privileges, and responsibilities (Steinberg, 2010). Educationally, adolescence begins with entry into junior high school and ends with a commitment to higher education or a particular career path (Furstenburg, 2000; Rudolph, Lambert, Clark, & Kurlakowsky, 2001). Legally, adolescence begins with the attainment of juvenile status and ends with the attainment of majority status with all the ramifications and opportunities afforded (Steinberg, 2010). Therefore, we can

view the period of adolescence as characterized by a process of transformations in a variety of realms.

The direction of all of the adolescent changes in each of the various domains is towards competent adulthood. Adolescence and its various transformations represent a means of transitioning from childhood to adulthood. The transitions, or developmental tasks, of adolescence serve to prepare the individual for adult roles and behaviors. For example, the developmental tasks of adolescence put forth by Havighurst (1948; 1953) include achieving emotional and economic independence, developing the social skills necessary for civic competence, selecting and preparing for an occupation, and preparing and planning for family life. Given the developmental direction of the adolescent period, we can think of adolescence as a time during which future planning achieves a heightened significance for the person. Different levels of future orientation in the adolescent are thought to be related to major adolescent tasks including cognitive advancements, proximity to future goals (i.e., nearing high school graduation), and identity development. This period can be a positive or negative lead-up to adulthood depending on the ways in which the individual maneuvers through these various transformations. As we will see, future orientation is an important element in these transitions to adulthood and it predicts adolescent behavioral outcomes. This centrality of future orientation leads to the consideration of it as a significant mediating factor for adolescent behavior problems.

Adolescence has been considered a period of heightened importance due to these numerous tasks and changes experienced concomitantly during this period. Through the adolescent period individuals are attempting to gain a sense of identity and conceptualize

themselves in adult roles. In 1996, Levitt and Selman proposed the concept of ‘personal meaning’ in a theory of risky behaviors. They proposed that problem behaviors occur within the context of personal meaning, in the context of one’s own life story. According to this approach, problem behavior comes to form and is formed by one’s own life circumstances, including peer culture, life experience, and family dynamics. Adolescents are developing the capacity to integrate their various circumstances into a life story. Through this process, they are developing the ability to consciously evaluate the embeddedness of their behaviors within their own life history and future. An adolescent’s understanding of his or her deviant behaviors may help to define and shape a sense of who the adolescent is as an individual and who the adolescent wants to be. Additionally, adolescents’ views of who they are and who they want to be will shape their behavior in that present behavior must be incorporated into their life stories. Therefore, personal meaning both forms and transforms the adolescent’s views and behavior. Levitt and Selman suggest that personal meaning mediates associations between contextual variables and social behavior.

In line with Levitt and Selman’s (1996) theory, this model proposes that delinquent behaviors develop along with a capacity to appreciate how one’s pattern of risk behavior is embedded in one’s own life experiences and developing life story. This model acknowledges the active nature of the individual as well as the contexts in which the individual acts. I propose that the processes leading to adolescent problem behavior occur through the development of self within active contexts. There are many aspects of a child’s life and thinking that may increase the likelihood of problem behaviors in adolescence. The present model will focus on early family instability as a contextual

antecedent to adolescent problem behaviors. This association is predicted to be mediated through future time orientation. Although future orientation does not measure Levitt and Selman's concept of "personal meaning" as this is the integration of behaviors into one's life history, it does attempt to measure whether the adolescent has formulated a future life story within which to place potential deviant behaviors. Through the processes of cognitive and identity development and the adoption of adult roles, the adolescent reflects on and organizes his or her future activity.

During the early years of an individual's life, one develops an understanding of the world and what to expect for the future. Based on the experiences young children have, they may see the world as a predictable, stable place within which to make plans or they may see the world as unpredictable, in which case they may not feel able to plan for their future. When adolescents begin to think about their own future they will call upon this understanding of the world and what they may or may not expect for their future. That is, it is theorized that the association between early family instability and problem behaviors will be mediated by future orientation. Rather than reducing all developments to internal cognitive changes, I also theorize that social relations and aspects of the family context moderate this path. In this model, the associations between early family instability and future orientation as well as between future orientation and adolescent problem behaviors are theorized to be moderated by family routine and deviant peer associations.

The primary risk factor for adolescent problem behavior that will be addressed in this model is early family instability. Family instability is a construct that has gained increasing attention due to its growing incidence in the lives of children as well as its

potential long term implications. For young children, the home or family environment is a central influence on emotional as well as cognitive and behavioral development (Bradley, Caldwell, & Rock, 1988; Bradley et al., 1989). However, we know that in life, a variety of events occur wherein individuals with children must move, get sick, lose their jobs, separate from romantic partners, develop romantic relationships, and lose loved ones. These changes may be necessary or possibly due to positive circumstances; however, regardless of the cause, physical changes in the home may create an atmosphere of instability in the lives of young children. Recent research has demonstrated that the degree of instability within the family environment to which children are exposed is a strong predictor of their developmental adjustment (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999; Adam & Chase-Lansdale, 2002). This study will focus on particular aspects of the family environment that create instability, including residential moves and changes in household composition, and propose a model identifying the processes by which these disruptions in the family environment impact the developing person and their actions. The outcomes examined here are problem behaviors in adolescence, specifically risk-taking behaviors and externalizing behaviors.

Problem Behaviors in Adolescence

The present study examines two aspects of adolescent problem behavior: risk-taking, which often involves potential harm to oneself, and externalizing behavior, which is associated with causing harm to others. As previously noted, both types of problem behaviors in adolescence can have lasting detrimental effects on the individual.

Risk-taking Behaviors. From the inception of the scientific study of adolescence, this developmental period has been conceived of as a period of “storm and stress” (Hall,

1904). Adolescence has long been associated with elevated rates of risk-taking behavior (Arnett, 1999). Indeed, contemporary research confirms that in the United States and other Western countries, the adolescent years are the years of highest prevalence of a variety of problem behaviors (i.e., behavior that carries the potential for harm to self and/or others and aggressive behaviors). This pattern exists for crime as well as for behavior such as substance use, risky automobile driving, and risky sexual behavior (Arnett, 1992; Moffitt, 1993).

It is well established that risky behaviors, which are preventable and often self-inflicted, are the greatest threats to the well-being of young people in the United States. According to the Centers for Disease Control and Prevention (2006), in adolescence nearly 80 percent of boys and 60 percent of girls take unnecessary risks while skateboarding or riding bikes, close to one-third of both sexes have been passengers in cars driven by intoxicated drivers, and one-tenth have driven while drinking. Substance use is an example of a behavior that is often initiated during this age period and is of considerable importance given the significance for adolescent development and because of the possible long-term impact. In 2006 approximately 48% of 12th graders had used some illegal drug in their lifetimes, and 73% had consumed some alcohol by the end of high school (Johnston, O'Malley, Bachman, & Schulenberg, 2007). The consequences associated with these behaviors vary significantly, but each poses a range of potential immediate and long-term physical and psychological health problems.

Risky behaviors can be defined as voluntary behaviors that threaten the well-being of the individual and limit one's potential for achieving responsible adulthood (Elliott, 1993). Examples of risk-taking behavior are alcohol, tobacco, and other illegal

drug use; physical fighting; carrying a weapon; reckless driving; and sexual risk taking. These behaviors all carry the risk of physical harm and limits on future activities. For example, reckless driving can lead to physical harm or death to oneself and to innocent parties, whereas heavy drinking may result in job loss, poor health, and antisocial behaviors. Empirical support for the grouping of these behaviors is widespread (Petraitis, Flay, & Miller, 1995). Numerous studies have demonstrated a correlation between two or more risk-taking behaviors, providing evidence of a single syndrome (Jessor, 1991). For example, Zweig, Phillips, and Lindberg (2002) explored the nature of health-compromising lifestyles and found that adolescents participate in combinations of risk behaviors creating profiles of risk taking; the authors conclude that it is rare for an adolescent to take risks in only one area of life.

The variety of respects in which adolescents engage in risk-taking behavior at greater rates than children or adults lends further validity to the perception of adolescence as a high-risk developmental period. Although adolescents generally experience their participation in risky behavior as pleasurable (Arnett, 1992; Lightfoot, 1997), suffering the consequences of such behavior – contact with the legal system, suffering from an STD, the effects of an automobile accident, among others – may include lifelong challenges. Due to the significant implications of risk-taking behavior in adolescence, it is essential to understand the factors, both risk and protective, that may contribute to these behaviors.

Externalizing Behaviors. Characterized by an undercontrol of emotions, externalizing behaviors include antisocial behavior problems, conduct problems, and disruptive behavior problems (Achenbach et al., 1991). These various forms of

behavioral problems do overlap both conceptually and empirically such that they share many similar risk factors and effective interventions (Schulenberg & Zarrett, 2006).

With prevalence estimates ranging from 1 to 16%, these behaviors are important to study as a substantial percentage of conduct-disordered youth will progress to antisocial behavior as adults (Myers, Stewart & Brown, 1998).

Behavioral functioning is a key developmental outcome and is a strong predictor of future adjustment. Behavior problems are an important predictor of maladjustment later in life. For example, long-term associations exist between externalizing behavior during youth and later substance abuse and general underachievement (Helstrom, Bryan, Hutchison, Riggs, & Blechman, 2004; Hinshaw, 1992; King, Iacono, & McGue, 2004). Adults with a history of significant externalizing symptoms in their youth are also at elevated risk for violence, criminality, and mental health problems throughout their lifetimes (Moffitt, Caspi, & Honalee Milne, 2002; Patterson, DaBaryshe, & Ramsey, 1989). Due to these substantial long-term effects of externalizing behaviors, as well as research demonstrating that their origins begin early in the lifespan, it is essential to examine factors contributing to externalizing behavior in adolescence.

Family Instability

Many aspects of the home environment and family life, including family economic resources, family structure, and parenting style, have been studied in relation to child outcomes. Recently researchers have begun to examine indices of instability, disruption, or chaos in the home environment as potential influences on child well-being (Ackerman et al., 1999). In studying family instability, researchers have examined a variety of aspects of family life, including separation from parent figures, family changes

in marital status and household composition, changes in physical residence, episodes of antisocial behavior or mental or physical illness in the family, and other disruptive life events in the family. This study will focus on residential moves and household composition as the indices of family instability which can be thought of as physical changes occurring in the family. Examples include the physical move to a different residence and a member of the family physically moving out of the family home. These two aspects of family instability or disruption were chosen for several reasons. First, where one lives and with whom one lives are central to our conceptions of home. Second, changes in the composition of the household and changes in physical residence both imply major disruptions in children's routines and daily relationships (Humke & Schaefer, 1995; Maccoby, 1992).

The purpose of this paper is to propose a model of individual, peer and family factors as playing a distinct role in the development of risk taking behaviors in adolescence. Specifically, I will examine the role of instability within the family environment as a primary predictor of problem behaviors in adolescence, including risk-taking and externalizing behaviors. In examining the effects of family instability I will focus on the two primary aspects, residential instability and changes in household composition, and examine family instability as having a cumulative effect on the developing child.

Family Instability as a Distinct Construct. Research suggests that family instability, defined here as frequent residential transitions and changes in household composition, is a distinct construct within the family environment beyond other demographic variables (Wu & Martinson, 1993). For example, correlations between

socioeconomic disadvantage and negative family life events in low-income samples are small in magnitude, suggesting that family instability is not simply a marker of differences in financial resources (Ackerman et al., 1999; Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995). Similarly, family instability is only moderately related to other family risk factors, including harsh discipline strategies or maternal depression, and predicts child maladjustment above and beyond these factors (Ackerman et al., 1999; Greenberg, Lengua, Coie, Pinderhughes, & the Conduct Problems Prevention Research Group, 1999; Mathijssen, Koot, & Verhulst, 1999). Together, these findings support the conception of family instability as a unique, and possibly very powerful, aspect of children's environments; and instability during the first years of life seem to be of particular importance (Cavanaugh & Huston, 2008).

Additionally, recent research has shown that family instability has an influence on adolescent outcomes above and beyond other demographic variables. For example, Adam and Chase-Lansdale (2002) found that early childhood family instability, including residential moves and parental separations, were significantly related to adolescent externalizing and sexual behavior outcomes even while controlling for the adolescents' family demographic characteristics; instability was significant beyond the quality of adolescents' current relationships with parental figures, adult and peer support networks, and current neighborhood environments. Additionally, Jelleyman and Spencer (2008) reviewed available evidence for long term effects of residential mobility on adverse outcomes over the life course. They found that, after adjustment for confounding variables such as socioeconomic status, gender, and ethnicity, high rates of moving were associated with increased behavioral problems during childhood and adolescence.

