

**Examining Family Structure and Half-Sibling Influence on  
Adolescent Well-Being**

by

Kate Taylor Harcourt

A thesis submitted to the Graduate Faculty of  
Auburn University  
in partial fulfillment of the  
requirements for the Degree of  
Master of Science

Auburn, Alabama  
December 12, 2011

Key phrases: adolescent well-being; family structure;  
half-siblings; sibling relationships

Copyright 2011 by Kate Taylor Harcourt

Approved by

Francesca Adler-Baeder, Chair, Professor of Human Development and Family Studies  
Stephen Erath, Assistant Professor of Human Development and Family Studies  
Gregory Pettit, Professor Human Development and Family Studies

## Abstract

Using data from a statewide education project for adolescent youth (N=2,555), this study explored family structure variations of youth in two-parent families and their influence on coping, sexual activity delay, and alcohol and drug use. While the majority of prior research in this area has defined family structure by the parent-child relationship, this study emphasized variations in family structure based on types of sibling relationships. The differences among adolescents were explored based on (1) "traditional" categories of two-parent families, (2) the presence of a half-sibling and (3) the combination of family structure and the presence of a half-sibling in the family. Results indicate differences in outcomes when examining "traditional" classifications, as well as classifications based on the presence of a half-sibling, such that those in nuclear families and those without half-siblings are advantaged over other groups. Using groups based on a combination of family structure and half-sibling presence, differences were found between youth in nuclear families and youth in step-nuclear hybrid families (both biological and stepchildren) on sexual activity delay and alcohol and drug use. Biological and stepchildren in step-nuclear hybrid families did not significantly differ on any measure. Furthermore, a significant race by family structure interaction effect was seen for measures of coping. On average, differences were seen for European Americans but not for African Americans. Finally, age difference between siblings and gender of participant were the most potent predictors of sexual activity delay for mutual children; a greater age difference and being a female were more closely related to greater sexual activity delay.

## Acknowledgments

First, I would like to say thank you to my parents, Patrick and Craig Harcourt, for their love and understanding, as well as the motivation and support they have provided throughout my entire life. Also, my Nana, who passed before the completion of this thesis but who made sure to tell me how proud she was of me every time we spoke. My sister, Dare, and the many other family members who offered continual support and are great sources of strength. Additionally, I would like to thank my friends and fellow graduate students for the support and fellowship they have offered over the course of the last two years.

I would also like to thank my committee members, Dr. Stephen Erath and Dr. Greg Pettit for their time, guidance and support throughout this Master's thesis. Their willingness to help me grow professionally means a great deal. Finally, I would like to give a special thank you to my major professor, Dr. Francesca Adler-Baeder, who is always filled with words of encouragement. Her continued support and dedication, and willingness to truly be a mentor rather than just a committee member, means the world to me. Her spirit, caring nature, and knowledge in the field have aided in my development both personally and professionally.

## Table of Contents

Abstract.....	ii
Acknowledgments .....	iii
List of Tables .....	v
List of Figures.....	vi
Introduction .....	1
Literature Review .....	9
Overview .....	9
Family Structure on Youth Outcomes .....	10
Theoretical Approaches to the Study of Family Structure on Youth Outcomes .....	11
Heterogeneity in Family Structure Based on Sibling Relationships .....	14
Sibling Influences on Adolescent Outcomes .....	14
Theoretical Framework for Current Study .....	16
Empirical Studies of Children in Step-Nuclear Hybrid Families .....	20
Current Study .....	30
Methods .....	33
Sample and Procedure .....	33
Measures .....	35
Independent Variables .....	36
Dependent Variables .....	39

Plan of Analyses .....	41
Results .....	43
Preliminary Analyses .....	43
Hypothesis 1 .....	45
Hypothesis 2 .....	47
Research Question 1 .....	49
Research Question 2 .....	51
Research Question 3 .....	54
Discussion .....	56
Traditional Family Structure Categories .....	57
The Effect of having a Half-Sibling regardless of Family Structure .....	57
Examining the Effect of Family Structure Using a Combination of Half-Sibling Presence and Parent Marital Status .....	58
Interaction Effects for Family Structure and Race and Family Structure and Gender ..	60
Examining the Comparative Influence of Demographic and Contextual Variables on Mutual Children .....	62
Limitations .....	63
Conclusions and Future Directions .....	64
References .....	69
Appendix A: The Problem-Focused Style of Coping .....	77
Appendix B: Waiting to Have Sex .....	78
Appendix C: Alcohol and Drug Use .....	79

## List of Tables

Table 1. Descriptive Statistics for Coping, Sexual Activity Delay, and Alcohol and Drug Use for All Samples .....	43
Table 2. Pearson Correlations for Covariates and Outcomes Using a Combined Sample .....	44
Table 3. Pearson Correlations for Covariates and Outcomes Using Sample 2 .....	44
Table 4. Pearson Correlations for Predictors, Controls, and Outcomes Using a Subsample of Mutual Children in Sample 2 .....	45
Table 5. Between-Groups Analysis of Covariance of Outcomes on Traditional Family Structure Categories .....	46
Table 6. Between-Groups Analysis of Covariance of Outcomes based on Half-Sibling Presence .....	47
Table 7. Between-Groups Analysis of Covariance of Outcomes on Family Structure Grouping by Parent-Child Relationship and Sibling Structure .....	49
Table 8. Summary of Hierarchical Regression Analysis for Variables Predicting Sexual Activity Delay for Biological Adolescents in Step-Nuclear Hybrid Families .....	55

## List of Figures

Figure 1. The Effect of Traditional Family Structure Categories on Measures of Coping, Sexual Activity Delay, and Alcohol and Drug Use.....	47
Figure 2. The Effect of Half-Sibling Presence on Measures of Coping, Sexual Activity Delay, and Alcohol and Drug Use .....	48
Figure 3. The Effect of Family Structure by Parent-Child Relationship and Sibling Structure on Measures of Coping, Sexual Activity Delay, and Alcohol and Drug Use .....	51
Figure 4. The Interaction Effect of Family Structure by Race on Coping .....	52

## **I. Introduction**

In the past several decades, children's experiences in diverse family types have become increasingly common. Because of nonmarital births and parental relationship instability, estimates are that many children will spend at least a portion of their life in a single-parent home and as many as one half will be part of a stepfamily during their growing years (Bumpass, Raley, & Sweet, 1995; Cherlin, 2010; Parker, 2010). The likelihood of living in a "non-traditional" family structure is increased for African American children and those in low socio-economic status families (Cherlin, 2010; Parker, 2010).

The instability of the family environment and changing family structure are strong focal points for research on adolescent development. Findings from decades of comparative studies consistently show that children growing up in stepfamilies or single-parent families have, on average, worse academic, behavioral, and psychological outcomes, lower educational and SES attainment, and greater incidence of delinquent behavior, teen pregnancy and substance abuse than children in nuclear families (Cherlin, 2008; Coleman, Ganong, & Fine, 2000; Halpern-Meekin & Tach, 2008; Hetherington et al., 1999; Sweeney, 2010).

Several theoretical approaches have been used to explain the relationship between family structure and youth outcomes. These include biological evolutionary theory, resource theory, stress theory and selection theory. The biological evolutionary perspective assumes that parents are more likely to emotionally attach to and invest their resources in biological children for evolutionary reasons (e.g., continuation of the genetic family line and greater likelihood of



eldercare) (Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Hetherington, et al., 1999; Wilson & Daly, 1996). Relatedly, resource theory focuses on the greater likelihood that stepfamilies will experience economic strain compared to traditional nuclear families. Divorce and remarriage occur in higher proportions among lower socio-economic families (Amato, 2000; Sweeney, 2010). In addition, stepfamilies are typically larger than first families, stretching existing resources. Resources also tend to “leak” out, as time and money are often allocated to family members outside the immediate household (Coleman & Ganong, 2004; Halpern-Meekin & Tach, 2008). Overlapping the resource theory assumptions are tenets of stress theory that center on the greater likelihood that stepfamilies compared to nuclear families will experience stress from multiple sources due to the complexity of the family structure (e.g., relationship conflict, resource limits and economic strain) (Coleman & Ganong, 2004; Hetherington, et al., 1999; Strow & Strow, 2008). Another approach is the use of selection theory that posits parental characteristics lead to differences in family structure and ultimately, youth outcomes (Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008). Research shows that certain characteristics, such as marrying young, low educational attainment, earning a low income, having a mental health issue or personality disorder, low social competence, and substance abuse tend to be more prevalent among those who divorce compared to those who do not, and are therefore overrepresented among those who remarry or repartner (Cherlin, 2005; Halpern-Meekin & Tach, 2008). These characteristics, particularly the behavioral and mental health issues, are associated with less positive parenting and subsequently, less positive child outcomes. Thus, from each of these perspectives or all combined, stepchildren are expected to face greater risks to their healthy development and may display more negative outcomes than children in nuclear families.

The research on family structure and child outcomes, however, is limited due to broad measurement and definitions of family structure. The majority of family structure research defines family type by the relationship each child has with the adults in the household; it does not consider the variations within families based on sibling relationships. This has resulted in misclassifications, particularly of children living with both their biological parents who have a half-sibling. A “mutual child” in a stepfamily has typically been classified as living in a two-biological parent family (i.e., nuclear family), whereas his or her half-sibling is classified as living in a stepfamily (Apel & Kaukinen, 2008; Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008).

The consideration of sibling relationships and their effect on child and adolescent outcomes is a growing, but still newer area of investigation in the broad literature on adolescent well-being. Recent studies find both the presence and the quality of sibling relationships to be associated with elements of emotional, cognitive, and behavioral development (e.g., Deater-Deckard, Dunn, & Lussier, 2002; Linares, MiMin, Shrout, Brody, & Pettit, 2007; Padilla-Walker, Harper, & Jensen, 2010). Most studies examining the link between sibling relationships and adolescent well-being have primarily utilized samples of biologically-related “full” siblings. Much remains to be known about sibling relationships within different family types and the role they play in determining child and adolescent outcomes (Deater-Deckard et al., 2002; Hetherington et al., 1999).