Outcomes in adolescence included earlier initiation of drug use and related problems, an increased risk of both premarital sexual behavior and teenage pregnancy. The reasons for moving are diverse, including parental employment factors, perceptions about neighborhoods, and changes in family size. However, regardless of the particular reason, there is evidence that high rates of residential mobility are an important factor in itself for later adverse outcomes (Adam & Chase-Lansdale, 2002; Jolleyman & Spencer, 2008).

Although many children never experience family instability, those who experience one family transition are at greater risk of experiencing subsequent transitions and their concomitant stresses. There is a growing body of evidence suggesting that children who experience multiple transitions in family structure may fare worse developmentally than children raised in stable households. And although the disruptions in the family context that follow divorce and repartnering are typically temporary (Hetherington, Bridges, & Insabella, 1998), families that undergo multiple transitions in household composition may fail to recuperate, resulting in a home environment defined by uncertainty (Osborne & McLanahan, 2007). Thus, young people who experience multiple transitions have more compromised well-being than those who experience no transition or only one (Cavanagh & Huston, 2006). The underlying assumption is that children and their parents, whether single or partnered, form a family system and that repeated disruption of this system may be more distressing than the long-term continuation of any one particular structured system. Higher levels of family instability have been shown to predict increases in internalizing behavior (Ackerman et al., 1999; Nolen-Hoeksema, Girgus, & Seligman, 1992) and externalizing behavior (Berden, Althaus, & Velhulst, 1990; Compas, Howell, Phares, Williams, & Giunta, 1989), as well

as academic problems (Dubois, Felner, Meares, & Krier, 1994). These cumulative results suggest that the occurrence of overall family instability may contribute to maladjustment for some children.

Timing of Family Instability. Based on developmental theory, children's early experiences are responsible for shaping a key aspect of their personalities: whether they will be basically trusting or mistrustful of the world. According to Erikson (1963), in the first stage of life the central goal is the infant's development of a sense of basic trust. During this time, infants will develop either a foundational trust or mistrust of the world. Given a trust-worthy environment, individuals will view the world as fair and dependable. Erikson suggests that if infants are able to develop trust, they experience a sense of hope, which permits them to feel as if they can fulfill their needs successfully. Erikson focused on the caregiver-child relationship but also on a stable, reliable environment. In the absence of stability in a child's early years, that child may come to extend a sense of mistrust more broadly, not feeling as if they can successfully fulfill their needs. These feelings of mistrust may lead these children to have feelings of mistrust in their own future. Not knowing what the family situation is likely to be from one year to another is predicted to lead to a focus on immediate rewards that are more predictable and controllable than long-term rewards. Specifically, I theorize that an unstable environment in the form of changes in household composition and residential moves may lead to insecurity about what the future holds and a basic mistrust in the world. These feelings of mistrust then may lead to a lower level of orientation to their own future.

Additionally, the notion that early experience is important for positive long-term outcomes for children has been supported by studies of behavioral outcomes and early intervention in high risk populations. One example of such studies is on the effects of prenatal nutrition and exposure to toxic substances on behavioral and brain development (Lester et al., 2012; Morgan & Gibson, 1991; Sonderegger, 1992). Studies have consistently shown the lasting effects of maternal depression during pregnancy and infancy on children's later cognitive and emotional functioning (Goodman & Gotlib, 1999). Additionally, research has shown positive effects of early interventions for improving social and cognitive functioning in children from high risk backgrounds (Campbell & Ramey, 1994). Finally, we are seeing a large and ever-growing body of evidence demonstrating the tremendous brain development occurring during the early years as well as the long-term effects of experience on early brain and behavioral development (Dawson, Ashman, & Carver, 2000).

There are multiple practical reasons to believe that the timing of instability will be systematically associated with differences in children's later adjustment (e.g., Hetherington & Clingempeel, 1992). It could be that instability occurring early in life would be more detrimental because the farther along a given developmental path one is when the instability occurs, the less likely it will be that the instability will deflect the path of the trajectory. Additionally, it could be because the more involved one is in contexts outside the family (which occurs later in development), the less likely it will be that the instability will have long-term effects on the child (Allison & Furstenberg, 1989). Both of these arguments would suggest that instability early in life will have larger effects on adjustment outcomes than instability experienced later in life. Alternatively, it

is also possible that the timing of instability may affect different aspects of adjustment that are particularly salient at different times of development (Hetherington, 1993).

Lansford et al. (2006) examined the occurrence and effects of the timing of parental separation for the trajectories of children who did and did not experience their parents' divorce or separation in kindergarten through tenth grade. They found that the experience of parental divorce or separation was related to negative behavioral outcomes, but that the effects did vary according to the timing of the instability. Early parental divorce or separation was associated with both internalizing and externalizing problems whereas no separation or later divorce or separation was not. Thus, these results provide support for the conclusion that the timing of family instability does play a role in the occurrence and magnitude of later adjustment problems and that the earlier the experiences with instability the more likely a child is to experience negative outcomes.

Some studies examining detrimental outcomes in adolescence have found instability during the first five years to be predictive. For example, Donahue, D'Onofrio, Bates, Lansford, Dodge, and Pettit (2010) assessed whether the timing of parental instability predicted adolescents' sexual activity or major depression. They found that exposure to parents' relationship instability prior to the age of five was associated with increased sexual behavior and major depression in adolescence. These findings were not explained by the quality of the parent-child relationship, parent knowledge of activities, number of relationship transitions, or number of caregivers. Therefore, in this study, parental instability prior to the age of five predicted adolescent sexual partnerships and depression; and these associations are not explained by parenting and family variables. This indicates that instability within the family during the early years of a child's life may

have an effect on the developing child beyond the overall effects of the family environment. Additionally, Cavanaugh and Huston (2008) found evidence that specifically early family instability, more so than later family instability, had lasting detrimental effects on the developing child. Their results show that family instability, particular to the years prior to elementary school, left young people less competent with later peer relationships, less popular with peers, and lonelier. Boys who had experienced instability in early childhood were especially likely to engage in more externalizing behaviors.

Taken as a whole, there appears to be good theoretical as well as empirical reason to examine family instability in the first years of life as an influence on later development. Taken together, previous findings suggest that family instability occurring early in life is critical to examine and highlight the importance of assessing the developmental outcomes later in life. Because some children inevitably will experience instability, it is important to examine the various pathways and possible attenuating factors of influence for these experiences.

Future Orientation

This study tests a theory of the process by which early family instability is related to later problem behaviors. Problem behaviors include risk-taking behavior, such as alcohol use and risky sexual behaviors, and externalizing behaviors, such as physical fighting and cheating. This theory proposes that early family instability may create an environment of unpredictability, which may in turn lead the developing person to view the future as unstable, in other words, a decrease in orientation to the future. What we will call *future orientation* is broadly an individual's consideration of his or her own

future life. As we will see, future orientation can be thought of as a representation of self in the context of time. A lower level of future orientation is then proposed to be related to higher levels of risk-taking behaviors in adolescence. This model proposes that the developing person understands what to expect from the world through his or her experiences in multiple contexts. In turn, this understanding of the present and future world will influence the current behaviors of the adolescent. That is, the adolescent will act according to his or her understanding of the world and what is expected to happen in the future. If one comes to know the world as unstable, one is theorized to continue to view the future as unstable. Given an unknowable future, an adolescent is less likely to avoid risks with potentially long-term consequences. Specifically, our model proposes that future orientation mediates the relationship between early family instability and later risk-taking behaviors.

The term *future orientation* has been used to refer to an assortment of loosely related constructs with cognitive, attitudinal, and motivational components. This construct has been defined as the distance into the future one is able to imagine (Lessing, 1972); the amount one thinks about the future (Cauffman & Steinberg, 2000); the amount one plans for and sets goals for the future (Nurmi, 1989); anticipation of future consequences (Steinberg et al., 2009); hopes and fears about the future (Nurmi, 1987); the valence of distant goals (De Volder & Lens, 1982); belief in internal or external control (Trommsdorff, Lamm, & Schmidt, 1979); and the level of optimism or pessimism about the future (Trommsdorff & Lamm, 1980) among others. Frequently the same label has been used for different aspects of this complex system of time perception. Future orientation may refer to extension, coherence, density, kinesis, importance or

predominance of the future (Steinberg et al., 2009). Additionally, the general concept of future orientation has had a variety of labels, including *personal persistence*, Evolutionary Life History Theory, and *psychology of time* (Chandler, Lalonde, Sokol, & Hallett, 2003; Fraisse, 1963; Kruger, Reischl, & Zimmerman, 2008). In this study, future orientation will refer to one's expectation of achieving one's goals in the future.

Family Instability and Future Orientation. Research has shown, at least concurrently, that family life has a significant influence on an adolescent's future orientation. Family interaction, support, and parental responsiveness have been found to be related to general adolescent adaptive development (Aunola, Stattin, & Nurmi, 2000; Grolnick, Ryan, & Deci, 1991), and to adolescents' future beliefs (Pulkkinen, 1990). Nurmi and Pulliainen (1991) found that in adolescence, a high level of family discussion resulted in more interest in a future family and marriage. This indicates that, given a positive model of family life and stability, adolescents are encouraged to think actively about their own future as part of a stable family. Additionally, Trommsdorff (1986) found that adolescents who perceived their parents as loving and supportive had more trusting, hopeful, and positive future orientations and believed more in personal control of their future.

Furthermore, Pulkkinen (1990) studied retrospective reports of the family atmosphere and later future orientation in early adulthood. The results show that positive memories of child rearing practices and time spent together in childhood are associated with later optimism regarding the future. Young adults who as children experienced not only an unpredictable family life, but also out of home placements, continued to believe that relationships were ultimately unpredictable and unreliable (Samuels, 2008). By

contrast, stability of family life provides the child with consistency that can be relied upon from day to day. This family consistency allows the child cognitive and emotional freedom to be able to rely upon and think about the future. If the structure of the family remains the same over time, a child can predict what may occur and what may be possible in the days and weeks ahead. These children will be more able to make goals and plans for the future. As children become adolescents the goals and plans are able to be extended further into the future (see review in Furby & Beyth-Marom, 1992). Additionally, these children who have experienced stability understand the future to be a predictable, consistent place where they are safe to make plans and goals with the trust that the future will be as they imagine.

Previous research supports the conception that levels of stability in children's lives is related to their ability to think about and plan for their future. It is thought that family stability allows for the prediction of events that are likely to occur tomorrow or next year and lack of stability would not allow for this type of prediction. In order to make plans for the future, one must have a mental idea of a stable future within which to place these plans. If a future is deemed unknowable based on previous experience, there is no mental image available within which to envision a future goal.

Future orientation and problem behaviors. We know that behavior problems in adolescence have the potential to lead to a less desirable future. Adolescents know this as well. Studies have shown that adolescents will assess a risky scenario as more highly risky and harmful than adults, indicating that they fully understand the potential harm (Steinberg, 2004). Therefore, if adolescents are aware of the potential dangers and negative outcomes to problem behaviors, why would they engage in these behaviors?

The current study proposes one possible answer to this question: some adolescents, although aware of the potential risks, are willing to engage in these risky and problematic behaviors because they do not conceptualize their future and are therefore not concerned with protecting their future.

Research has shown that orientation to the future in the form of optimism and pessimism as well as in plans extending into the future has been associated with problem behaviors. A negative relation between future orientation and a variety of problem behaviors has been established, including drug and alcohol use (Keough, Zimbardo, & Boyd, 1999; Trommsdorff, 1986), early sexual activity (Gilchrist & Schnicke, 1987), risky sexual behaviors (Mindick, Oskamp, & Berger, 1977), and alcohol problems (Robbins & Bryan, 2004). I hypothesize that it is the lack of ability to rely on the future that allows adolescents to put their future life at risk, often in the form of problem behaviors.

Adolescents who are not oriented to the future may develop problem behaviors such as delinquency, problems in school, and drug use (Nurmi, 1991). Barndt and Johnson (1955) found that delinquent boys who had been committed to a state rehabilitation school completed a story completion task by writing stories of events which occurred over a shorter time span than did non-delinquent boys. Individuals who abuse alcohol also have less extensive and coherent future time perspectives than do social drinkers (Smart, 1968). Additionally, patients in a drug treatment program were found to be less motivated for the future than were control participants drawn from a student population (Lavelle, Hammersley, & Forsyth, 1991). Through their study on the concept of “personal persistence,” Chandler, Lalonde, Sokol, and Hallett (2003) found that failure

to acquire a sense of personal persistence, or self-continuity, is strongly associated with increased suicide risk in adolescence.

Conversely, higher levels of future orientation may lower the likelihood of problem behaviors. Future optimism and future planning have both been shown to be associated with decreased likelihood of substance abuse, early initiation of sexual behavior, unprotected sex, and school failure (Bryan, Aiken, & West, 2004; Keough, et al., 1999; Zimbardo & Boyd, 1999). Based on Lewin's (1942) and Fraisse's (1963) conceptions of the psychology of time, a higher level of time perspective has been associated with an increase in delay of gratification (Davids & Falkof, 1975; Klineberg, 1968) and decreased psychopathology (Wallace, 1956). Finally, employing Evolutionary Life History Theory, Kruger, Reischl, and Zimmerman (2008) showed that time perspective completely mediated the relationship between the social conditions in the neighborhoods of 7th and 8th grade students and the degree of problem behaviors and delinquency. They found that individuals who experienced unpredictable and unsafe environments were likely to be more present oriented which was associated with riskier and more aggressive behaviors. Other individuals who experienced more stable, supportive environments were likely to have an orientation to the future rather than the present and exhibited fewer risky and aggressive behaviors.

It is clear that future orientation, measured in a variety of ways, is related to problem behaviors in adolescence. Researchers studying this relationship between future orientation and juvenile delinquency have hypothesized that individuals who have engaged in delinquent behavior would be less future oriented either because their immediate circumstances are too pressing to allow for consideration of the future, or

because they lack the optimism that their circumstances will improve. I hypothesize that individuals who are not looking toward or planning for their own future life are less likely to behave in a manner that protects their future life. Some problem behaviors may be intrinsically enjoyable and require inhibition in order to avoid; examples of these behaviors include unprotected sex, alcohol use, and theft. Therefore, an individual requires motivation to inhibit these behaviors. I propose that one primary incentive for avoiding problem behaviors is in defense of one's future life and success. However, when one does not perceive of a predictable future life, one does not have that incentive to inhibit problem behaviors. Therefore, I propose that a lower level of future orientation will predict higher levels of problem behavior in adolescence.

There is a substantial amount of evidence linking future orientation with problem behaviors in adolescence. Given the potential for long-lasting implications of adolescent problem behaviors for the individual and for society, it is important to understand the risk and protective factors leading to these problem behaviors. I propose that one risk factor leading to a lower level of future orientation is family instability in the sensitive years of a child's life. It is equally important to understand the factors that may promote a more stable family life and resiliency in children.

Family Routine as Moderator

One proposed moderator of the link between early family instability and future orientation is providing predictability in family life through alternate means. Another way of providing a predictable family environment is in the day-to-day regularity of family activities. This predictability can be articulated in the presence of family rituals (such as assignment of roles at dinnertime, family vacations, and family celebration of

religious holidays) (Jensen, James, Boyce, & Hartnett, 1983). Family routine has been found to be related to lower levels of behavior problems and higher self-esteem among individuals raised in such families (e.g., Bennett, Wolin, & Reiss, 1988; Fiese & Kline, 1993). Research on family routines has suggested that the presence or regular practice of such routines is associated with better child adjustment overall (Brody & Flor, 1997; Kliewer & Kung, 1998).

Residential moves and changes in family structure may occur due to a positive change or to circumstances out of the parents' control. Even when a family may not be able to, or want to, control transformations within the family or residential moves, that same family may be able to establish consistent internal routines. Even if there are external circumstances leading to changes in residence and family structure, some families will maintain a structure of routines internal to the family that provides children with support in terms of retaining trust in the regularity of events. Such structure may allow adolescents to have a more long-term orientation to the future despite a lack of physical stability. Due to the importance of family routines, it is proposed as a significant moderator in the link between family instability and future orientation.

Deviant Peer Association as Moderator

Adolescent problem behavior is associated with family factors, individual factors, and relations in their peer network (Loeber & Stouthamer-Loeber, 1998). I hypothesize that deviant peer association will moderate the effect of future orientation on adolescent problem behaviors. Additionally, deviant peer association will be examined as a moderator of the relation between family instability and adolescent behavior problems.

The developmental tasks of adolescence include identity development and increased salience of social and peer interactions (Blakemore, 2008; Spear, 2000). As children enter adolescence and undergo multiple transitions in autonomy, identity, physical maturation, and future goals, their relationships with peers undergo several changes. Whereas children spend a great deal of their time with family, adolescents begin to spend the majority of their time with peers (Fuligni & Stevenson, 1995). Additionally and relatedly, adolescents are more mobile and better able to avoid the supervision of parents and other adults. Not only does the amount of time spent with peers change but so does the nature of peer relationships. During adolescence, peer groups increase in size and diversity, and friendships and other relationships are more elaborate than at any other time (Lightfoot, Cole & Cole, 2009). These relationships begin to play a new role in the behaviors of adolescents.

Lightfoot (1997) describes risk-taking activities as a process of culture creation that is used to regulate interpersonal relationships. From this perspective, certain risks, or patterns of problem behaviors that different groups take part in, are symbolic of a particular social identity. There is a reason for groups of adolescents to be taking the same sorts of shared risks. Lightfoot conducted a series of interviews with adolescents in an attempt to better understand how they perceive their own risk-taking behavior. Adolescents described shared risks as promoting cohesion, closeness, and trust. Risks were understood as creating and maintaining bonds in relationships and group memberships. Therefore, we know that adolescents not only tend to take risks in groups but also take risks based on their group.

There is strong evidence for a significant association between involvement with deviant peers and adolescent deviant behavior (Dishion, 1990). Although peers can have both positive and negative influences on adolescents, most research has been conducted on negative peer influence and its relation to deviant behaviors (Jaccard, Blanton, & Dodge, 2005). This research supports the direct and indirect influence of antisocial peers on adolescents' problem behaviors including externalizing problems (Allen, Porter, & McFarland, 2006), risky sexual behavior (Crockett, Raffaelli, & Shen, 2006), and delinquency (Sullivan, 2006). Some have proposed that deviant behaviors may be socialized subsequent to peer selection in the context of peer relationships (Blanton & Burkley, 2008). Although the direction of effects in the association between deviant peers and risk taking behaviors has been debated, most investigators have interpreted their findings to mean involvement with antisocial peers leads to increased antisocial and risky behaviors (Conger & Rueter, 1996; Simons, Whitbeck, Conger, & Conger, 1991). It is not yet clearly understood, however, whether the contributions of peer relations to adolescent risk taking behaviors are similar for boys and girls in different family structures, particularly when considered within a context of family process effects.

This relationship between deviant behaviors and peer group has been considered to be important for years. Peer pressure may be seen as either risk-promoting or risk-protecting (Levitt & Selman, 1996). As we have seen, studies have found that children who are at risk for antisocial behavior and who become friendly with delinquent peers are likely to become delinquent themselves (Rodkin, Farmer, Pearl, & Van Acker, 2000). On the other hand, research has found that friends with positive behavior can serve a protective function over time (Brown & Klute, 2006; Haselager, Hartup, van Lieshout, &

Riksen-Walraven, 1998). Brown, Lohr, and McClenahan (1986) found positive peer pressure to be a strong motivator for adolescents not to engage in negative behaviors such as drug use and risky sexual activity. Boys' antisocial behavior has been found to be negatively related to the adolescents' perception of peer expectations for positive behavior (Padilla-Walker & Carlo, 2007). It is predicted that adolescents with a lower future orientation will be more likely to exhibit problem behaviors, and this will be especially true for those who associate with peers who are engaged in deviant behaviors. Additionally, this association between a low future orientation and problem behaviors is thought to be attenuated by fewer deviant peers.

Conclusion

Adolescence, as a developmental period, has been defined in a number of ways in various human realms. All of these characterize adolescence as a period of transformation. Importantly, these transformations are directed toward competent adulthood. Adolescence and its various transformations occur as a means of transitioning from childhood to adulthood. The transitions, or developmental tasks, of adolescence serve to prepare the individual for adult roles and behaviors. Given the goal-directed aspect of the adolescent period, we can think of adolescence as future oriented. As future goals become more salient, the adolescent's thinking about his or her future will impact the present decisions that are made for better or worse.

Deviant behavior is an often studied outcome of adolescence due to the relatively higher rate of occurrence compared with children and adults and the possible long-term consequences. Adolescence is a transition period between childhood and adulthood and is marked by multiple simultaneous tasks and changes including physical maturation,

identity development, increased salience of social and peer interactions, brain development, and planning for adult life and relationships (Blakemore, 2008; Casey, Getz, & Galvan, 2008; Spear, 2000; Casey et al., 2010). Given the importance of the tasks and goals undertaken during adolescence, engaging in deviant behaviors during this time may be extremely detrimental to the individual and their future.

This study tests a model of individual, peer, and family factors as playing important roles in the development of problem behaviors in adolescence. Specifically, instability within the family environment is expected to be an important predictor of later problem behaviors. There is considerable evidence that family disruptions and stressors, particularly those not under the individual's control, have negative effects on a wide range of outcomes (Shonkoff, Boyce, & McEwen, 2009). Given that the instability of the family environment is a significant indicator of later adverse outcomes, it is important to examine what it is about instability that is detrimental to the developing child.

This study examines a theory of the process by which early family instability influences later problem behaviors. This theory proposes that early family instability may create an environment of unpredictability, which may in turn lead the developing person to have an unstable view of their world, or a decrease in orientation to the future. Given this uncertainty, a child may be more likely to indulge and engage in immediately gratifying activities. If their future is unknown, what do they have to lose? A lower level of future orientation is then proposed to be related to higher levels of problem behaviors in adolescence. This model proposes that the developing person creates an understanding of the world through their experiences in multiple contexts and behaves according to the world that is understood to exist and is expected to exist in the future. The understanding

of the present and future world will influence the current behaviors of the adolescent. Specifically, this model proposes that future orientation mediates the relationship between early family instability and later problem behaviors. It is the case that not all children will follow this path. It is important to examine the direct path as well as alternate courses and what may alleviate some of the negative outcomes.

Thus, this model proposes two moderators in this process: family routine and deviant peer association. The proposed moderator of the link between early family instability and future orientation is through providing predictability in family life through alternate means. Another way of providing a predictable family environment is in the day-to-day regularity of family activities. Research has suggested that the presence or regular practice of family routines is associated with better child adjustment (Brody & Flor, 1997; Kliewer & Kung, 1998). In addition, we propose that deviant peer association will moderate the effect both of family instability and of future orientation on problem behaviors. There is strong evidence for a significant association between involvement with deviant peers and adolescent problem behavior (Conger & Rueter, 1996; Dishion, 1990).

Concisely, adolescent deviancy is a problem for the developing person and for their future life. It is essential that we understand the mechanisms underlying the development of these behaviors. The current study attempts to show a mediating effect of future orientation in the relation between early family instability and problem behaviors in adolescence. This model also proposes the moderating role of family routine in the relationship between early family instability and future orientation as well as the moderating role of deviant peer association in the relation between family instability and

risk taking behaviors. The goal of the project is to provide a comprehensive view of the developing person within various contexts with the objective of understanding the mechanisms involved and the protective factors available in the development of adolescent problem behaviors. In this model, hypothesized risk and protective factors in multiple contexts are examined in their relation to each other with the overall goal of better understanding the process wherein early family instability influences the outcome of risk-taking behaviors in adolescence.

The Current Study

Aim 1: Examine the primary constructs, early family instability and adolescent problem behaviors, and their relation

Hypothesis 1.1: It is expected that the amount of family instability experienced between the ages of 1 and 5 years will predict adolescent externalizing behavior above and beyond other demographic factors.

Research suggests that family instability is a distinct construct within the family environment beyond other demographic variables (Wu & Martinson, 1993). For example, correlations between socioeconomic disadvantage and negative family life events in low-income samples are small in magnitude, suggesting that family instability is not simply a marker of differences in financial resources (Ackerman et al., 1999; Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995). Similarly, family instability is only moderately related to other family risk factors, including harsh discipline strategies or maternal depression, and predicts child maladjustment above and beyond these factors (Ackerman et al., 1999; Greenberg, Lengua, Coie, Pinderhughes, & the Conduct Problems Prevention Research Group, 1999; Mathijssen, Koot, & Verhulst, 1999;).