It seems particularly important that studies consider the unique family contexts of first nuclear families and subsequent nuclear families and distinguish between children raised by two biological parents in a first family (with their full siblings) and those in a “step-nuclear hybrid” family (with half-siblings from one or both parent’s previous relationships).

Seemingly, mutual children in a step-nuclear hybrid family experience a unique family structure in that they are part of a nuclear family within a stepfamily. Although mutual children have not experienced the divorce or separation of their parents, they differ from children in first families because they have complex sibling relationships and one or both of their parents are in a remarriage (Halpern-Meekin & Tach, 2008). Similarly, stepchildren are also commonly classified as living in a stepfamily regardless of whether they have half-siblings.

As previously noted, theories guiding the study of the effects of family transitions on child development focus on the parent and the parent-child context and center on parent-partner transitions and events. However, sibling events can contribute to child/adolescent outcomes as well (Halpern-Meekin & Tach, 2008). One of the biggest family transitions can be the addition of a new child into the family. Boss (1980) found the birth of a baby to be a “normative stress event.” While the introduction of a new child into any type of family will likely disrupt family routines and result in the reassignment of family roles and boundaries, the birth of a child can be particularly stressful for extant children in a stepfamily (Schlomer, Ellis, & Garber, 2010).

Recent work suggests the use of "parent-offspring conflict theory" (POCT) (Trivers, 1974 in Schlomer, et al., 2010) in the study of complex sibling relationships and their effects. POCT explicates a cognitive-behavioral process based on evolutionary biology assumptions that genetic asymmetries and divergence between expected investment and actual investment creates conflict between parents and children. A basic tenet of POCT is that parent-child conflict will be greater in multiple sibling families due to the disconnect between the amount of parental resources invested in each child and the amount of investment expected by the child. Further, the suggestion that parental investment is based on biological relatedness informs the assumption that there will be less conflict among those who are biologically related than among

those who are less biologically or non-biologically related. Thus, it is expected that the introduction of a younger half-sibling will result in higher levels of conflict between extant children and their biological parent than will the introduction of a younger full sibling. It is also expected that there will be greater conflict between the stepparent and stepchild (i.e., non-biologically-related parent-child dyad). It is therefore reasoned that extant children (i.e., the stepchild in a step-nuclear hybrid stepfamily) will experience more conflict with both residential parents and should fare worse on measures of well-being than stepchildren without a half-sibling, and will fare worse than the younger half-sibling (i.e., the biological child in a step-nuclear hybrid stepfamily) (Schlomer, et al., 2010).

Systems theory, however, suggests that what happens in one family subsystem affects every other subsystem. The conflict experienced by the stepchild with his/her biological parent and with the stepparent may spill over and negatively affect the biological child in the hybrid stepfamily as well. A systems view helps explain why biological children in step-nuclear hybrid families may be at risk for the same negative outcomes experienced by stepchildren in the same family (Dupuis, 2010; Minuchin & Fishman, 1981). Compared to a child growing up in a first family, the mutual, or biological, child in a step-nuclear hybrid family may be exposed to added tensions and stress, such as parental conflict with a former spouse, conflict between stepparent and stepchild, increased conflict between parent and older half-sibling, and stress related to sharing resources across households with former partners (i.e., economic strain) (Strow & Strow, 2008). As selection theory suggests, it also may be that mutual children in stepfamilies may be more likely to have parents with the negative characteristics associated with divorce and relationship instability and may therefore be more likely to experience less positive parenting than the average child in a first nuclear family (Halpern-Meekin & Tach,

2008).

The study of mutual children in stepfamilies also benefits from concepts in social learning theory (SLT), which suggests that a key mechanism of behavioral development is modeling the behaviors and attributes of important others (McHale, Bissell, & Kim, 2009). While it is possible that more socially responsible adolescents are setting more positive examples for their younger half-siblings who then respond favorably through imitation (Hetherington et al., 1999), research indicates that family transitions may put older stepchildren at risk for delinquent and negative behavior (e.g., Halpern-Meekin & Tach, 2008; Sweeney, 2010), thus, there is an increased chance that a mutual child in a stepfamily may be exposed to negative role models, even if the relationship quality between siblings is high (Hetherington et al., 1999). In addition, suggestions are that individuals are more likely to imitate models who are similar to themselves (Bandura, 1969); therefore, it is assumed that when an older sibling is closer in age, proximity, and is the same gender, behavioral imitation by the younger sibling is even more likely to occur (McHale, Bissell, & Kim, 2009).

In very recent years, a handful of studies have emerged that examine the experiences of stepchildren and biological children with complex sibling relationships (Evenhouse & Reilly, 2004; Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008; Tillman, 2008). To date, evidence shows that children and adolescents raised by both of their biological parents in step-nuclear hybrid family households have, on average, worse outcomes in terms of educational achievement, behavior, and psychological well-being than children raised in nuclear family households (Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008). In addition, a few studies investigated and found no differences in outcomes between mutual children in stepfamilies and stepchildren

(Halpern-Meekin & Tach, 2008; Strow & Strow, 2008). Findings from several studies also indicate differences between children in a stepfamily with and without half-siblings. Those with half-siblings experience greater conflict with their stepparent and their biological parent (Stewart, 2005; Schlomer et al., 2010) and demonstrate worse outcomes compared to stepchildren in a stepfamily without half-siblings (Strow & Strow, 2008).

Advancing this literature will serve to promote better understanding of the variations of experiences and outcomes within family types. This is useful information for researchers, policy-makers, teachers, practitioners and parents themselves. In the few previous studies of complex sibling relationships, family structure, and youth outcomes, more than half utilized an older sample of youth (e.g., born in 1960); most used a primarily Caucasian sample, and most controlled for both demographic and contextual variables that could reveal variations among children/stepchildren with half-siblings. The current study utilized an ethnically-balanced community-based sample of youth born in the mid to late nineties, and explored family structure variations of youth in two-parent families and their influence on several indicators of well-being (i.e., coping, sexual activity delay, and alcohol and drug use). Building on previous studies, the differences among adolescents were explored in a sequence of comparisons based on (1) "traditional" categories of two-parent families, (2) the presence of a half-sibling in the family and (3) the combination of family structure and the presence of a half-sibling in the family (i.e., (a) biological children in a nuclear family, (b) biological, mutual children in a step-nuclear hybrid family, (c) stepchildren in a step-nuclear hybrid family, and (d) stepchildren in a simple stepfamily). Extending previous work, the influence of gender and race was also examined. Further, the variation in experiences for mutual children in step-nuclear hybrid families was explored by examining whether and how additional demographic characteristics

(i.e., gender and race) and contextual variables (i.e., age difference between siblings, gender match with half-sibling, living arrangement of half-sibling, and shared biological parent gender) affect outcomes.

## **II. Review of Literature**

### **Overview**

Research on the relationship between family structure and child well-being continues to be an active area. Given that a large percentage of American children are being raised in non-traditional family forms, the attention to family structure research and differences in the family context of children is warranted (Cherlin, 2010; Evenhouse & Reilly, 2004). Estimates suggest that by the time they are 18, many children will have spent at least a portion of their life in a single-parent home, and anywhere from one third to one half will have been part of a stepfamily (Bumpass, Raley, & Sweet, 1995; Cherlin, 2010; Parker, 2010). Additionally, within family types, a growing number of children live in households with complex sibling relationships. In 2010, the Pew Research Center estimated that 42% of adults have at least one step relative, with 30% indicating they have a step- or half-sibling. The likelihood of having a step relative and complex family and sibling relationships is increased for African American, the younger cohort of adults, and adults without a college degree. Fifty-two percent of people under the age of 30 report having a step relative and 44% report having a step- or half-sibling compared with 45% and 35%, respectively, of those age 30 to 49. Sixty percent of African American's report having a step relative and 45% report having a step- or half-sibling compared with 39% and 26%, respectively, of Caucasians. Additionally, 45% of those without college degrees have a step-relative and 34% have a step- or half-sibling compared to 33% and 21%, respectively, of those with a college degree (Parker, 2010). Similarly, a broad study of



low-income, mostly African American, families reports that for more than 60% of expectant couples in their sample, one or both partners already had at least one child from a previous relationship (Edin & Reed, 2005).

In the following chapter, a summary of previous research on the relationship between family structure and youth outcomes will be presented, along with an overview of theoretical approaches used to guide this work. Following this, information on sibling influences on adolescent outcomes will be given. Information will then be provided on the diversity within family structure categories based on sibling relationships. Theories that inform investigations of adolescent outcomes in the context of complex family and sibling relationships will be presented first, followed by detailed information on the handful of recent family structure studies that examine differences in child/adolescent outcomes based on sibling relationship complexity. Finally, the rationale and approach for the proposed study will be presented.

### **Family Structure and Youth Outcomes**

Given the growing prevalence of “nontraditional” family structures, the past decade has seen a push in legislative efforts to tighten state divorce laws and encourage marriage (Evenhouse & Reilly, 2004). The largest motivation for this seems to be the desire to benefit children and stems from a belief that children do better with both biological parents than with a single or stepparent (Evenhouse & Reilly, 2004; Ginther & Pollak, 2004). A large literature on child outcomes and family structure has been built over the past 3 decades. Most of this research focused on contrasting children living with both biological/adoptive parents, children living with one parent and a stepparent, and children living with a single parent (Amato, 2000; Amato, 2010; Evenhouse & Reilly, 2004; Gennetian, 2005; Ginther & Pollak, 2004; Sweeney, 2010). Most studies on this topic find differences based on family structure on such measures

as academic achievement, high school completion, educational attainment, behavior problems, social competence, and risky sexual activity (e.g., Garasky, 1995; Evenhouse & Reilly, 2004; Tillman, 2008). Many scholars have concluded that findings from these comparative studies indicate that children in stepfamilies are generally at greater risk for a number of negative outcomes than children living with both of their biological/adoptive parents (e.g., Coleman, Ganong, & Fine, 2000; Hofferth & Anderson, 2003; Sweeney, 2010; Tillman, 2008) and "fare no better than children of lone parents" (Cherlin, 2008 p. 8).

### **Theoretical Approaches to the Study of Child Outcomes in Stepfamilies**

Psychology, sociology, and economics all suggest causal mechanisms that may explain the link between family structure and child/youth outcomes. Each approach postulates that children raised in nuclear families will, on average, experience better outcomes than children in stepfamilies (Ginther & Pollak, 2004). Social scientists across disciplines have suggested four theoretical pathways that explain risks for children in stepfamilies: (1) biology, (2) resource, (3) stress and instability, and (4) selection (Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meehin & Tach, 2008).

**Biology.** Those who subscribe to the biological evolutionary position hypothesize that parents are more likely to invest their resources in biological children for evolutionary reasons (Ginther & Pollak, 2004; Halpern-Meehin & Tach, 2008). From this perspective, investment in biological children increases the ability of the next generation to reproduce and the likelihood that the genetic family line will continue. Attachment theory, which is partially based on biological evolutionary theory, also suggests that parents will have a stronger bond and emotional attachment to biological children than non-biological children because they are able to connect and develop close parent-child relationships during the first year of an infant's life

(Bowlby, 1969). The assumptions of biological evolution and attachment would suggest that a warm, loving relationship between parents and stepchildren is much harder to attain than with biological parents and children (Hetherington et al., 1999). An additional motivation for investment in biological children is that this relationship will likely be long term (Hofferth & Anderson, 2003). It is suggested that the tendency to invest more in biological children than non-biological children results in uneven treatment of children within stepfamilies and less emotional support and connection with stepchildren, potentially putting these children at a disadvantage compared to children reared by their two biological parents (Evenhouse & Reilly, 2004; Halpern-Meekin & Tach, 2008; Hetherington et al., 1999).

**Resource.** A large number of studies have documented the association between economic resources and child outcomes (McLanahan & Percheski, 2008). Resource theory suggests that children are not only affected by the amount of resources available to them but also by the quality of resources and the timing of their allocation (Strow & Strow, 2008). In general, it has been shown that married two-biological-parent families tend to have greater economic well-being, on average, compared to single-parent or stepparent families (Apel & Kaukinen, 2008; Sweeney, 2010). Children experiencing economic instability and strain are likely to experience more stress and have an increased likelihood of living in undesirable, even dangerous, neighborhoods than children of higher-resourced parents, not experiencing economic instability (Cleveland, Wiebe, van den Oord, & Rowe, 2000). In addition, parents who are economically at risk are also less likely to offer effective discipline and parenting practices, and on average, spend less time on overall parenting responsibilities (Apel & Kaukinen, 2008; McLanahan & Percheski, 2008; Sweeney, 2010). It appears that parent stress and mental health issues may mediate the relationship between financial insecurity and the

parent-child relationship (Cleveland, Wiebe, van den Oord, & Rowe, 2000; Apel & Kaukinen, 2008; McLanahan & Percheski, 2008; Sweeney, 2010).

**Stress and instability.** A stress and instability perspective on family structure suggests the broader view that changes and transitions in family structure may disrupt family environments, which results in stress that may lead to increased family conflict and disruption of effective parenting behavior (Sweeney, 2010). Stepchildren have experienced at least two transitions, uncoupling and re-coupling, and therefore may be at risk for negative outcomes associated with multiple transitions. Suggestions are that family transitions can be disruptive for children's development because they reduce stability and force adjustment to new environments (Halpern-Meehin & Tach, 2008). Transitions may also result in relocation, economic instability (i.e., the central focus on the resource theory perspective), the redefining of family roles, and possibly the loss of parental control (e.g., effective parenting practices, parental monitoring) (Gennetian, 2005; Ginther & Pollak, 2004). Research on instability and stress generally indicate that cumulative family stress is associated with more negative outcomes such as behavior problems, early sexual involvement, teenage pregnancy, and low academic achievement (Fomby & Cherlin, 2007; Manning & Lamb, 2003; Sweeney, 2010).

**Selection.** Selection theory postulates that it is certain unobserved characteristics that lead to differences in family structure and ultimately, youth outcomes (Ginther & Pollak, 2004; Halpern-Meehin & Tach, 2008). Research has found that characteristics, such as marrying young, having little education, and earning a low income, tend to be more prevalent among those who divorce compared to those who do not (Cherlin, 2005; Halpern-Meehin & Tach, 2008). Other characteristics that predict divorce include alcoholism, low interpersonal skills, negative attitudes and less supportiveness (Hetherington, 1999). Thus, these characteristics may

be more prevalent among remarried or repartnered parents. While some of these characteristics alone may put children at risk, they also may influence parenting practices and the environment in which the child is raised (Halpern-Meekin & Tach, 2008).

### **Heterogeneity in Family Structure Based on Sibling Relationships**

Relevant to the current study, the vast majority of family structure studies considered only the child's relationship to the parents in the home as the indicator of family structure. That is, they grouped all children living with two biological parents as part of a nuclear family - whether or not a parent was repartnered or remarried and there were half-siblings in the family. Studies also did not consider diversity within stepfamilies and single parent families regarding sibling relationships (i.e., the presence of half siblings). The “traditional” classification of family structure with a focus on the relationship between a child and his/her parents fails to capture the complexity of families (Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008). With a child-based classification approach, the same hybrid family is a stepfamily for one child and a nuclear family for another child in the same family (Ginther & Pollak, 2004). Step-nuclear hybrid families are unique in that they contain both stepchildren and mutual, biological children. Although mutual children are living in a two-biological-parent family (i.e., a nuclear family), their family context differs from other children in nuclear families due to the presence of half-siblings from one or both parent's previous relationship(s) and one or both of their parents is repartnered or remarried (Halpern-Meekin & Tach, 2008). Their experiences, have in essence, been subsumed by the experiences of children in "traditional" nuclear families.

### **Sibling Influences on Adolescent Outcomes**

Although sibling relationships are potentially the longest relationship a person will

experience, researchers know relatively little about the role of sibling relationships in youth development in comparison to research on parent-child relationships (Deater-Deckard et al., 2002). Fortunately, the past decade has seen an increase in interest in this topic and researchers are beginning to acknowledge the important and perhaps complex role that siblings play in each other's developmental outcomes. To date, studies on sibling relationships and youth outcomes have found the quality of sibling relationships to be associated with adjustment problems (Deater-Deckard et al., 2002) as well as other indicators of emotional, cognitive, and behavioral development (Padilla-Walker, Harper, & Jensen, 2010). The study of sibling relationships is important for several reasons. First, siblings are an important, and often constant, socializing agent in most children's lives, particularly in early and middle childhood (Deater-Deckard et al., 2002; Hetherington et al., 1999; McHale & Crouter, 1996). Second, siblings can serve as sources of support during difficult times (e.g., Hetherington et al., 1999; Linares et al., 2007). Sibling relationships can be highly adaptive to family stress, allowing siblings to pull together and become closer in times of turmoil within the family. However, the same siblings who are capable of providing support can also be potential sources of stress (Linares et al., 2007). Siblings' relationships that are higher in conflict and aggression and lower in warmth have been linked to child depression, internalizing problems, antisocial behavior, and other indicators of child maladjustment (Brody, 1998; Deater-Deckard et al., 2002; Linares et al., 2007). Importantly, research indicates that sibling relationships can influence child and adolescent outcomes above and beyond that of parental influence (Criss & Shaw, 2005; Pike, Coldwell, & Dunn, 2005; Padilla-Walker, et al., 2010).

Studies examining the link between sibling relationships and adolescent well-being have almost exclusively focused on full biological siblings. Much remains to be known about

sibling relationships within different family types (Deater-Deckard et al., 2002; Hetherington et al., 1999). Research in this area is critical for advancing knowledge about the influence of both family structure and sibling relationships on adolescent outcomes.

It is only recently that a few studies have begun to uncover evidence that the presence of half-siblings in the home may have negative consequences for children living in the home regardless of parental marital status (Evenhouse & Reilly, 2004; Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008; Tillman, 2008). Efforts have also been made to articulate theoretical assumptions about the experiences of children with half-siblings. In the following section, the theoretical framework for the current study is articulated through the combination of information on theoretical approaches used in recent studies and other complementary theory. Following this, more details are provided on the empirical studies examining child/adolescent outcomes based on presence of half-siblings.

### **Theoretical Framework for Current Study**

Schlomer, Ellis, and Garber (2010) introduced to family studies and specifically to studies of complex sibling relationships the use of "parent-offspring conflict theory" (POCT) (Trivers, 1974 in Schlomer, et al., 2010). POCT is used primarily in evolutionary biology studies and focuses on genetic asymmetries in families and appears to incorporate assumptions from resource theory as well. Suggestions are that when parents are equally genetically related to each of their offspring, they are likely to invest equally in each child. Children, however, are 100% genetically related to themselves but only 50% genetically related to each of their biological siblings and therefore, one implication of POCT is that parent-child conflict will be greater in multiple sibling families due to the disconnect between the amount of parental resources invested in each child and the amount of investment expected by the child. Further,

the suggestion that parental investment is based on biological relatedness advances the assumption that there will be less conflict among those who are biologically related than among those who are less biologically or non-biologically related. Children are only 25% genetically related to each half-sibling, thus resulting in even greater divergence in expectations for and receipt of parental investment, resulting in higher levels of parent-child conflict in families containing half-siblings. Thus, it is expected that the introduction of a younger half-sibling will result in higher levels of conflict between extant children and their biological parent than will the introduction of a younger full sibling. Schlomer and colleagues' study (2010) supports this assumption. In these step-nuclear hybrid families, at least one child is living with both biological parents while other children live with only one. This may result in feelings of insecurity and jealousy for the stepchild, especially if the stepchild resented his or her biological parent's decision to have another child. In sum, families that contain half-siblings may struggle even more so than nuclear families with structural inequality between children and perceived differential treatment of children in the home (Tillman, 2008).