There is a growing body of evidence suggesting that children who experience higher levels of family instability may fare worse developmentally than children raised in stable households. For example, research has consistently reported that changes in parental partnerships are linked to a broad range of negative effects (Allison & Furstenberg, 1989; Amato & Keith, 1991; Bray & Berger, 1993; Dornbusch, 1985; Fine, Voydanoff, & Donnelly, 1993; Hetherington, 1993; Hetherington & Clingempeel, 1992). In fact, it appears that the greatest effects of divorce on child adjustment are for externalizing behaviors which include lack of self-regulation, aggressive and noncompliant behavior (Amato & Keith, 1991; Hetherington, 1993; Zill, Morrison, & Coiro, 1993). Kim, Hetherington, and Reiss (1999) found that even in enduring remarriages, stepfather families were at risk for having adolescent boys and girls showing greater delinquent peer group affiliation and higher levels of risk taking behaviors than adolescents in non-stepfamilies. This indicates that the negative outcomes associated with parental transitions are not due solely to the effects of divorce or living in a single-parent household, nor to the variety of factors that are associated with single-parent households. This further suggests that parents' marital transitions seem to affect developing children not through indirect effects such as poverty, grief, lack of resources, and others, but rather as a direct effect of family instability and change (Amato & Booth, 1996; Amato & Keith, 1991). Additionally, Adam and Chase-Lansdale (2002) found that early childhood family instability, including residential moves and parental separations, were significantly related to adolescent externalizing behavior even while controlling for the adolescents' family demographic characteristics and were significant beyond the

quality of their current relationships with parental figures, adult and peer support networks, and current neighborhood environments.

These cumulative results suggest that the occurrence of overall family instability may contribute to maladjustment for some children. In addition, research has shown that the timing of family instability plays a role in the magnitude of later adjustment problems and that the earlier the experiences with instability the more likely a child is to experience negative outcomes (Allison & Furstenberg, 1989; Cavanaugh & Huston, 2008; McLanahan, 1985). Together, these findings support the conception of family instability as a unique, and possibly very powerful, aspect of children's environments; and instability during the first years of life seems to be of particular importance (Cavanaugh & Huston, 2008). I expect that the level of family instability will predict to adolescent externalizing behavior after controlling for other demographic factors.

Hypothesis 1.2: It is hypothesized that the amount of family instability experienced between the ages of 1 and 5 years will predict adolescent risk-taking behavior beyond other demographic factors.

Higher levels of family instability over development have been shown to predict increases in adolescent risk behaviors including early sexual activity (Lansford, Dodge, Pettit, & Bates, 2010; Hetherington, 1993), as well as alcohol and drug use (Amato, 2001; Hetherington, Bridges, & Insabella, 1998). Jolleyman and Spencer (2008) reviewed available evidence for long term effects of residential mobility on adverse outcomes over the life course. They found that, after adjustment for confounders such as socioeconomic status, gender, and ethnicity, high rates of moving were associated with increased behavioral problems during childhood and adolescence. Outcomes in

adolescence included earlier initiation of drug use and related problems and an increased risk of both premarital sexual behavior and teenage pregnancy. Additionally, Adam and Chase-Lansdale (2002) found that early childhood family instability, including both residential moves and parental separations, were significantly related to sexual behavior outcomes even while controlling for the adolescents' family demographic characteristics and were significant beyond the quality of their current relationships with parental figures, adult and peer support networks, and current neighborhood environments. These cumulative results suggest that the occurrence of early family instability will be predictive of adolescent health risk behaviors.

As has been previously presented, research has shown the construct of family instability to be a unique influence on later outcomes; and instability during the first years of life to be of particular importance (Cavanaugh & Huston, 2008). I expect that family instability will predict to adolescent risk behaviors including substance use and risky sexual behaviors after controlling for other demographic variables.

Aim 2: Examine the role of future orientation in the relation between early family instability and adolescent risk-taking behaviors.

Hypothesis 2: It is expected that future orientation measured at age 10 will mediate the relation between early family instability and adolescent risk-taking behaviors including externalizing behavior and risk behaviors.

The present model proposes that children construct their future orientation as a result of their early experiences and that they will use this orientation to guide their behaviors in the world. Specifically, early family instability is theorized to lead the child to construct a mental model less oriented to the future. Future orientation will be

measured by the amount an individual thinks about and plans for his or her future life. This orientation will then instruct his or her present and future behaviors, in this case risky behaviors. There is evidence that early experiences in the family play a role in the development of future orientation. Pulkkinen (1990) studied retrospective reports of the family atmosphere and later future orientation in early adulthood. The results show that positive memories of child rearing practices and time spent together in childhood are associated with later optimism regarding the future. Young adults who as children experienced not only an unpredictable family life but out of home placements continued to believe that relationships were ultimately unpredictable and unreliable (Samuels, 2008).

Further, adolescents who are not oriented to the future may develop problem behaviors such as delinquency, problems in school and drug use (Nurmi, 1991). This shortsightedness has often been implicated as a cause of the poor judgment and risky decision making often evinced by young people (Steinberg, 2007). It is thought that thinking about and planning for a future provides incentive to reject risky behaviors due to their possible long-term consequences. Indeed, several researchers have found a negative relationship between future orientation and problem behaviors such as drug and alcohol use, early sexual activity, risky sexual behaviors, and alcohol problems (Keough, et al., 1999; Mindick, Oskamp, & Berger, 1977; Robbins & Bryan, 2004; Trommsdorff, 1986). Therefore, it is proposed that future orientation will mediate the relation between family instability and adolescent risk-taking behaviors.

Aim 3: Examine the impact of family routine and deviant peer association as possible moderators.

Hypothesis 3.1: Family routine is expected to moderate the association between early family instability and future orientation.

A proposed moderator of the link between early family instability and future orientation is through providing predictability in the family life through alternate means. Another way of providing a predictable family environment is in the day-to-day regularity of family activities. The work of Sandler, Wolchik, Braver, and Fogas (1991) has highlighted the importance of stable positive events in the family, finding that the stability of positive family events was associated with better overall adjustment among children of divorce. Overall, research on family routines has suggested that the presence or regular practice of such routines is associated with better child adjustment (Brody & Flor, 1997; Kliewer & Kung, 1998; Taylor & Lopez, 2005). Family routine has been found to be related to lower levels of delinquent behaviors among African American adolescents (Taylor, 1996; Taylor & Lopez, 2005). This moderator is important to study because while a family may not be able to control parental transitions or residential moves, that same family may be able to establish internal routines. Additionally, family routine may be more accessible to psychological intervention than are family transitions.

Greater adherence to family routines has been shown to moderate the positive relationship between family stressors and externalizing child problem behaviors (Kliewer & Kung, 1998). Bennett, Wolin, and Reiss (1988) found that children growing up in alcoholic families which deliberately planned and executed family rituals were less likely to exhibit behavior problems than their counterparts without family rituals. These

authors concluded that these families with serious problems who could still impose control over family life were conveying messages to their children regarding their ability to take control of their own present and future life events, decreasing the likelihood of developing behavior problems. Family routine may provide the predictability that children with high levels of family instability are lacking, which may decrease their engagement in risky behaviors as adolescents.

Again, experience with an unstable family life in the form of residential moves and family transitions may result in a continued belief that relationships are ultimately unpredictable and unreliable (Samuels, 2008). Although families may not be able to stop a divorce or a residential move from taking place, there may be more control over the internal family routines. Due to the importance and the accessibility of family routines, it is proposed as a significant moderator in the link between family instability and future orientation.

Hypothesis 3.2: Deviant peer association is expected to moderate the association between future orientation and adolescent risk-taking behavior.

A proposed moderator of the link between future orientation and adolescent risk-taking behaviors is deviant peer association. There is strong evidence for a significant association between involvement with deviant peers and adolescent deviant behavior (Conger & Rueter, 1996; Dishion, 1990). Although peers can have both positive and negative influences on adolescents, most research has been conducted on negative peer influence and its relation to risk behaviors (Jaccard, Blanton, & Dodge, 2005). Research supports the direct and indirect influence of antisocial peers on adolescents' risky

behaviors including externalizing problems (Allen, Porter, & McFarland, 2006), risky sexual behavior (Crockett, Raffaelli, & Shen, 2006), and delinquency (Sullivan, 2006).

Under conditions in which the adolescent is exposed to relatively more deviant peers, lower levels of future orientation may have a smaller influence because the child would likely be exposed to an excess of idealized notions of risk-taking behavior. In this situation, it is proposed that the decision to take risks may be based on the effects of peer pressure rather than, or perhaps mitigating, the child's overall goals in the world. In this case, future orientation would act as a protective factor to adolescent risk taking when the adolescent reports little exposure to deviant peers. It is proposed that deviant peer association will moderate the relation between future orientation and adolescent risk-taking behaviors.

Hypothesis 3.3: Deviant peer association is expected to moderate the association between family instability and externalizing behavior.

This model proposes that deviant peer association has a moderating effect on the relation between family instability and adolescent externalizing behavior. As has been noted, deviant peer association is highly related to adolescent problem behavior whereas adolescents with few deviant peers are less likely to exhibit problem behaviors (Dishion, 1990). Given a history of family instability, a child who selects less deviant friends may be less likely to act out with externalizing behaviors. In this way, a lack of deviant peers may act as a protective factor to externalizing behavior among those exposed to instability. It is proposed that fewer deviant peers would moderate the association between family instability and externalizing behavior.

CHAPTER 2

METHOD

Participants

The participants in the current study were recruited as part of the Maternal Lifestyle Study (MLS). This prospective, longitudinal study was designed to examine the effects of maternal lifestyle choices during pregnancy on childhood outcomes. The primary purpose of the study was to examine the effects of prenatal cocaine/opiate exposure on child outcomes (Bada et al., 2011; Fisher et al., 2011; LaGasse et al., 2011; Lester et al., 2012). To this end, MLS accessed a large multi-site population of newborn infants and their mothers. Beginning as an interagency longitudinal study, MLS consists of a multi-cultural, multi-ethnic, socio-demographically varied population.

MLS was conducted in four centers of the National Institute of Child Health and Human Development Neonatal Research Network. These sites include Brown University (Providence, RI), University of Miami (Miami, FL), University of Tennessee, Memphis (Memphis, TN), and Wayne State University (Detroit, MI). Participants were fully informed of their rights and limits as study participants including limits to confidentiality, and informed consent was obtained from all caregivers as approved by review boards at each study site. The current study includes the 1,388 children followed from one month of age through 15 years. The sample is 77% Black, 16% White, 6% Hispanic, and 1% Other. There are roughly equal numbers of boys (52%) and girls (48%).

Procedure

In the first phase of the study, 19,079 pregnant mothers were recruited just before or after they gave birth. Of these, 16,988 (89%) were eligible for a brief maternal

interview on drug use and infant meconium testing, and 11,811 (70%) of these agreed to participate in the study. Drug use was confirmed by mother interview and gas chromatography/mass spectroscopy for cocaine/opiate metabolites in the meconium of the infant. Based on this information, there were 1,185 (10%) infants who were exposed to either cocaine or opiates during pregnancy. A total of 7,442 (63%) of the infants were confirmed to have been exposed to neither cocaine nor opiates. There were 3,184 (27%) infants whose exposure status was not confirmed. The use of alcohol, tobacco, and marijuana by mothers occurred in all three of these groups.

Phase II of the study tracked the development of infants who had been exposed to illicit drugs, comparing the results to infants whose mothers had not used illicit drugs. A total of 1,388 subjects were recruited into this part of the study. Of these, 658 were infants exposed to either cocaine, opiates or both. There were 730 infants who had been exposed to neither. All of these infants were seen at 1 month of age. Their mothers or caretakers were encouraged to participate in follow-up visits at 4, 8, 10, 12, 18, 24, 30, and 36 months of age. At these visits, the children participated in a variety of assessments that noted both their medical and developmental outcomes over time. Mothers and caretakers were also asked questions about the infant and the home environment.

Mother/child dyads have continued their involvement in the study through subsequent phases. Phase III covered visits of the child from the time he or she was 4 years through age 7. In Phase IV children were seen between the ages of 8 and 11 at yearly clinic visits in addition to intermittent home and school visits. This pattern of

clinic, home and school visits continues into Phase V including children between the ages of 12 and 15.

Measures:

Demographics

Child sex, age, ethnicity/race, mother education, and Hollingshead Social Status scores were obtained from the mother during laboratory visits.

Prenatal Substance Exposure. Cocaine and opiate use was confirmed by mother interview and gas chromatography/mass spectroscopy for cocaine/opiate metabolites in the meconium of the infant. The meconium is the infant's earliest stools. Unlike later feces, meconium is composed of materials ingested during the time the infant spends in the uterus and can be tested for various drugs. Additionally, prenatal exposure to tobacco, marijuana, and alcohol were confirmed through maternal report.