Due to the expectation in POCT that extant children and their biological parent will experience an increase in conflict after the birth of a younger half-sibling, combined with the expectation from general evolutionary biology theory for greater conflict between non-biologically related family members (i.e., stepparent-stepchild), it is reasoned that extant children (i.e., the stepchild in a step-nuclear hybrid family) will experience more conflict with both residential parents and should fare worse on measures of well-being than the younger half-sibling (i.e., the biological child in a step-nuclear hybrid family) and stepchildren without younger half-siblings (Schlomer, et al., 2010). We note, however, that some recent studies (reviewed in the following section) have found no differences in outcomes between biological



and stepchildren in step-nuclear hybrid families (Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Hofferth & Anderson, 2003; Strow & Strow, 2008). This can be explained through assumptions in family systems theory (Whitchurch & Constantine, 1993) and social learning theory (Deater-Deckard et al., 2002; Hetherington et al., 1999) and elements of stress, resource, and selection theories used in broad studies of family structure and child outcomes.

Systems theory suggests that what happens in one family subsystem affects every other subsystem (Whitchurch & Constantine, 1993). The conflict experienced by the stepchild with his/her biological parent and with the stepparent may spill over and negatively affect the biological child in the hybrid stepfamily as well. A systems view helps explain why biological children in step-nuclear hybrid stepfamilies may be at risk for the same negative outcomes experienced by stepchildren in the same family (Dupuis, 2010; Minuchin & Fishman, 1981). Because step-nuclear hybrid families contain step relationships, children born into this type of family are living in a household with one or two stepparents. This means that compared to a child growing up in a first family, the mutual child in a step-nuclear hybrid family may be exposed to added tensions and stress, such as parental conflict with a former spouse, conflict between stepparent and stepchild, increased conflict between parent and older half-sibling, and stress related to sharing resources across households with former partners (i.e., economic strain) (Strow & Strow, 2008). It also may be that negative parental characteristics associated with divorce may be overrepresented among parents in step-nuclear hybrid families, as selection theory suggests, increasing risks of negative outcomes for mutual children in these families (Halpern-Meekin & Tach, 2008).

Overall, we expect the presence of half-siblings from both the older half-sibling and

younger half-sibling perspective may result in increased levels of stress for youth in step-nuclear hybrid family structures because it increases the complexity and ambiguity of relationships (Tillman, 2008). Relationship ambiguity is common when parent-child or sibling relationships span multiple households, and is associated with poorer family functioning (Sweeney, 2010). The ambiguity of relationships may result in uncertainty of family roles, which may lead to poor communication, more difficult sibling relationships, and a decrease in positive parent-child interactions among all dyads in the family (Cherlin, 1978; Tillman, 2008).

The current study also benefits from concepts in social learning theory (SLT). SLT suggests that a key mechanism of behavioral development is modeling the behaviors and attributes of important others (McHale, Bissell, & Kim, 2009). While it is possible that more socially responsible adolescents are setting more positive examples for their younger half-siblings who then respond favorably through imitation (Hetherington et al., 1999), research indicates that family transitions may put older stepchildren at risk for delinquent and negative behavior (e.g., Halpern-Meekin & Tach, 2008; Sweeney, 2010). If the older stepchild in the family is engaging in such behavior, the younger half-sibling may engage in the behavior as well.

According to social learning theory, the effect is expected to be stronger when relationships are close (Deater-Deckard et al., 2002; Hetherington et al., 1999), and research suggests that individuals are more likely to imitate models who are warm, high in status, and similar to themselves (Bandura, 1969). From this perspective, it is assumed that when an older sibling is closer in age, proximity, and is the same gender, behavioral imitation by the younger sibling is even more likely to occur (McHale, Bissell, & Kim, 2009). Findings from research in some domains of adolescent risky behavior (i.e., alcohol use) are consistent with these

propositions, documenting stronger associations between the behaviors and characteristics of siblings of the same gender (Rowe & Gulley, 1992), for those with smaller age differences (Feinberg & Hetherington, 2000), and for those with closer sibling relationships (Slomkowski, Rende, Novak, Richardson, & Niaura, 2005).

Although there is still much to be known about the quality of complex sibling relationships within different family types, Hetherington et al. (1999) found half-sibling relationships to be far more like full-sibling relationships than step-sibling relationships and concluded that for most, the bond between half-siblings is strong and there are high levels of sibling warmth. In fact, during adolescence, siblings often do not even acknowledge a difference between full- and half-siblings (Hetherington et al., 1999). We therefore assume that biological children in step-nuclear hybrid stepfamilies are as likely to be influenced by older half-siblings as they are by older biological siblings. We further theorize, however, that there is a greater risk that older half-siblings may be modeling more negative behaviors due to the risks they face as stepchildren.

Thus, for some children living with their two biological parents, the presence of older half-siblings in the family may mitigate some of the protective benefits of living in a nuclear family due to assumptions from parent-child conflict theory, family systems theory, resource theory, stress theory and social learning theory (Strow & Strow, 2008). According to selection theory, it also may be that mutual children in step-nuclear hybrid families may face comparative risks due to parental characteristics associated with family instability (Halpern-Meekin & Tach, 2009; Hetherington, et al., 1999).

### **Empirical Studies of Children in Step-Nuclear Hybrid Families**

Acknowledging the heterogeneity between and within family structure, six recent

studies have expanded previous family structure literature by examining the effects of complex sibling relationships on child/adolescent outcomes, rather than focusing solely on parent-child relationships and parental marital status (Evenhouse & Reilly, 2004; Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008; Tillman, 2008). Overall, the studies provide indications that the presence of a half-sibling is associated with poorer adolescent outcomes. Here, details on this emerging literature are presented.

Ginther and Pollak (2004) used three data sets, the National Longitudinal Survey of Youth (NLSY), the Panel Study of Income Dynamics (PSID), and the children of females from the NLSY (NLSY-Child), to examine the association between family structure and children's educational outcomes. The authors used the NLSY and PSID to investigate the effect of family structure on four schooling outcomes for young adults: (1) years of schooling, (2) high school graduation, (3) college attendance, and (4) college graduation. Additionally, the NLSY-Child data set was utilized to explore the relationship between family structure and three child cognitive outcomes: the Peabody Individual Achievement Tests (PIAT) for reading cognition, reading comprehension, and math.

The NLSY began collecting data in 1979 with a nationally representative sample of 12,686 young adults aged 14-21. Beginning in 1986, data were collected on children born to female participants of the NLSY. As of 1992, 9,360 children were included, thus comprising the NLSY-Child dataset. Although the NLSY-Child includes children born to a nationally representative dataset, its participants are not nationally representative themselves. Ginther and Pollak (2004) worked with a subset of NLSY participants who had siblings or stepsiblings (N=4,764) and used a sub sample of the NLSY-Child data set that was limited to children with siblings in the sample, aged 5-15, for whom there was data on age and the three PIAT

assessments (N=4,320)

The PSID began collecting data in 1968 on a nationally representative sample of 4,800 families. For this study, the authors used a sample consisting of individuals born between 1960 and 1970 with educational outcomes observed between 1990 and 1993, who had at least one sibling who also met these criteria. In 1985, the PSID collected retrospective data on pair wise relationships within each family for their 1968-1985 Relationship file. Ginther and Pollak (2004) included participants from the Relationship file who had at least one biological parent in the PSID sample, had reported years of schooling, and also had a sibling meeting these criteria. A total of 1,980 participants were included in the combined PSID/1968-1985 Relationship file subsample used in Ginther & Pollak (2004).

Across the 3 samples, family structure was defined based on the largest proportion of childhood that a child resided in a nuclear family, single parent family, blended family (defined as a biological parent who is married to a step-parent or both biological parents and at least one half-sibling), or an alternative family form. The study focused on children from “stable” blended families and excluded children in blended families that ended in divorce, allowing the appropriate comparison of mutual children in blended families to children in nuclear families (i.e., neither group experienced family-structure transitions).

Roughly 30% of siblings participating in the NLSY and 48% of siblings in the PSID reported ever living in a non-traditional family. Of the children in both the NLSY and PSID samples who were defined as living in a blended family, 11% were classified as mutual children. Similarly of the 4,320 siblings participating in the NSLY-Child sample, roughly 10% (n=418) were classified as living in a stable blended family.

Across the samples and controlling for gender, race, number of siblings, birth order,

family income, religion, and parental schooling, findings indicate that children in nuclear families fare better on educational outcomes than do biological children in step-nuclear hybrid families. Additionally, within step-nuclear hybrid families, no significant differences between biological and step- children were found.

Similar to Ginther and Pollak (2004), Gennetian (2005) also examined the effect of family structure on educational outcomes using a subsample of the NSLY-Child sample. The sample consisted of 2109 children aged 5 through 10 from 1986 to 1994. In the study, the analysis considered first traditional classifications of family structure based on parent-child relationships and then definitions of family type defined from the child's perspective. After examining the initial family types of "single mother" (n= 682), "stepfather family" (n=231), or "two biological parent family" (n=1196), results shows that many children who would have been classified in "traditional" classifications of family structure are actually growing up in more complex family households. Specifically, 27% of children in single mother families, 48% of children in stepfather families and 7% of children in two biological parent families were actually living in blended family households. Thus, initial family types were further broken down into subcategories determined by the mother's marital status at the time of the child's birth (i.e., marital or nonmarital) and by sibling mix (i.e., blended or non-blended). That is, this study considered both parental relationship stability and instability and blended and non-blended family situations within single mother families, stepfather families, and nuclear families. Based on these family structure elements, Gennetian (2005) defines a blended family as one that "contains half-siblings, step-siblings, or both and may or may not include a father" (Gennetian, 2005, pg. 421). Of those living in a single mother family, 23.6% report having a half-sibling; 46.2% of those living in a stepfather family report having a half sibling; and 5.2%

of those living in a two-parent biological family report having a half sibling.

Like Ginther and Pollak (2004), Gennetian (2005) examined educational outcomes by using PIAT test scores. Rather than look at three PIAT scores separately, Gennetian (2005) took the average of a child's math and reading recognition scores. The study also utilized the Home Observation for Measurement of the Environment (HOME) cognitive score as an outcome measure. Comparisons of achievement scores based on family structure elements controlled for income, mother's and (step) father's education and age, teen mother at time of birth, mother's score on the Armed Forces Qualifying Test (AFQT), child's race/ethnicity, child gender, physical health (i.e., physical or learning disability or low birth weight), birth order of child, length of time a child has spent in a single parent family, and total number of siblings.

Contrary to most previous family structure studies using traditional categories for family type, results from this study found no evidence for differences on PIAT scores when using traditional categories for family structure. The use of multiple controls is suggested as the reason for limited evidence for family structure differences. However, re-classifying families based on sibling mix resulted in evidence that young children in blended families (i.e., those with complex sibling relationships) demonstrate lower performance on cognitive outcomes, regardless of traditional family structure category. Further, they found no evidence that stepchildren in blended families fare worse than mutual children in blended families on these measures. These findings are consistent with those of Ginther and Pollak (2004).

Evenhouse and Reilly (2004) were the first to extend this research to youth and used data from the first wave of the National Longitudinal Study of Adolescent Health (Add Health) to examine indicators of adolescent well-being across nuclear, single parent, and stepfamilies

and emphasized diversity within stepfamilies based on sibling relationships. Add Health began collecting data in 1994 from over 20,000 adolescents, among which are 2,734 pairs of siblings (442 pairs of half-siblings). Data were collected from children themselves, their parents, school friends, and school administrators. This study distinguished types of stepfamilies by labeling them as “pure” (one adult is the biological parent of all children in the family and there are no mutual children in the home), “blended” (the adults in the stepfamily also have a mutual child together), and “Brady Bunch” (each parent brought at least one child from a previous relationship and they may or may not have a mutual child together). Of children in the half-sibling sample, 1.9% indicated living in a nuclear family type, 38.7% in a single parent family, 23.3% in a “pure” stepfamily, 35.2% in a “blended” stepfamily, and .8% in a “Brady Bunch” family type. The majority of the sample was Caucasian. Because the study focused on stepparent effects, the analyses centered on the 35.2% of half-siblings who were in blended families.

Evenhouse and Reilly (2004) focused on 33 indicators of adolescent well-being; Six indicators of parental investment (e.g., child attends a private school; number of child’s extracurricular activities), 5 indicators of education (e.g., child’s self-reported GPA; child ever held back a grade), 5 indicators of risky behavior (e.g., child reports having had sex; child reports drinking alcohol away from adults), 4 indicators of child’s social network (e.g., number of children naming child as a friend; mean GPA of child’s friends), 10 indicators of relationship quality (e.g., my (step)mother is mostly warm and loving; I badly want to leave home), and 3 indicators of emotional health (e.g., child contemplated suicide in the last year; child often feels depressed). Additionally, the study used several control variables: length of time spent in family type, exposed to two or more stepparents, child gender, child race and ethnicity,



household income, household income-to-needs ratio, (step)mother works full time, low birth weight, and whether the child has an alcoholic biological parent.

Findings from this study, in some areas, contrast those of several other studies (e.g., Gennetian, 2005; Ginther & Pollak, 2004; Halpern-Meekin & Tach, 2008). There were some differences in the 33 outcome measures; however, the majority showed no statistical differences between biological children in nuclear families and those in step-nuclear hybrid families. Similar to previous studies, though, stepchildren and half-siblings living in the same household have similar outcomes. Also consistent with other studies, they found that stepchildren in step-nuclear hybrid families fare worse than stepchildren in simple blended families on one outcome.

Tillman (2008) also used a sample from ADD Health and focused on academic achievement and adjustment by looking at GPA and school-related behavior problems (e.g., having trouble getting along with students or teachers). Family structure variables classified youth as living in two biological parent families (N=6,628) (note: they included mutual children in stepfamilies in this group), married stepfather families (N=1,334), married stepmother families (N=292), cohabitating stepfather families (N=247), or single mother families (N=2,470). Furthermore, youth were classified according to sibling relatedness and grouped into one of four categories: (1) simple (i.e., include either no siblings or full biological siblings) (N=9,270), (2) complex (i.e., include stepsiblings) (N=244), (3) simple-blended (i.e., include half-siblings) (N=1,436), and (4) complex-blended (i.e., include both step- and half-siblings) (N=86). They controlled for race, gender, age, number of siblings in the household, immigration generation status, economic deprivation (e.g., level of education of resident parent), and time spent in the reported family structure.

In general, findings indicate that children growing up in a stepfamily have lower levels of academic achievement and higher levels of school-related behavior problems than do children growing up in nuclear families. Specifically, youth in cohabitating stepfather families were found to experience some of the poorest outcomes of all youth. Results also indicate that living with either step- or half-siblings during adolescence, regardless of “traditional” family category, is associated with more school-related behavior problems and living with a stepsibling is associated with lowered GPA scores. Interestingly, Tillman (2008) found that living with both step- and half-siblings is not any worse than living with only step- or half-siblings. Although initially controlling for gender, they also reported that males are more negatively affected by living in households with non-traditional siblings than females.

Halpern-Meehin and Tach (2008) also used data from ADD Health and examined the effect of family structure on adolescent outcomes. The findings from this study are similar to those of Ginther & Pollak (2004) and Gennetian (2005), but focus on academic, behavioral, and psychological outcomes of adolescents rather than only educational outcomes for young children. Further, Halpern-Meehin and Tach (2008) restricted their sample to include only siblings who were living with two married parents ( $n=1,769$ ). In this study, adolescents were classified into one of four sibling types: (1) simple two-parent family (a nuclear family), (2) shared children in blended families (the biological child of both residential parents who has a residential half-sibling), (3) stepchildren in blended families (the biological child of only one residential parent who has a residential half-sibling), and (4) stepchildren in stepfamilies (the biological child of only one residential parent who has no residential half-sibling). The final sample included 1,292 children in nuclear families, 122 biological children and 186 stepchildren in step-nuclear blended families, and 167 stepchildren in simple stepfamilies. The

majority of the sample was Caucasian (81.5%).

Halpern-Meekin and Tach (2008) examined four outcome variables: (1) GPA, (2) delinquency (e.g., how many times in the past 12 months have you deliberately damaged property that did not belong to you; sold marijuana or other drugs), (3) depressive symptoms (e.g., how often in the past week have you not felt like eating; had trouble keeping your mind on what you were doing), and (4) school detachment (e.g., how often since school started have you had trouble getting along with teachers; had trouble getting homework done). Various controls were used that included parental characteristics (e.g., parent education, parent income), relationship quality (e.g., marital relationship quality, parent-child relationship, sibling relationship), family instability (e.g., number of marriages of the parent, length of current relationship), and adolescent demographic variables (e.g., race, age, birth order).

Findings from this study were consistent with those of others (Ginther & Pollak 2004; Gennetian 2005; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008) in that they indicate biological children in step-nuclear hybrid families fare worse than biological children in nuclear families. Also consistent with previous studies, biological and stepchildren in step-nuclear hybrid families did not differ on outcomes in terms of delinquency, depression, or school detachment. However, the study did find that biological children in step-nuclear hybrid families have higher GPAs than do stepchildren in the same family. Differences between stepchildren with and without half-siblings were also found, although this comparison was not the focus of their study.

Strow and Strow (2008) also studied the effects of living in a step-nuclear family versus a nuclear family or living with a single mother. Like Gennetian (2005) and Ginther & Pollak (2004), this study also utilized a subsample of the NLSY-Child sample. The study classified

children into five groups: (1) nuclear families, (2) biological children in blended families, (3) stepchildren in blended families, (4) stepchildren in simple stepfamilies, and (5) single mother. They further distinguished the groups based on whether or not the half-sibling were maternal or paternal. Fourteen percent of participants identified as African American and 79% identified as Caucasian.

The study examined three different outcome measures: (1) the Behavioral Problem Index (BPI), (2) PIAT math, and (3) PIAT reading. This study considered the gender of the shared parent as a predictor and included a large number of independent variables as controls: the number of marriages of the mother, household income, mother employment, mother education, the mother's age at the birth of the child, whether or not the mother came from an intact household, receipt of welfare, the age of mother at first marriage, prenatal care, low birth weight, the mother's work history since the time the child was born, birth order of child, race, AFQT, and number of children in the family.

Similar to other studies, findings indicate that children who live with at least one half-sibling display more behavior problems than those living with no half-siblings. This is true for both biological and stepchildren living within step-nuclear families. Specifically, they also show on measures of reading that children living in a blended family with paternal half-siblings (presumably non-residential), and children with a single mother perform worse than children living in nuclear families with no half-siblings. Interestingly, they found that children in blended families with maternal half-siblings (i.e., likely residential), however, do not fare any worse in reading scores than children living in nuclear families. In the case of math scores, only those in a single mother family fare worse than children in nuclear families. Unique to this study, findings also indicate that stepchildren living without half-siblings do not display more

behavior problems than children living with nuclear families.

In summary, the majority of studies have found that biological children in step-nuclear hybrid families fare worse than biological children in nuclear families (Ginther & Pollak 2004; Gennetian 2005; Halpern-Meekin & Tach, 2008; Strow & Strow, 2008; Tillman, 2008), and that children with half-siblings fare worse than children without half-siblings (Cleveland et al., 2000; Strow & Strow, 2008; Tillman, 2008). Additionally, several studies have found no differences between biological and stepchildren in step-nuclear hybrid (Evenhouse & Reilly, 2004; Ginther & Pollak, 2004; Gennetian, 2005; Halpern-Meekin & Tach, 2008). Interestingly, Strow & Strow (2008) indicate no differences between stepchildren in simple stepfamilies and adolescents in nuclear families. While this was unique to their study, two other studies found that stepchildren in step-nuclear hybrid fare worse than stepchildren in simple step families (Evenhouse & Reilly, 2004; Halpern-Meekin & Tach, 2008).