IQ. The Wechsler Abbreviated Scale of Intelligence (WASI) was conducted with the children at 13 years (Wechsler, 1999). This scale produces an estimate of general intellectual ability yielding three scores: Verbal, Performance, and Full Scale. For the purposes of this study, we used the Full Scale IQ. Higher scores indicate greater intellectual ability.

Family Instability

Caretakers were interviewed during each clinic visit to obtain information on the number of children and adults in the home, number of address changes, and number of caretaker changes. These interviews took place in visits at 4, 8, 10, 12, 18, 24, 30, and 36 months of age during Phase I and continued yearly at ages 4 and 5 during Phase II. A composite score of family instability was derived based on the number of address

changes the child experienced and the number of changes in household composition across these time points.

Family Routine

The Child Health and Illness Profile – Child Edition (CHIP-CE) was used to assess family routine. The study child completed this measure at ages ten and eleven. This measure provides a comprehensive assessment of health and quality of life status across four domains: Satisfaction, Comfort, Resilience, and Risk Avoidance. Children report symptoms and signs of illness and of well-being, health-related behaviors, problem behavior, school performance, and involvement with family and peers. The majority of items assess frequency of events, typically over the past 4 weeks, using a five-point response format. Items are illustrated with cartoon-type characters anchoring the ends of each set of five graduated-circle responses. The scenes feature a race-, age-, and gender-neutral character.

One question from the Resilience Domain of this measure was used in this study. This domain focuses on the supportive resources provided by the family with 19 total items. This domain of the CHIP-CE is thought to measure the regularity of activities with the family that enhance health states (Riley et al., 2001). The question used to measure family routine is: “In the past 4 weeks, how often did your parents eat meals with you?” The response from this question was averaged over ages ten and eleven.

Future Orientation

The Expectations/Aspirations measure was used to assess future orientation. The study child completed this questionnaire at age twelve. This measure is a 22-item scale developed by Loeber, Stouthamer-Loeber, Van Kammen, and Farrington (1991) for the

Pittsburgh Youth Study, which was adapted from instruments developed by the staffs of the Institute of Behavioral Science and of the Rochester Youth Development Study. The measure assesses children's feelings about their goals and activities in life. Specifically, the measure contains questions regarding children's views of how important specific goals are, how far they would like to go in school, how far they think they will go in school, and how likely it is that they will meet specific goals.

This study used the Future Expectations I scale of this measure to assess future orientation. This scale measures the individual's beliefs in how likely he/she will be in achieving six goals. An example of a question is: "Do you think when you are grown-up you will have a well-paying job?" Their answers may vary from 1 (very likely) to 4 (not likely at all). This scale has a high internal consistency, with Cronbach's alpha = 0.82. We have defined future orientation as the extent to which one thinks about and plans for their future life. This measure is thought to assess future orientation through not only the child's ability to think some distance into the future (temporal extension), but also their anticipation of achieving particular goals in the future.

Deviant Peer Association

The measure Things That Your Friends Have Done was used to assess deviant peer association (Conger & Elder, 1994). The study child completed this questionnaire at age thirteen. This measure was adapted from Fast Track and New Hope studies and the Youth Risk Behavior Survey. This measure asks the child about the deviant activities of their friends. The most sensitive items are whether the friends experiment with cigarettes, alcohol, drugs, or weapons.

This measure includes three scales: Major Risk-Taking/Delinquency by Friends (9 items, Cronbach's alpha=0.72), Minor Risk-Taking by Friends (5 items, Cronbach's alpha=0.63), and Any Risk-Taking by Friends (19 items, Cronbach's alpha=0.77). All subscales were used as one total score in this study to assess deviant peer association; higher values indicate more risk taking by the child's friends.

Adolescent Problem Behavior.

Externalizing Behavior. The Child Behavior Checklist (CBCL) was completed by the child's caretaker at ages 13 and 15 years (Achenbach, 1991). This is a widely used measure to assess the social competence and problem behavior of children 4-18 years. The CBCL has been standardized on large samples of children in the US and abroad. A series of behaviors are rated on 3-point scales from 0 (not true of the child) to 2 (very true of the child). Broad band scales of Internalizing and Externalizing problems, and narrow band scales of social problems, aggression, attention problems, and depression (among others) are derived from a computerized scoring program. Norms exist to determine whether children's behavior falls into the normal range, suggests that the child is at risk for problems, or indicates that the child's behavior is more akin to those with clinically diagnosed problems. The CBCL is the most widely used screening instrument available for tracking the emergence of behavior problems in children. Extensive psychometric information is available on these measures in the manuals and the many publications on the CBCL and its uses. In brief, the CBCL is highly reliable and internally consistent (both broad band and narrow band factors).

Standardized scores (T-scores) are produced for eight syndrome scales – Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought

Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. T-scores are also produced for three Total scales which are combinations of the eight syndromes: the Internalizing scale and the Externalizing scale. This study will use the Externalizing scale which is based upon the Delinquent and Aggressive behaviors. The T-scores at age 13 and 15 were averaged to provide an overall measure of adolescent externalizing behavior.

Risk-taking Behavior. The Child Health and Illness Profile – Adolescent Edition (CHIP-AE) was used to assess risk behaviors at age 13 and 15 years. The CHIP-AE is a generic measure of the health and quality of life of adolescents 11-17 years of age. It is a self-report questionnaire that assesses health in five domains with 14 sub-domains experienced by adolescents: Satisfaction, Comfort, Risk, Resilience, and Achievement. The adolescent reports in various formats: the number of days a symptom or behavior occurred in the past four weeks, the level of agreement with a statement, the most recent occurrence, number of occurrences in the past 12 months, the occurrence of problems, or the severity of injury.

One sub-domain from the Risk domain was used in the present study. The Risk domain assesses individual risks and threats to achievement including questions about substance use and risky sexual behaviors. The particular sub-domain is that of Individual Risk which measures activities which threaten individual development. An example question is: “When was the last time you smoked cigarettes?” with possible answers as follows: “Never,” “More than year ago,” “In the past year,” “In the past month,” or “In the past week.” Higher scores on this measure indicate lower levels of risk-taking behavior. Extensive reliability and validity analyses indicate that the CHIP-AE has good

psychometric qualities. This indicates that adolescents are reliable and valid reporters of their health and that the CHIP-AE produces meaningful and useful assessments of their health status. In particular, reliability is excellent for the Risk domain (Cronbach's $\alpha=.90$) (Riley et al., 2001).

CHAPTER 3

RESULTS

Preliminary Analyses

Analyses began by testing the correlations of the primary variables in the model. The correlations are presented in Table 1. It is important to note that higher scores on the risk-taking measure indicate lower levels of risk-taking behavior. As anticipated, there was a significant correlation between early family instability and later family instability ($r = .22, p < .05$). Early family instability was also correlated with risk-taking behavior ($r = -.08, p < .05$) and externalizing behavior ($r = .12, p < .01$). Given that higher scores on the risk-taking measure indicate lower levels of risk-taking behaviors, these results are consistent with the stated hypothesis. In addition, these correlations are consistent with previous research showing a robust relation of family instability with risk-taking behavior (Cavanagh, 2008) and externalizing behavior (Cavanagh & Huston, 2006; Fomby & Cherlin, 2007; Fomby & Osborne, 2010; Osborne & McLanahan 2007). Similarly, later family instability (ages 8-12) was correlated with risk-taking behavior ($r = -.07, p < .05$), externalizing behavior ($r = .15, p < .01$) as well as family routine ($r = -.07, p < .05$). Future orientation was correlated with risk-taking behavior ($r = -.06, p < .05$) and peer deviance ($r = .22, p < .01$). Previous research provides support for a direct relation between future orientation and adolescent risk-taking behaviors (Nurmi, 1991; Trommsdorff, 1986). Although little research has examined the relation between future orientation and deviant peer association, the results of these studies have been inconsistent with some researchers finding a significant association and others finding no such correlation (Little & Steinberg, 2006; Monahan, Steinberg, Cauffman, & Mulvey, 2009). As expected, risk-

taking behavior was also correlated with externalizing behavior ($r = -.21, p < .01$) and peer deviance ($r = -.30, p < .01$). Externalizing behavior was additionally negatively correlated with family routine ($r = -.07, p < .05$) and positively correlated with peer deviance ($r = .13, p < .01$). Many previous research findings support a relation between family routine and lower levels of problem behaviors, with family routine often serving as a protective factor between risk factors and later problem behaviors (Kliewer & Kung, 1998; Lanza & Drabick, 2011; Taylor, 1996). Alternatively, peer deviance has often been found to be a significant risk factor for later problem behaviors (Kung & Farrell, 2000; Lansford, Criss, Pettit, Dodge, & Bates, 2003).

Means and standard deviations for all key study variables are presented in Table

1. All of the variables were normally distributed and met the assumptions of multivariate normality.

Table 1. Means, Standard Deviations, and Correlations of Key Variables

Variables	1	2	3	4	5	6	7
1. Family Instability Ages birth to 5 years							
2. Family Instability Ages 8 to 12 years	0.22*						
3. Future Orientation at 12 years	0.05	0.01					
4. Risk-taking 13 and 15 years	-0.08*	-0.07*	-0.06*				
5. Externalizing 13 and 15 years	0.12**	0.15**	0.05	-0.21**			
6. Family Routine 10 and 11 years	-0.05	-0.07*	-0.04	0.05	-0.07*		
7. Peer Deviance 13 years	0.03	-0.04	0.22**	-0.30**	0.13**	-0.06	
M	4.03	3.53	1.36	26.85	53.42	4.42	2.29
SD	3.04	3.02	0.36	3.05	10.19	0.69	0.59
p<.05* p<.01**							

Analyses were conducted to examine gender differences in the key study variables for the entire sample using a series of independent sample t-tests. The results indicated gender differences only in risk-taking behavior ($t = -7.32, p < .001$), such that females scored higher on the measure of risk-taking behavior (higher score indicating

lower levels of risk-taking behavior). The means and standard deviations are presented in Table 2.

Table 2. Means and Standard Deviations of Key Variables by Gender

Variable	Male		Female	
	N	M(SD)	N	M(SD)
Family Instability Ages birth to 5 years	700	4.05(3.14)	634	4.01(2.92)
Family Instability Ages 8 to 12 years	601	3.52(3.11)	552	3.55(2.92)
Future Orientation at 12 years	494	1.36(.36)	479	1.36(.36)
Risk-taking 13 and 15 years	526	26.19(3.34)***	516	27.53(2.55)
Externalizing 13 and 15 years	556	53.29(9.96)	522	53.56(10.44)
Family Routine 10 and 11 years	547	4.38(.72)	517	4.46(.65)
Peer Deviance 13 years	479	2.29(.57)	493	2.29(.62)
<i>p</i> < .001***				

Family Instability and Adolescent Risk-Taking

To determine the relation between early family instability and later risk-taking behavior, I conducted two regressions. I first regressed the risk-taking outcome on early family instability and demographic characteristics and covariates, reported as Model A in Table 3. I then ran a second set of models, adding later family instability (ages 8-12). These results are reported as Model B in Table 3. By running the analyses in these two stages, it is possible to isolate the relation of early instability to risk-taking behavior while controlling for demographic and exposure characteristics.

Turning first to the prediction of early instability on later risk-taking behavior (a higher risk-taking score is associated with lower risk-taking behaviors), we found that greater instability from birth to five years predicted adolescent risk-taking behaviors ($\beta = -.08, p < .05$). In addition, children whose mothers reported using tobacco during pregnancy were more likely to engage in risk-taking behaviors and the results were significantly different for boys and girls.

When later instability was added to the model, early instability was no longer a significant predictor of risk-taking behavior in adolescence. These results indicate that although early family instability contributed significantly to the prediction of adolescent risk-taking behavior, this relation is mediated by the experience of family instability at a later time. Exposure to opiates and tobacco in utero were both significant predictors in this model. Because gender was found to be significant, the analyses were run separately for boys and girls. When this regression was conducted, instability was not a significant predictor of risk-taking behavior among boys or girls.

Table 3
Regression Analysis Evaluating the Relation Between Early Family Instability and Adolescent Risk-Taking Behavior

Variable	Model A: Early Family Instability (N = 916)		Model B: Adding Later Instability (N = 909)	
	β	$R^2 (f^2)$	β	$R^2 (f^2)$
Step 1		.08 (.09)		.09 (.10)
Cocaine Exposed	.02		.02	
Opiate Exposed	-.07*		-.07*	
Alcohol Exposed	-.05		-.05	
Tobacco Exposed	-.08*		-.08*	
Marijuana Exposed	-.02		-.02	
Gender	.25***		.25***	
Maternal Age	.02		.02	
SES	-.05		-.05	
IQ	.06		.06	
Ethnicity	-.02		-.02	
Step 2		.09 (.10)		.09 (.10)
Cocaine Exposed	.03		.02	
Opiate Exposed	-.06		-.07*	
Alcohol Exposed	-.04		-.04	
Tobacco Exposed	-.08*		-.08*	
Marijuana Exposed	-.03		-.03	
Gender	.25***		.25***	
Maternal Age	.00		.01	

Table 3 Continued

	SES	-.04	-.04	
	IQ	.06	.06	
	Ethnicity	-.02	-.02	
	Instability	-.08*	-.08*	
Step 3				.10 (.11)
	Cocaine Exposed		.03	
	Opiate Exposed		-.07*	
	Alcohol Exposed		-.04	
	Tobacco Exposed		-.08*	
	Marijuana Exposed		-.03	
	Gender		.25***	
	Maternal Age		.00	
	SES		-0.03	
	IQ		0.06	
	Ethnicity		-0.02	
	Later Instability		-.07*	
	Instability		-.06	

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

Family Instability and Adolescent Externalizing Behaviors

We next examined whether early family instability was associated with adolescent externalizing behavior by first regressing externalizing behavior on early family instability alone and then including later family instability. This approach followed a two-regression sequence similar to that used in the prediction of risk-taking behavior, again to isolate the unique impacts of the timing of instability. The results from these sets of regressions are presented in Table 4.

When examining the prediction of externalizing behavior, we found that higher levels of early family instability contributed significantly to externalizing behaviors

($\beta = .11, p < .01$). Some exposure characteristics and child IQ predicted externalizing behavior. No other demographic characteristics predicted externalizing behavior. When later family instability was added to the model, early family instability remained a significant predictor of adolescent externalizing behavior ($\beta = .09, p < .01$). These results indicate that early family instability is predictive of adolescent externalizing behavior after controlling for later family instability and other demographic factors.

Table 4
Regression Analysis Evaluating the Relation Between Early Family Instability and Adolescent Externalizing Behavior

Variable	Model A: Early Family Instability (N = 936)		Model B: Adding Later Instability (N = 929)	
	β	$R^2 (f^2)$	β	$R^2 (f^2)$
Step 1		.08 (.09)		.08 (.09)
Cocaine Exposed	-.03		-.03	
Opiate Exposed	.09**		.09**	
Alcohol Exposed	.07*		.07*	
Tobacco Exposed	.20***		.20***	
Marijuana Exposed	.03		.03	
Gender	-.02		-.02	
Maternal Age	-.06		-.06	
SES	.06		.06	
IQ	-.09*		-.09*	
Ethnicity	-.01		-.01	
Step 2		.09 (.10)		.10 (.11)
Cocaine Exposed	-.05		-.04	
Opiate Exposed	.09**		.09**	
Alcohol Exposed	.07*		.07*	
Tobacco Exposed	.20***		.19***	
Marijuana Exposed	.03		.04	
Gender	-.01		-.02	
Maternal Age	-.04		-.05	
SES	.04		.05	
IQ	-.09**		-.09*	

Table 4 Continued

	Ethnicity	-.00	-.00
	Instability	.11**	.12***
Step 3			.10 (.11)
	Cocaine Exposed		-.05
	Opiate Exposed		.09**
	Alcohol Exposed		.07
	Tobacco Exposed		.19***
	Marijuana Exposed		.04
	Gender		-.01
	Maternal Age		-.03
	SES		.03
	IQ		-.09**
	Ethnicity		.00
	Later Instability		.10**
	Instability		.09**

$p < .05^*$

$p < .01^{**}$

$p < .001^{***}$

Family Instability and Future Orientation

Although early family instability was not significantly correlated with future orientation, we conducted a regression to examine the association with the demographic and exposure characteristics. As expected based on the correlation, early family instability was not a significant predictor of future orientation. Exposure characteristics did not predict future orientation; however, ethnicity significantly predicted future orientation. The results of this analysis are presented in Table 5.

Because ethnicity significantly predicted risk-taking behavior in this model, the analyses were performed separately among African American and white children. The results indicate that there is no significant association between early family instability and later levels of future orientation among white children or African American children.

Table 5

Regression Analysis Evaluating the Relation Between Family Instability and Future Orientation

Variable	Model A: All Participants (N = 880)		Model B: African American (N = 704)		Model C: White (N = 113)	
	β	$R^2 (f^2)$	β	$R^2 (f^2)$	β	$R^2 (f^2)$
Step 1		.03 (.03)		.01 (.01)		.07 (.08)
Cocaine Exposed	.04		.05		.02	
Opiate Exposed	.02		-.03		.11	
Alcohol Exposed	.03		.07		-.01	
Tobacco Exposed	-.01		-.02		.03	
Marijuana Exposed	-.01		-.01		.02	
Gender	.03		.05		-.07	
Maternal Age	.02		-.01		.16	
SES	-.01		-.08*		.17	
IQ	.02		-.02		.06	
Ethnicity	.14***		--			
Step 2		.03 (.03)		.02 (.01)		.07 (.08)
Cocaine Exposed	.03		.03		.01	
Opiate Exposed	.01		-.03		.11	
Alcohol Exposed	.03		.06		.00	
Tobacco Exposed	-.01		-.02		.01	
Marijuana Exposed	-.00		-.01		.02	
Gender	.04		.05		-.07	
Maternal Age	.04		.01		.18	
SES	-.02		-.09*		.18	
IQ	.02		-.02		.06	
Ethnicity	.14***		--		--	
Family Instability	.06		.07		.06	

$p < .05$ * $p < .01$ ** $p < .001$ ***

*Future Orientation as Mediator of the Relation between Family Instability and**Adolescent Problem Behaviors*

According to Baron and Kenny (1986), we did not have the steps that are required to demonstrate mediation for future orientation given that early family instability was not related to the proposed mediator (i.e., future orientation). Thus, within this sample, future

orientation is not a mediator of the relation between early family instability and adolescent problem behaviors (risk-taking and externalizing).

Future Orientation and Risk-Taking Behavior

Next, the child’s level of future orientation was used as a predictor of adolescent risk-taking behavior. The results from this regression are presented in Table 6. Higher levels of future orientation at age 12 predicted lower levels of risk-taking behavior (a higher score on the risk-taking measure indicates less risk-taking behavior). Some exposure characteristics, child IQ, and gender were significant predictors of risk-taking.

Because gender significantly predicted risk-taking behavior in this model, we ran the analyses separately for boys and girls. These results are also presented in Table 6 as Model B (boys) and Model C (girls). Whereas the level of future orientation significantly predicted adolescent risk-taking behavior for boys, future orientation did not predict risk-taking for girls.

		Model A: All Participants (N = 871)		Model B: Boys (N = 435)		Model C: Girls (N = 436)	
	Variable	β	$R^2 (f^2)$	β	$R^2 (f^2)$	β	$R^2 (f^2)$
Step 1			.09 (.10)		.07 (.08)		.02 (.02)
	Cocaine Exposed	0.02		0.01		0	
	Opiate Exposed	-.07*		-.13**		0.05	
	Alcohol Exposed	-0.04		-0.06		-0.01	
	Tobacco Exposed	-.08*		-0.06		-.12*	
	Marijuana Exposed	-0.03		-0.06		0.03	
	Gender	.25***		--		--	
	Maternal Age	0.02		0.06		-0.06	
	SES	-0.03		-0.04		-0.03	

behavior ($\Delta R^2 = .08, t = -.46, ns$). Thus, routine was not a significant moderator of the relation between family instability and externalizing behavior.

Table 8
Regression Analysis Evaluating Family Routine as a Moderator of the Relation Between Family Instability and Externalizing Behavior (N = 904)

	Variable	β	$R^2 (f^2)$
Step 1			.08 (.09)
	Cocaine Exposed	-.03	
	Opiate Exposed	.09**	
	Alcohol Exposed	.06	
	Tobacco Exposed	.19***	
	Marijuana Exposed	.04	
	Gender	-.01	
	Maternal Age	-.06	
	SES	.06	
	IQ	-.10**	
	Ethnicity	-.01	
Step 2			.10 (.11)
	Cocaine Exposed	-.05	
	Opiate Exposed	.08*	
	Alcohol Exposed	.05	
	Tobacco Exposed	.19***	
	Marijuana Exposed	.05	
	Gender	-.00	
	Maternal Age	-.03	
	SES	.05	
	IQ	-.10**	
	Ethnicity	-.00	
	Family Routine	-.08*	
	Family Instability	.11**	
Step 3			.10 (.11)
	Cocaine Exposed	-.05	
	Opiate Exposed	.08*	
	Alcohol Exposed	.05	
	Tobacco Exposed	.19***	
	Marijuana Exposed	.05	
	Gender	-.00	

Table 8 Continued

Maternal Age	-.03
SES	.05
IQ	-.10**
Ethnicity	-.00
Family Routine	-.07*
Family Instability	.10**
Routine x Instability	-0.02

$p < .05$ * $p < .01$ ** $p < .001$ ***

Deviant Peers as Moderator of the Relation between Family Instability and Externalizing Behavior

To determine whether association with deviant peers moderates the relation between family instability and externalizing behavior, we performed a hierarchical regression. The exposure and demographic characteristics were entered in Step 1, deviant peer association and family instability were entered in Step 2, and the interaction between family instability and deviant peer association was entered in Step 3. The main effects of family instability ($\beta = .13, p < .001$) and deviant peer association ($\beta = .10, p < .01$) were significant in this model. In Step 3 ($\Delta R^2 = .08$), the interaction term between family instability and deviant peer association was not significant ($t = 1.40, ns$). Therefore, there was no evidence that deviant peer association moderated the effects of family instability (Table 9).

Table 9

Regression Analysis Evaluating Deviant Peers as a Moderator of the Relation Between Family Instability and Externalizing Behavior (N = 843)

	Variable	β	R^2 (f^2)
Step 1			.07 (.08)
	Cocaine Exposed	-.04	
	Opiate Exposed	.10**	
	Alcohol Exposed	.07	
	Tobacco Exposed	.18***	
	Marijuana Exposed	.02	
	Gender	.00	
	Maternal Age	-.05	
	SES	.06	
	IQ	-.07	
	Ethnicity	-.01	
Step 2			.09 (.10)
	Cocaine Exposed	-.07	
	Opiate Exposed	.08*	
	Alcohol Exposed	.06	
	Tobacco Exposed	.17***	
	Marijuana Exposed	.02	
	Gender	.01	
	Maternal Age	-.02	
	SES	.04	
	IQ	-.07	
	Ethnicity	-.02	
	Family Instability	.13***	
	Peer Deviance	.11**	
Step 3			.09 (.10)
	Cocaine Exposed	-.07	
	Opiate Exposed	.08*	
	Alcohol Exposed	.06	
	Tobacco Exposed	.18***	
	Marijuana Exposed	.02	
	Gender	.01	
	Maternal Age	-.02	
	SES	.04	
	IQ	-.07	
	Ethnicity	-.02	

Table 9 Continued

Family Instability	.13***
Peer Deviance	.10**
Instability x Peers	.05

$p < .05$ * $p < .01$ ** $p < .001$ ***

Deviant Peers as Moderator of the Relation between Future Orientation and Risk-Taking

Because the relation between future orientation and risk-taking behaviors was significant for males but not females, we ran these analyses only for the male participants. Using hierarchical regression, we entered the demographic and exposure characteristics in Step 1, deviant peer association and future orientation in Step 2, and the interaction term between deviant peer association and future orientation in Step 3. The results (presented in Table 10) indicated that deviant peer association did not moderate the association between future orientation and risk-taking behaviors ($\Delta R^2 = .15$, $t = .16$, *ns*). The main effect of peer deviance was a significant predictor in this model ($\beta = -.28$, $p < .001$).

Table 10.