### **Current Study**

All recent studies of family structure that explore the presence or influence of complex sibling relationships suggest increased attention in this area to replicate and extend the findings, given the considerable number of children with hybrid family relationships and the still limited attention in the research and the dearth of efforts to capture the full diversity of children's family structure experiences. In particular, mutual children in step-nuclear hybrid families have been "lost" in most family structure studies; their experiences overshadowed by those of biological children in first families. Emerging evidence indicates that children in these hybrid families are at greater risk for negative outcomes. The current study builds on previous work, utilizing a community-based, ethnically balanced, recent sample of youth and focuses on a range of outcomes (i.e., coping, sexual activity delay, and substance use). The study focused

on youth in two-parent families, both married and cohabiting. Comparisons that consider both "traditional" family structure categories and the presence of a half sibling were conducted.

In addition, the role of race and gender was examined, rather than controlled for as in most previous work. Only one study considered the effect of gender and found some distinctions in outcomes (Tillman, 2008); no previous study of family structure and complex sibling relationships has considered the possibility of racial differences. Scholars note that African American youth may be comparatively more accustomed to transitions and may be exposed to adaptive family processes that more readily incorporate nonbiologically-related members into the family system based on socio-historical experiences (McLanahan & Sandefur, 1994; Crosbie-Burnett & Lewis, 1993). Some very recent research finds no differences in well-being indicators in four large samples of African American youth in nuclear and stepfamilies (Adler-Baeder, Russell, Kerpelman, Pittman, Ketring, Smith, Lucier-Greer, Bradford, & Stringer, 2010). It may be that having a half-sibling does not increase the risk of negative outcomes for African American youth. Comparisons that consider race are warranted.

Further extending recent work, the study also examined the role of several contextual variables in predicting outcomes for mutual children. Most previous studies have controlled for factors that may predict variations within family structure/complex sibling categories. A next step, therefore, was to begin to uncover the more nuanced differences within group. Incorporating assumptions from social learning theory, the current study considered the age difference between siblings, gender match with sibling, residence of the half-sibling, and shared biological parent gender.

In summary, the following research questions were explored:

Hypothesis 1: Controlling for participant age, family size, socio-economic status (SES), parent marital status, gender, and race, there are differences in measures of coping, sexual activity delay, and alcohol and drug use between youth based on "traditional" family structure categories of nuclear and stepfamily.

Hypothesis 2: Controlling for participant age, family size, socio-economic status (SES), parent marital status, gender, and race, there are differences in measures of coping, sexual activity delay, and alcohol and drug use between youth based on the presence of a half-sibling, regardless of family structure category.

Research Question 1: Controlling for participant age, family size, socio-economic status (SES), parent marital status, gender, and race, are there differences in indicators of well-being based on combinations of half-sibling presence and family structure? This involved comparisons among 4 groupings of adolescents in two-parent families: (1) nuclear families, (2) biological children in step-nuclear hybrid families, (3) stepchildren in step-nuclear hybrid families, and (4) stepchildren in simple stepfamilies.

Research Question 2: Controlling for participant age, family size, socio-economic status (SES), and parent marital status, do these differences exist within gender and racial subgroups? That is, are there interactions of family structure and gender and family structure and race?

Research Question 3: Controlling for participant age, family size, socio-economic status (SES), and parent marital status, what is the comparative influence of several demographic and contextual variables on outcomes (i.e., gender, race, age difference between siblings, gender match with half-sibling, residence of half-sibling, and shared biological parent gender) among mutual children in step-nuclear hybrid families?

### **III. Methods**

#### **Sample and Procedure**

Secondary analyses were conducted using data from a statewide relationship education project. The original data were collected from participants who were part of the project during the fourth and fifth year (2009 - 2011) (N=2,555) after the demographic items in the surveys were adjusted so as to identify youth with half-siblings. The data used for the original study were collected using self-reports both prior to and after implementation of a relationship education intervention and were matched by participant code. The current study utilized only pre-program data collected prior to participation in the program.

Data were collected by family resource centers (FRC) located in eight counties in a Southern state. Three of those counties are considered rural, while the others are considered urban. Each FRC was responsible for recruiting youth to participate in the relationship education classes that were held in both school-based and non-school-based settings. Data were collected from various sites including middle or high schools, churches, after school programs, and summer camps. The surveys were administered by relationship/marriage educators trained in evaluation and data collection procedures.

Prior to participation in the study, adolescents and their guardians were informed of the purposes of the study, and each signed informed consent forms indicating their agreement to participate and release information for research purposes. Informed consent letters, master code



lists containing participant information, and completed surveys were mailed to the university and processed by the project research team.

The sample for this study was drawn from 2,555 adolescent youth, with 1138 adolescents completing surveys in project year 4 (Sample 1) and 1417 adolescents completing surveys in project year 5 (Sample 2). Both samples were restricted to those living in two parent households, leaving 722 adolescents in Sample 1 and 817 in Sample 2. Further, Due to small numbers, ethnicities other than European and African American were not used, resulting in a final sample size of 1,345 adolescent youth, with 609 adolescents in Sample 1 and 736 adolescents in Sample 2. Those with half-siblings could be identified in Samples 1 and 2; however due to adjustments made in survey items each year, the four family structure groups that consider both relationship to parents and relationship to siblings could only be determined from responses to items from Sample 2. Therefore, the two hypotheses (i.e., those focused on traditional classification or presence of half-sibling only) were answered using a combination of Samples 1 and 2, two of the research questions (i.e., those focused on both family structure and half-sibling presence) used only Sample 2, and the final research question used a subsample of Sample 2 (i.e., those who could be identified as biological children in step-nuclear hybrid families). For this reason, demographic characteristics are presented separately for each sample.

For sample 1, 68% identified as European American youth (n=414) and 32% African American youth (n=195). Gender composition was 60% female (n=367) and 40% male (n=241). The average age of participants was 15.54 (Median = 15.6; Range = 9, SD = 1. 12). Participants were asked about their parent's education. For mothers, 7% did not complete high school (n=43), 25% completed high school only (n=149), 19% completed some college

(n=113), 11% completed a 2-year college program (n=67), 25% completed 4 years of college (n=145) and 13% had post college education (n=76). For fathers, 12% did not complete high school (n=73), 33% completed high school only (n=193), 20% completed some college (n=118), 11% completed a 2-year college program (n=65), 15% completed 4 years of college (n=90) and 9% had post college education (n=50).

Adolescents in Sample 2 were demographically similar to those in Sample 1. Sixty-eight percent identified as European American youth (n=498) and 32% as African American youth (n=238). The average age of participants was 15.67 (Median = 15; Range = 9, SD = 1.07). Gender composition was 56% female (n=410) and 44% male (n=321). Participants were asked about their parent's education. For mothers, 13% did not complete high school (n=92), 24% completed high school only (n=174), 22% completed some college (n=158), 9% completed a 2-year college program (n=67), 22% completed 4 years of college (n=159) and 10% had post college education (n=70). For fathers, 17% did not complete high school (n=121), 33% completed high school only (n=234), 18% completed some college (n=126), 10% completed a 2-year college program (n=74), 15% completed 4 years of college (n=104) and 7% had post college education (n=52). For the final research question, a subsample of Sample 2 was used, utilizing only those who were classified as biological children in a step-nuclear hybrid family (n=84).

## **Measures**

**Demographic Variables.** Participants completed items on the survey indicating demographic information. Adolescents were asked to separately fill in or circle the options that described their age, gender and ethnic background. Educational level of both the participant's mother and father was obtained and used as a proxy for socio-economic status. Adolescents

were asked to circle one of the following in regards to their parent's education level: less than high school, completed high school, some college, 2 year college/Technical school degree, 4 year college degree, or post college degree (e.g., Master's, Ph.D., M.D., Ed.D.). Responses were coded as a continuous variable from 1 to 6; higher values indicate a higher level of education and relatedly, higher socio-economic status. Age was coded as a continuous variable and represents the actual age in years reported. Gender was dummy coded with 1 indicating girls and 0 indicating boys. Ethnic background was also dummy coded, with 1 indicating European American and 0 indicating African American.

### **Independent Variables**

*Family structure groupings.* For testing hypothesis 1, participants were classified into *traditional family structure* categories of two-parent nuclear family or stepfamily. A participant was coded as living in a two-parent nuclear family if they responded to the item "Were your biological/adoptive parents ever married?" with "Yes, and they are still together" or "No, but they are together in a relationship." A participant was coded as living in a stepfamily if they responded yes to the item "Are you part of a step- or blended family?" In the combined sample, 818 are classified as living in a two-parent nuclear family and 527 as living in a stepfamily.

For testing hypothesis 2, participants were classified as either having a half-sibling or not having a half-sibling (i.e., dummy coded 0, 1 for *half-sibling presence*). For Sample 1, a participant was coded as having a half-sibling if they answered yes to the item "Do either of your parents have a child from a previous relationship?" For Sample 2, a participant was classified as having a half-sibling if they answered "yes, my mother does" or "yes, my father does" or "yes, both parents do" to the previous item or if they indicated they have a half-sibling in the "who is in your family?" demographic table in the Sample 2 questionnaire. In the

combined sample, 544 participants reported having a half-sibling. Note this under represents those with half-siblings since there was not an item to capture the presence of younger half-siblings on the Sample 1 questionnaire.

For the three research questions, only Sample 2 was utilized since the “who is in your family?” demographic table was not used in the Sample 1 questionnaire and youth are more likely to be miscategorized. Respondents in Sample 2 were categorized into four complex family structure groups based on sibling relatedness and parent marital status: (1) nuclear, (2) biological child in step-nuclear hybrid family, (3) stepchild in step-nuclear hybrid family, or (4) stepchild in a simple stepfamily. Adolescents were considered to be in a nuclear family type if they were currently living with both biological parents and were fully biologically related to all siblings in the household. Biological children in a step-nuclear hybrid family were currently living with both biological parents and had at least one half-sibling. Stepchildren in step-nuclear hybrid families were currently living with one biological parent and had at least one half-sibling. Finally, stepchildren in simple stepfamilies were currently living with one biological parent and had no half-siblings.