Regression Analysis Evaluating Deviant Peers as a Moderator of the Relation Between Future Orientation and Risk-Taking Behavior for Boys (N = 395)

Variable	β	$R^2 (f^2)$
Step 1		.08 (.09)
Cocaine Exposed	.01	
Opiate Exposed	-.18***	
Alcohol Exposed	-.07	
Tobacco Exposed	-.05	
Marijuana Exposed	-.02	
Maternal Age	.06	
SES	-.08	
IQ	.13*	

Table 10 Continued

	Ethnicity	-.02	
Step 2			.18 (.22)
	Cocaine Exposed	.01	
	Opiate Exposed	-.17***	
	Alcohol Exposed	-.05	
	Tobacco Exposed	-.03	
	Marijuana Exposed	-.01	
	Maternal Age	.05	
	SES	-.06	
	IQ	.14**	
	Ethnicity	.02	
	Future Orientation	-.09	
	Peer Deviance	-.28***	
Step 3			.18 (.22)
	Cocaine Exposed	.01	
	Opiate Exposed	-.17**	
	Alcohol Exposed	-.05	
	Tobacco Exposed	-.03	
	Marijuana Exposed	-.01	
	Maternal Age	.06	
	SES	-.06	
	IQ	.14**	
	Ethnicity	.02	
	Future Orientation	-.09	
	Peer Deviance	-.28***	
	Future Orient x Peers	.01	

$p < .05$ * $p < .01$ ** $p < .001$ ***

Summary of Results

The model tested here predicted that early family instability would be related to adolescent problem behaviors including risk-taking and externalizing behaviors. This relation was predicted to be mediated by future orientation. Deviant peer association and family routine were predicted to be moderators in the model. The results reveal a

significant association between early family instability and adolescent externalizing behavior. This association is significant while controlling for later family instability and other demographic variables, such as socioeconomic status, ethnicity, and child IQ. Additionally, level of future orientation was associated with adolescent risk-taking behavior for boys but not for girls. However, early family instability was not related to future orientation which precluded future orientation as a mediator in the relation between early family instability and later problem behaviors. Family routine was predicted to moderate the relation between future orientation and later problem behaviors. This was tested for in the significant association between future orientation and adolescent risk-taking behavior for boys. These results indicate that family routine did not significantly moderate the association between future orientation and risk-taking behavior. Although peer deviance was predicted to moderate the association between early family instability and externalizing behavior, these results do not show this moderation association. Peer deviance was also predicted to moderate the relation between early family instability and externalizing behavior. Results indicate that peer deviance did not significantly moderate the relation between early family instability and externalizing behavior.

CHAPTER 4

DISCUSSION

The present study was designed to examine the mediating role of future orientation in the relation between early family instability and adolescent problem behavior. It is well established that adolescents are more likely to engage in problem behaviors than either children or adults. Taking risks during this critical time in development can have damaging long term consequences. Risky behaviors in adolescence have been shown to have significant influence on the person, their future, and society at large. There is consistent empirical support that adolescent adjustment problems predict adverse adult outcomes (Dishion & Owen, 2002; Reid, Patterson, & Snyder, 2002). The identification of antecedent risk and protective factors are critical for the long term well being of these individuals.

This study's aim was to identify one developmental path predicting adolescent problem behaviors. Early family instability was proposed as the primary factor predicting adolescent risk-taking behaviors and externalizing behavior. For a variety of reasons, instability in family structure and station has become more commonplace. A growing body of literature suggests that children who experience multiple transitions in family structure may fare worse developmentally than children raised in stable, two-parent families and maybe even stable, single-parent families (e.g., Adam & Chase-Lansdale, 2002; Amato & Booth, 1996; Amato & Keith, 1991; Brody, Neubaum, & Forehand, 1988; Furstenberg & Seltzer, 1986). Multiple changes in residence and changes in household structure during the first five years of life are associated with an increase in problem behaviors later in life. In order to better understand the association

between early family instability and later behavior problems, it is important to examine the mechanisms through which this plays out in children's development.

There is consistent evidence linking family instability with later adolescent maladjustment. In order to better understand and prevent problem behaviors in adolescence, it is crucial to understand the developmental mechanisms through which these develop. We know that adolescents are capable of understanding the potentially harmful effects of various problem behaviors (Steinberg, 2004). In fact, they will rate behaviors as more risky and potentially harmful than adults will rate these same behaviors. They are, however, still more likely to engage in these behaviors than are children or adults. I have proposed here that one possible reason that some adolescents will take risks and engage in problem behaviors while understanding the potential harmful consequences is that they are not thinking about or concerned with their future life.

Therefore, the proposed developmental path through which early family instability impacts adolescent behavior problems is through the child's orientation toward the future. I contend that when children experience high levels of family instability early in life, they are less likely to think about their own future and their long-term goals. High levels of stability within the family during a developmental period at which children are creating their basic understanding of the world are thought to create a sense of predictability and trust in the developing child. Alternatively, high levels of family instability during this period are thought to create a basic sense of mistrust in the expectations of the future. If the physical environment and family structure cannot be relied upon, how can one have even basic expectations for a near or distant future life? In

turn, children that are less focused on their own future lives are more likely to engage in problem behaviors and risk-taking behaviors in adolescence. As noted, adolescents understand the potential long-term consequences to risky behaviors. When a child does not think about or plan for their future life, they are theorized to be less likely to protect that future by avoiding risk. In sum, this study proposes that future orientation mediates the relation between early family instability and adolescent problem behaviors.

Results indicated that family instability in the first five years was directly related to adolescent externalizing behavior. These results held even when controlling for family instability in middle childhood and other demographic factors. This finding provides partial support for the initial hypothesis and is in accordance with previous literature. Research has shown that family instability appears to be a distinct construct within the family environment beyond other demographic variables and family risk factors (Ackerman et al., 1999; Greenberg, Lengua, Coie, Pinderhughes, & the Conduct Problems Prevention Research Group, 1999; Mathijssen, Koot, & Verhulst, 1999; Wu & Martinson, 1993). This study confirmed these previous findings as family instability in the first five years of life was a significant predictor of externalizing behavior in adolescence beyond other demographic factors and while controlling for later family instability.

These findings emphasize the importance of the first five years of life and the long-lasting effects that experience during this period may have on later development. This study found that family instability during the first years of life played a unique role in adolescent outcomes. As previously noted, research has shown family instability during the first years of life to be of particular importance to later developmental

outcomes (Cavanaugh & Huston, 2008). There are multiple reasons to believe that the timing of instability will be systematically associated with differences in children's later adjustment (e.g., Hetherington & Clingempeel, 1992). Developmental theory points to early childhood (birth to age five) as especially important for the formation of basic social relationship skills, attachment relationships, and cognitive and brain development (Bowlby, 1988; Eliot, 1999; McLanahan, 1985). Many studies have shown lasting effects of experiences during the first years of life through a myriad of conduits. For example, we know that nutrition and maternal depression during these years have identifiable effects on later functioning (Goodman & Gotlib, 1999; Sonderegger, 1992). We also know that early experience and interaction with the world during the first years of life are critical in a child's brain development (Garlick, 2003). Additionally, attachment relationships are formed in the early years of a child's life, and these early experiences with caregivers gradually give rise to a system of thoughts, beliefs, expectations, and behaviors about the self and others (Bowlby, 1973; 1979). In accordance with attachment theory, we could interpret early instability as a barrier to the security that is known to be critical in the early years, and, in turn, lack of security may later lead to higher levels of externalizing behaviors. Previous studies have shown that maladaptive views of the self and others resulting from insecure attachments put a child at risk for engaging in aggressive behaviors (Main & Goldwyn, 1984; Teti & Ablard, 1989). These developmental theories and research findings are consistent with those found in research suggesting that instability early in life may be particularly detrimental to the development of children (e.g., Allison & Furstenberg, 1989).

In contrast to the relation found between early family instability and adolescent externalizing behavior, early instability was not found to uniquely predict risk-taking behavior in this sample. Interestingly, in predicting risk-taking behavior, it was later instability that was more predictive than early instability. There are several possible reasons for these findings. Although risk-taking and externalizing behaviors are highly correlated, there are clearly different antecedents and different mechanisms at play. Risk-taking behaviors are defined as behaviors that are potentially harmful to the individual (i.e., substance use, driving while intoxicated). Externalizing behaviors are actions that potentially harm others and include behaviors such as theft, bullying, and physical aggression. One difference between these two types of problem behaviors is that risk-taking behavior may be more affective, in terms of reward-seeking, which may be more influenced by current status than earlier experience. Based on developmental neuroscience, it is now thought that adolescent risk-taking may be primarily due to an increase in reward seeking. There is now evidence pointing to substantial changes in the patterns of dopaminergic activity during puberty (Spear, 2000; Steinberg, 2007). The dopaminergic system is the brain's socio-emotional center, and the changes experienced around the time of puberty likely lead to an increase in the likelihood of reward-seeking behaviors during adolescence.

Whereas risk-taking behaviors are those that contain rewards, or excitement, such as drug and alcohol use, risky sexual behavior, and dangerous driving, externalizing behavior is not as appetitive or thrilling. Externalizing behaviors are those that direct aggressive behaviors outward, including physical or verbal acts that harm or threaten to harm others, theft, and vandalism. Externalizing behavior may be more related to early

family instability because the processes involved in these types of problem behaviors stem from a different source. Specifically, whereas risk-taking behaviors are thought to be thrilling, externalizing behaviors are thought to be reactive or combative – aggression directed at the world. These types of problem behaviors often originate in childhood and pose a risk for developing further into adolescence and adulthood (Moffitt, 1993).

Previous research on externalizing behaviors focus on the individuals' interactions with their environment with direct and indirect influences from families, peers, and societies (White & Renk, 2012). Much of this research describes the development of emotional and behavioral regulation problems which then lead to externalizing behaviors (Mason et al., 1994). Behavioral regulation is the ability to suppress or prevent behaviors when they are not appropriate (Deak & Narasimham, 2003). Research has shown that externalizing behaviors are highly linked to deficiencies of behavioral control (Muris & Dietvorst, 2006). Children's regulatory abilities are thought to begin developing very early in life and continue through the preschool years (Moilanen, Shaw, Dishion, Gardner, & Wilson, 2010). This is the same time period during which early family instability was measured in this study. A variety of parenting and environmental dimensions are believed to support the development of behavior regulation (Dennis, 2006). An important aspect of a child's environment that is known to be associated with lower levels of behavioral regulation is inconsistency (Lengua, 2006). These findings together suggest that the link between early family instability (during the ages that behavioral regulation is developing) and externalizing behaviors may be mediated by behavioral control. Experiences early in development may lead not to an increase in reward-seeking, but to a lower level of behavioral control. It is important to note that

these two classes of problem behavior in adolescence do seem to follow different developmental paths.

Results also supported a direct relation between future orientation and risk-taking behavior for boys but not for girls. There was a significant difference in overall risk-taking for boys and girls in this sample. There is reason to believe that there may be different antecedents of risk-taking behavior for boys and girls as well as different outcomes. Previous research has indicated that there may be consistent differences in the developmental pathways to externalizing behaviors for girls and boys. There are gender differences in age of onset and levels and types of risk-taking behavior (Byrnes, Miller, & Schafer, 1999). For example, there is a mean difference between the levels of risk-taking behaviors in boys and girls from elementary school onward. Additionally, based on a meta-analysis, Byrnes, Miller, and Schafer found that gender differences in risk-taking behavior did not manifest themselves consistently across age or context. Based on these complex gender differences in risk-taking behaviors, it is likely that these behaviors may not be explained by the same predictors and mechanisms.

Additionally, it may be that future orientation may mean something different for boys than it does for girls and each may exhibit behaviors accordingly. There are a variety of gender differences in future orientation in terms of types of and number of goals as well as extension into the future. Research has shown that women tend to have a greater overall number of goals and perceive a shorter time frame for achieving their major life events than men (Greene, 1990; Halvari, 1991; Lamm, Schmidt, & Trommsdorff, 1976). This suggests that the underpinnings of future orientation may be

different for boys and girls. It may be that males and females have different motivation for and reaction to their future goals.

Eccles and colleagues (1983) found that boys' and girls' future expectancies in various domains matched up with gender stereotypes in those domains. Indeed, the primary differences found in a wide variety of studies on future orientation have shown that girls are more likely to be concerned with future family life and interpersonal relationships whereas boys are more likely to be concerned with future career and educational goals (Green & Wheatley, 1992; Seginer, 1988; Seginer & Halabi-Kheir, 1998), though these differences may be decreasing over generations or modernization of cultures (Seginer & Halabi-Kheir). In the context of our findings, it might be consequential if the future goals of boys and girls were of different content. This study examined the purported importance of future life goals and how that magnitude influenced their behavior. I proposed that having important life goals would prevent individuals from taking risks that would endanger their future. However, if we take into account differences between the aspirations of girls and boys, we may better understand the divergent motives for behavior. Perhaps when boys think about and plan for their future educational goals and later career, they feel a sense of obligation to protect that future through the protection of self. If a young man were to engage in risky sexual behavior, he would likely suffer consequences in his career attainment. However, when girls feel a sense of obligation to have interpersonal relationships and a family, they might be just as likely to take risks such as "risky" sexual behavior.

Future orientation did not serve as a mediator of the relation between early instability and adolescent problem behaviors. In this study, future orientation was found

to be predictive of risk-taking behaviors for boys. However, counter to prediction, family instability was not related to future orientation. It was hypothesized that stability in the family would allow the child to predict events that are likely to occur tomorrow or further into the future. In order to plan for the future, one must have a predictable future within which to place those plans. Given an unpredictable, or unstable, family environment, an individual may not have the confidence in their future to make plans. In this sample, early family instability did not predict the child's level of future orientation. It may be the case that early family instability does not decrease a developing child's sense of their future. Additionally, families may be capable of countering any effects of instability in other ways, thus attenuating any lasting consequences. It may be that the particular measure of future orientation used in this study does not directly measure the child's ability to extend their thoughts into the future to imagine their future life, but only the importance of future goals. The conception of future success as important may remain intact even if the child is not actually thinking about or planning for their future. Previous research has found that early family instability does have some long-lasting implications. However, we did not find any relation between the experience of instability in the first years and later future orientation. Future research should be performed to understand the precursors to future orientation. Because the development of future orientation is related to adolescent risk-taking behavior for boys, it is important to understand the mechanisms through which future orientation develops.

The moderating effects of both family routine and deviant peer association for the relation between family instability and externalizing behavior were tested but neither proved to be significant. Early family instability was found to be significantly related to

adolescent externalizing behavior. It was proposed that family routine may moderate this association. Given instability in the form of household composition and physical residence, another approach to providing predictability in family life was proposed to be through the regularity of family activities in the form of family routine. Family routine was measured during middle childhood as a moderating factor in this relationship. It is possible that the unique effects of family instability particular to the first years of life have already had an impact on the child by middle childhood. Because we know that instability during the early years of life have a unique effect on the developing person, it may be that maintaining a family routine during those first years of life, rather than in middle childhood, would have a significant moderating effect on family instability. Additionally, the measure of family routine in this study consisted of a single question at two time points. It may be the case that a more robust measure of internal routine may bear out a more complex association between family instability and routine.

Deviant peer association was also predicted to moderate the relation between early family instability and adolescent externalizing behaviors, but did not prove to be significant. As previously noted, there is strong evidence for an association between deviant peer involvement and adolescent deviant peer behaviors. The direction of the effects in this association has been debated. It may be that deviant peer association may not have been a significant moderating factor due to selection effects. Children who are likely to act out may also be more likely to choose peers that also engage in problem behaviors. Deviant peer association may not have served as a moderator because at least some significant portion of this sample chose deviant peers because they were previously inclined to engage in deviant behaviors. As well, a portion of these adolescents may have

selected friends who were less deviant because, due to experiences, they were less inclined to engage in deviant behaviors. In this case, deviant peer association may serve as a mediator, rather than as a moderator, in the association between early family instability and adolescent externalizing behaviors.

It was anticipated that association with deviant peers would moderate the association between future orientation and risk-taking behavior. This was not the case. This moderator was examined for the boys in the sample. Although deviant peer association is a known factor in the level of risk-taking behavior (Farrell & White, 1998; Windle, 2000), it did not serve as a moderator in this association. Risk-taking and deviant peer association are correlated in this sample indicating some direct association. However, deviant peer association did not have a moderating effect on the relation between future orientation and risk-taking behavior. Because the strength of the relation between future orientation and risk-taking behavior decreases when deviant peer association is added to the model, it appears that deviant peer association may mediate the relation between future orientation and risk-taking behavior. These results would be supported by previous literature indicating a mediating effect of deviant peer association on risk-taking behaviors (Patterson & Dishion, 1985). It would be interesting to further investigate the specific role played by deviant peer association.

Strengths

As noted, the Maternal Lifestyle Study is a prospective, in-depth study with a multi-cultural, multi-ethnic, socio-demographically diverse sample with a wide range of child developmental outcomes as its focus. The primary focus of this study was to examine the long-term impact on children after exposure to cocaine in utero. This study

has an extensive protocol with annual visits conducted over a fifteen year period and multiple adolescent measurements. The present study focused on instability early in life and proposed long-term implications of these experiences while examining the influence of multiple constructs at the individual and contextual levels. This sample was particularly useful in examining the effects of early instability because many of the study families experienced substantial hardships related to drug use and its correlates. One of primary strengths of the present study is the large and diverse sample that has experienced considerable instability both in early and middle childhood. When examining negative child outcomes, it is essential to include at-risk populations in the study sample. This is clearly a sample that would be expected to show considerable problem behaviors, both risk-taking and externalizing, and is a good sample to use to study these behaviors. Using these data, this study examined the mechanisms through which adolescents may develop problem behaviors.

The Maternal Lifestyle Study has produced a great deal of publications with wide-reaching implications. These findings have helped to delineate the mechanisms of long-term effects of prenatal cocaine exposure on a variety of childhood and adolescent outcomes ranging from obesity to behavior problems. For example, LaGasse et al. (2011) found a connection between prenatal cocaine exposure and obesity in childhood. These effects are only found in children who were exposed to cocaine but were not exposed to alcohol prenatally. It may be that prenatal alcohol exposure serves to constrain weight gain in children beyond the effects of other drug exposures. Because this study measured the exposure to a variety of substances and examined the interaction

between exposure to these individual substances, the link between prenatal cocaine exposure and childhood obesity is more clearly demarcated.

Additionally, findings from the Maternal Lifestyle Study have greatly illuminated the complex connections between prenatal exposure to substances and later behavior problems. The findings indicate that children with high prenatal cocaine exposure had significantly higher levels of externalizing behaviors at seven years of age and these levels of behavior were stable over subsequent years (Bada et al., 2011). These findings were consistent across teacher and caretaker ratings of externalizing behavior. Fisher et al. (2011) examined the combined effects of prenatal drug exposure and early adversity on the emergence of neurobehavioral disinhibition in childhood and adolescence. This is a crucial investigation into the mechanisms leading to negative adolescent outcomes in that prenatal substance exposure and early life stress often co-occur. Results show that prenatal exposure predicted behavior dysregulation in childhood through early adolescence. However, early adversity mediated this connection in childhood and early adversity was the only direct predictor of executive function difficulties in childhood. These results indicate that prenatal drug exposure and early adversity are associated with behavior dysregulation though they appear to contribute to these outcomes independently. A follow-up study showed that this neurobehavioral disinhibition trajectory across childhood and adolescence, which was predicted by both prenatal cocaine exposure and early adversity, was related to initiation of substance use (Lester et al., 2012). Prenatal cocaine exposure was not a significant predictor of substance use initiation beyond neurobehavioral disinhibition. These findings together indicate that prenatal cocaine exposure may be a risk pathway to neurobehavioral disinhibition, which

itself predicts the initiation of substance use. The Maternal Lifestyle Study has been a significant driving force in forging our understanding of the effects of prenatal cocaine exposure, in the context of various contextual factors, on a wide range of outcomes across different developmental periods.

Limitations

Given the large scope of the Maternal Lifestyle Study and its aims, some of the measures used for this study were not designed for the focus of the present study. Although the Maternal Lifestyle Study has an extensive inventory of complex measurements and protocol, the particular variables of interest in this study were dependent on the existing dataset. The measure of future orientation was more specifically goal oriented and did not measure the cognitive component of future orientation. Researchers have conceptualized future orientation in a myriad of ways. For the purposes of understanding its relation to instability, it would be useful to think of future orientation in terms of personal persistence or sameness-in-change as conceived of by Chandler and colleagues (Chandler, Lalonde, Sokol, & Hallett, 2003). This is the developmental difficulty of coming to terms with both the notion that we must change but also that our self must also somehow remain the same over time. If the self does not remain the same, all notions of moral and interpersonal responsibility would become nonsensical and would likely result in problem behaviors. In order to study personal persistence, Chandler and colleagues performed extensive interviews with study participants; such interviews were not possible in the present study. The measure used in the present analyses focused on the importance of future goals. Given the gender differences in future orientation, it would be interesting to examine not only the presence

of goals and their importance but also what the specific goals were that the children listed for their future lives.

Secondly, the measure of family routine was available only in middle childhood and consisted of a single question. A more robust measure of family routine might allow for more complex examination of the associations proposed. Given the age at which instability is theorized to affect a child's development, it would be interesting to examine how regular activities important to young children may influence these associations. It may be that family routine concurrent with instability provides more protection from the long-term effects of the instability. For example, it might be more important to young children to have a regular naptime routine and familiar toys and books in their environment than a regular dinner schedule.

Implications and Future Directions

Due to the important and complex nature of adolescent problem behaviors, it is crucial to understand the various mechanisms and paths from which they develop. This model proposed that early family instability would predict adolescent problem behaviors and that this association would be mediated by future orientation. We found that early family instability was significantly predictive of externalizing behavior above and beyond later instability and other demographic factors. This indicates that there is something special about the first years of life. This model proposed that this link would be mediated by future orientation. However, this is not the case in this sample. It would be valuable to investigate what the processes are that result in the relation between early instability and externalizing behavior ten years later. There are several possibilities regarding the mechanisms involved. Early family instability may have an impact on the child's

behavioral control which would then be related to externalizing behavior. It would be important to investigate the role of regulatory control in this association. Alternatively, it could be that patterns of behavior get set up during the early years of life and are compounded by trouble in the school years and continuing into adolescence.

Given that family instability in the first five years of life have been shown to be significant for long-term developmental outcomes, it is important to consider how these early experiences carry over into later life. Based on developmental theory, there are several possible explanations for the importance of early experiences on later developmental outcomes. First, attachment theory highlights the important role of secure parent-child relationships during the early years of life for children's later social and emotional development. According to this theory, if a child's primary relationships with attachment figures are secure, then they are more likely to engage in more reciprocal interactions with peers and be less hostile in childhood (Sroufe, Egeland, Carlson, & Collins, 2005). Family instability in the early years may undermine the parent-child relationship, disrupting the relations that permit children to develop behaviors beneficial to healthy peer relationships (Bowlby, 1969). Therefore, family instability in early childhood might have long-term negative effects on children's adjustment and behaviors later in life.

Second, Erikson's theory of social and emotional development points to the first years of life as crucial for the development of trust and security in relationships and in the world. According to this theory, the child must experience a stable, consistent environment in these early years in order to develop this sense of trust in the world (Erikson, 1950). Given an environment which is constantly changing, a basic sense of

mistrust in the world may result. Development of mistrust can lead to an understanding of the world as undependable, unpredictable, and possibly dangerous (Erikson, 1963). Thus, instability early in life may lead to an overall understanding of the world as unpredictable and precarious.

Future orientation was found to be significantly predictive of boys' adolescent risk-taking behavior. The fact that future orientation was a predictor of risky behaviors for boys but not for girls and not for externalizing behavior is of interest as well. Is there something specifically different about boys' risk-taking that would be related to their thinking about their future? Boys and girls may have different motivations for engaging in risk-taking behaviors in adolescence. Additionally, it would be of interest to investigate the development and the role of future orientation further. There appear to be distinct mechanisms related to future orientation for boys and girls. It may be important to examine the specific life goals and other characteristics of future orientation that may differ for boys and girls. In a follow-up study, it would be informative to use qualitative measures to better understand the underpinnings and development of future orientation.

The sample used to test this model was a large, high-risk group of children followed from birth to fifteen years. This is a longitudinal, prospective, observational study initiated to better understand the effects of drug exposure during pregnancy. It is important to study problem behavior with samples such as this in which many of the participants are of low socio-economic status and have many other risk factors. Although not the focus of the present study, it is important to take into account the effects of prenatal exposure to substances in this sample, and these variables were included as controls in the analyses. Prenatal exposure to tobacco was found to be predictive of both

risk-taking and externalizing behaviors, indicating that the effect of prenatal tobacco exposure requires further investigation. Although these findings are outside the scope of the present study, it would be important to examine these effects further.

In summary, the present study found that family instability during the first five years of life is significantly predictive of adolescent externalizing behavior. This association appears to be unique to the first five years of life as it remains significant even when controlling for later instability. Additionally, as predicted, instability appears to be a construct in and of itself and not a byproduct of other risk factors. Early family instability predicted adolescent externalizing behavior after controlling for other demographic factors. This is important because we would like to prevent adolescent externalizing behaviors by recognizing important antecedents that can help to inform intervention efforts. Although early family instability was not related to future orientation, future orientation was found to be related to risk-taking for boys. It will be important in future research to examine the predictors of future orientation as it appears to be highly related to risk-taking behavior in adolescence. Additionally, the specific gender differences found in these results would prompt further investigation. It would also be interesting to investigate the developmental trajectory of future orientation and how that may relate to later outcomes.

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