A noncontinuous, categorical variable for *complex family structure* groups was constructed. A participant was coded as living in a nuclear family if they responded to the item “Were your biological/adoptive parents ever married?” with “Yes, and they are still together” or “No, but they are together in a relationship” and also responded no to the item “Do either of your parents have a child from a previous relationship” and did not indicate any half-siblings in the “who is in your family?” demographic table in the Sample 2 questionnaire. A participant was coded as a biological child in a step-nuclear hybrid family if they responded to the item “Were your biological/adoptive parents ever married?” with “Yes, and they are still together”

or “No, but they are together in a relationship” and also responded yes to the item “Do either of your parents have a child from a previous relationship” or indicated any half-siblings in the “who is in your family?” demographic table in the Sample 2 questionnaire. A participant was coded as a stepchild in a step-nuclear hybrid family if they responded yes to the item “Are you part of a step- or blended family” and also responded yes to the item “Do either of your parents have a child from a previous relationship” or indicated any half-siblings in the “who is in your family?” demographic table in the Sample 2 questionnaire. Finally, a participant was coded as being in a simple stepfamily if they responded yes to the item “Are you part of a step- or blended family” and also responded no to the item “Do either of your parents have a child from a previous relationship” and did not indicate any half-siblings in the “who is in your family?” demographic table in the Sample 2 questionnaire. Two hundred ninety-five participants were classified as biological children who live in a nuclear first family (233 European Americans, 62 African Americans), 84 as biological children living in a step-nuclear hybrid family (50 European Americans, 34 African Americans), 238 as stepchildren living in a step-nuclear hybrid family (145 European Americans, 93 African Americans), and 119 as stepchildren living in a simple stepfamily (70 European Americans, 49 African Americans).

For the final research question, only a subsample of Sample 2 (i.e., those classified as biological children living in a step-nuclear hybrid family) was used. Because the research question required demographic information on at least one half-sibling, only those who included this information were included in these analyses. Therefore, those who indicated one or more parent had a child from a previous relationship (n=89) but did not list the half-sibling in the demographic table were not included (n=49). Using the subsample of Sample 2, *age difference between siblings* was coded by subtracting the age of the younger sibling from the

older sibling (half-sibling closest in age was used if more than 1 was reported). *Sibling gender match* was coded by subtracting the value of respondent gender from reported half-sibling gender. Those with a value of 0 were coded a 1 for match; those with a value greater than 0 were coded a 0 for match. *Sibling living arrangement* was created using information from the “who is in your family?” demographic table on the survey. A dummy code of 1 indicated that the half-sibling resided with the respondent; a code of 0 indicated that the half-sibling did not reside with the respondent. Finally, *shared biological parent gender* was examined using the item “Do either of your parents have a child from a previous relationship?” If respondents answered yes to “My mother does,” they were given a code of 1. If they answered yes to “My father does,” they were given a code of 0. If they answered yes to “Both parents do,” they were given a code of 1. This variable was used as a proxy for physical proximity of a half-sibling and children are more likely to live with their mother than father after a separation or divorce (Kelly, 2007).

Often in previous studies, birth order is controlled for. While the literature on birth order and adolescent outcomes is extensive, it is very contradictory (e.g., Higgins, Reed, & Reed, 1982; Steelman & Powell, 1985; Zajonc & Mullally, 1997) and much of the recent work suggests that birth order has little impact (Wichman, Rodgers, & MacCallum, 2006). Although it can be expected that biological children in step-nuclear hybrid families are primarily younger siblings and stepchildren in step-nuclear hybrid families are primarily older, birth order was not examined or controlled in this study, given the limited evidence of effects on the outcomes of interest. The current study did consider age difference between siblings and did examine whether controlling for age affected results.

## **Dependent Variables**

The current study utilized measures of coping, sexual activity delay, and alcohol and drug use as indicators of adolescent well-being. The majority of recent research looking at family structure with complicated sibling relationships has focused on cognitive and educational outcomes (e.g., Gennetian, 2005, Ginther & Pollak, 2004; Strow and Strow, 2008; Tillman, 2008). In order to extend these findings, this study aimed to examine measures outside of the realm of academic achievement. Research has found differences based on “traditional family” structure classifications and/or sibling relationships on internalizing problems (e.g., Garasky, 1995; Brody, 1998), early sexual involvement (e.g., Fomby & Cherlin, 2007), and substance use (e.g., Rowe & Gulley, 1992). Therefore, these outcome domains warrant further attention when examining family structure and sibling relationships together.

***Coping.*** The Problem-Focused Style of Coping (PF-SOC; Heppner et al., 1995) (Appendix A) is an 18-item multidimensional measure of problem solving (i.e., an indicator of social skills) consisting of three subscales: Reflective Style, Reactive Style, and Suppressive Style. Only the Reflective Style (e.g., “I consider the short-term and long-term consequences of each possible solution to my problems”), and Reactive Style (i.e., “my old feelings get in the way of solving current problems”) were collected and used in this study. Respondents were asked to rate how often they engaged in each item across a 5-point Likert-type scale ranging from 1 (almost never) to 5 (almost all of the time). Responses for Reactive Coping were reversed scored. In general, higher scores on Reactive and lower scores on Reflective Style indicate greater problem-solving deficits. Evidence for the construct validity and utility of the PF-SOC scales has been reported in Heppner et al. (1995) ( $\alpha = .77$  for Reflective;  $\alpha = .73$  for Reactive). The Chronbach’s alpha reliability for the current study ranged from  $\alpha = .63$  to  $.74$ ,

depending on the sample. While reliability of .70 or higher is generally most desirable, values between .60 and .70 are not unacceptable (DeVellis, 1991).

***Sexual activity delay.*** Participants were asked six questions about their intent to wait to have sex until they are older (Appendix B; Gardner, Giese, & Parrott, 2004). Using a 5-point Likert-type scale, responses ranged from strongly disagree (1) to strongly agree (5). Questions included items such as, "I intend to have sex while I am a teen (reverse coded)" and "I intend to wait to have sex until I can handle the things that may result from having sex." Possible scores ranged from 5 to 25, with higher scores indicating greater intent to wait. Evidence for the construct validity and utility of the scale has been reported in Gardner et al. (2004) ( $\alpha = .81$ ). The Chronbach's alpha reliability for the current study ranged from  $\alpha = .70$  to .86 depending on the sample.

***Alcohol and drug use.*** Participants were asked to answer 10 questions about their substance use (Appendix C; adapted from Winters & Zenilman, 1994). Questions include items such as, "Have you felt that you use too much alcohol?" and "Do you feel you have a drug problem now?" Responses are either yes (1) or no (0). Response values were added up to calculate a risk level for each participant. Scores ranged from 10 (highest risk) to 0 (no risk).

### **Plan of Analyses**

In order to test differences in measures of coping, sexual activity delay, and alcohol and drug use between youth based on "traditional" family structure categories of nuclear and stepfamily (H1), SPSS 17.0 was utilized and univariate analysis of covariance (ANCOVA) was conducted for each outcome using the combined samples.

In order to test differences in measures of coping, sexual activity delay, and substance use between youth based on the presence of a half-sibling, regardless of family structure



category (H2), univariate analysis of covariance (ANCOVA) was conducted for each outcome using the combined samples.

In order to test whether there are differences in indicators of well-being based on combinations of half-sibling presence and family structure (RQ1), four groupings of adolescents in two-parent families were created with Sample 2 based on responses to items regarding parents' marital/relationship status and the presence of a half-sibling: (1) nuclear families, (2) biological children in step-nuclear hybrid families, (3) stepchildren in step-nuclear hybrid families, and (4) stepchildren in simple stepfamilies. Univariate analysis of covariance (ANCOVA) was then utilized to examine differences for each outcome measure between groups.

In order to test for gender by family structure interactions and race by family structure interactions (RQ2), 2(gender) X 4(family structure) and 2(race) X 4(family structure) full factorial models were tested using Sample 2. The four groupings of family structure based on parents' marital/relationship status and the presence of a half-sibling were used.

In order to examine the comparative influence of gender, race, age difference between siblings, gender match with half-sibling, residence of half-sibling and shared biological parent gender on outcomes among mutual children in step-nuclear hybrid families (RQ3), hierarchical linear regression was conducted using the subsample of mutual children Sample 2.

## IV. Results

### Preliminary Analyses

Preliminary assumption testing was conducted to check for normal distribution, skewness, kurtosis, independence, normality, and sphericity/equality in variance, reliability and homogeneity (Table 1). Assumptions were supported for most analyses. Violations of Levene's test for equality of variance occur in the analysis of Traditional Family structures on alcohol and drug use and the analysis of the presence of a half-sibling on alcohol and drug use. Although this assumption was not met, analysis of covariance (ANCOVA) is reasonably robust to violations of this assumption, provided a large sample size and reasonably similar group size (Stevens, 1996). For each hypothesis or research question, the inclusion of covariates was guided by the relationship between covariates and the outcomes, which was determined using the Pearson Correlation procedure (See Tables 2, 3 and 4).

Table 1.  
*Descriptive Statistics for Coping, Sexual Activity Delay, and Alcohol and Drug Use for All Samples*

Sample	Scale	Descriptive Statistics							
		N	Min.	Max.	M	SD	Skewness	Kurtosis	Reliability
Sample 1	Coping	1342	1	5	3.26	.77	-.155	-.185	.67
	Sex. Activity	1336	1	5	3.56	.10	-.313	-.603	.86
	Alc. & Drug Use	1270	0	8	1.49	1.69	1.22	1.24	
Sample 2	Coping	735	1	5	3.26	.78	-.196	-.138	.63
	Sex. Activity	729	1	5	3.47	.93	-.267	-.392	.80
	Alc./Drug Use	683	0	8	1.55	1.67	1.08	.843	
Subsample of Sample 2	Coping	49	1.17	4.67	3.17	.75	-.275	-.176	.74
	Sex. Activity	49	1.60	5	3.55	.92	-.188	-.613	.70
	Alc./Drug Use	48	0	6	1.46	1.61	.896	-.130	

Table 2.  
*Pearson Correlations for Covariates and Outcomes using a Combined Sample*

		Coping	Sexual Activity Delay	Alcohol and Drug Use
Gender (1=female, 0=male)	Pearson Correlation	.48*	.344***	-.184***
	Sig. (1-tailed)	.041	.000	.000
Ethnicity (1=EA, 0=AA)	Pearson Correlation	.008	.036	.056*
	Sig. (1-tailed)	.385	.094	.023
Age	Pearson Correlation	.052*	-.124***	.179***
	Sig. (1-tailed)	.028	.000	.000
SES	Pearson Correlation	.133***	.127***	-.133***
	Sig. (1-tailed)	.000	.000	.000
Family Size	Pearson Correlation	-.040	-.019	.026
	Sig. (1-tailed)	.102	.276	.210
Parent Marital Status	Pearson Correlation	.103***	.095***	-.054*
	Sig. (1-tailed)	.000	.000	.027

Note. ~  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 3.  
*Pearson Correlations for Covariates and Outcomes using Sample 2*

		Coping	Sexual Activity Delay	Alcohol and Drug Use
Gender (1=female, 0=male)	Pearson Correlation	.022	.324***	-.171***
	Sig. (1-tailed)	.275	.000	.000
Ethnicity (1=EA, 0=AA)	Pearson Correlation	.079*	.100***	.018
	Sig. (1-tailed)	.016	.003	.323
Age	Pearson Correlation	-.013	-.093**	.187***
	Sig. (1-tailed)	.361	.006	.000
SES	Pearson Correlation	.131***	.095**	-.083*
	Sig. (1-tailed)	.000	.005	.015
Family Size	Pearson Correlation	-.056	-.045	.062
	Sig. (1-tailed)	.094	.145	.078
Parent Marital Status	Pearson Correlation	.122***	.090**	-.078*
	Sig. (1-tailed)	.000	.007	.020

Note. ~  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 4.  
*Pearson Correlations for Predictors, Controls and Outcomes using a Subsample of Mutual Children in Sample 2*

		Coping	Sexual Activity Delay	Alcohol and Drug Use
Gender (1=female, 0=male)	Pearson Correlation	.103	.50 <sup>***</sup>	-.187
	Sig. (1-tailed)	.244	.000	.104
Ethnicity (1=EA, 0=AA)	Pearson Correlation	-.181	.367 <sup>**</sup>	-.032
	Sig. (1-tailed)	.106	.005	.415
Age	Pearson Correlation	-.092	-.017	.307 <sup>*</sup>
	Sig. (1-tailed)	.265	.455	.017
SES	Pearson Correlation	.395 <sup>**</sup>	-.138	-.214
	Sig. (1-tailed)	.003	.180	.079
Family Size	Pearson Correlation	-.152	-.132	.198
	Sig. (1-tailed)	.191	.224	.131
Parent Marital Status	Pearson Correlation	-.070	.308 <sup>*</sup>	.126
	Sig. (1-tailed)	.316	.016	.196
Gender Match	Pearson Correlation	-.055	-.082	-.208
	Sig. (1-tailed)	.357	.292	.083
Age Difference	Pearson Correlation	.206	.434 <sup>**</sup>	-.046
	Sig. (1-tailed)	.092	.002	.386
Residence	Pearson Correlation	.219	-.196	.159
	Sig. (1-tailed)	.137	.164	.219
Shared Parent	Pearson Correlation	-.190	-.339 <sup>*</sup>	.057
	Sig. (1-tailed)	.103	.011	.354

*Note.* ~  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Hypothesis 1: There are differences in indicators of well-being between youth based on "traditional" family structure categories.**

A one-way between groups analysis of covariance (ANCOVA) was conducted using the combined samples to compare the differences in measures of coping, sexual activity delay, and

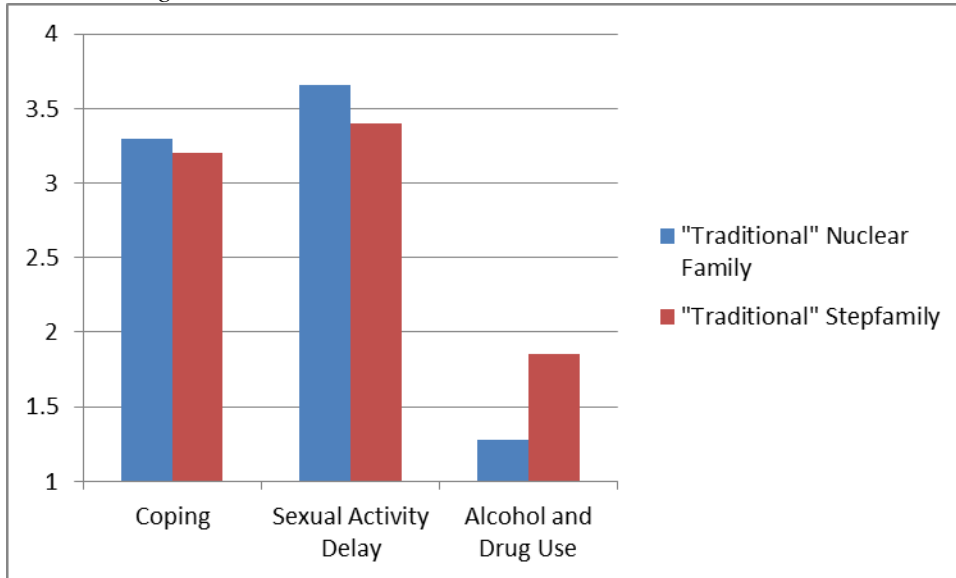
alcohol and drug use between two groups of adolescents based on “traditional” family structure categories (Table 5; Figure 1).

Table 5.  
*Between-Groups Analysis of Covariance of Outcomes on Traditional Family Structure Categories*

	Trad. Nuclear (N=818)		Trad. Stepfamily (N=527)		<i>F</i>	Sig
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Coping	3.3	.76	3.2	.79	.744	.389
Sexual Activity Delay	3.66	1.01	3.4	.97	10.8	.001
Alcohol/Drug Use	1.28	1.60	1.85	1.76	23.2	.000

After controlling for gender, participant age, SES, and parent marital status, there was a significant difference between nuclear and stepfamily groups on *Sexual Activity Delay*,  $F(1, 1291) = 10.8, p = .001$ , partial eta squared = .008. Similarly, after controlling for gender, race, participant age, SES, and parent marital status, there was a significant difference between nuclear and stepfamily groups on *Alcohol and Drug Use*,  $F(1, 1228) = 23.2, p = .000$ , partial eta squared = .019. On average, adolescents in stepfamilies were less likely to delay sexual activity and more likely to engage in alcohol and drug use than adolescents in nuclear families. After controlling for gender, participant age, SES and parent marital status, there was no significant difference between nuclear and stepfamily groups on *Coping*,  $F(1, 1299) = .744, p = .389$ , partial eta squared = .001.

Figure 1.  
*The Effect of Traditional Family Structure Categories on Measures of Coping, Sexual Activity Delay, and Alcohol and Drug Use*



**Hypothesis 2: There are differences in indicators of well-being between youth based on the presence of a half-sibling, regardless of family structure category.**

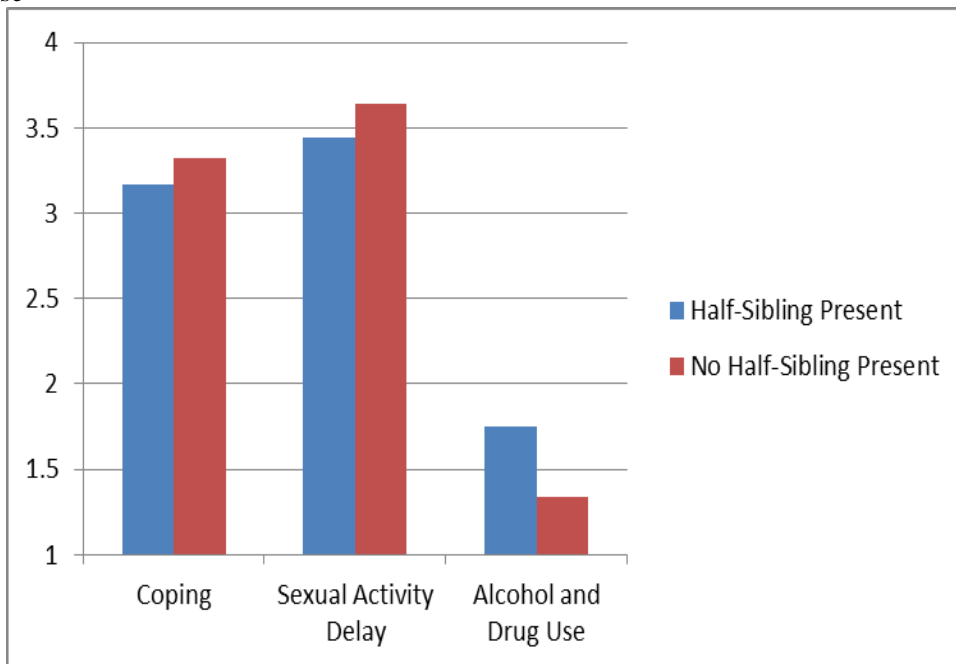
A one-way between groups analysis of covariance (ANCOVA) was conducted using the combined samples to compare the differences in measures of coping, sexual activity delay, and alcohol and drug use between two groups of adolescents based on the presence of a half-sibling, regardless of family structure category (Table 6; Figure 2).

Table 6.  
*Between-Groups Analysis of Covariance of Outcomes based on Half-Sibling Presence*

	Half-Sibling (N=544)		No Half-Sibling (N=801)		<i>F</i>	Sig
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Coping	3.17	.76	3.32	.78	5.36	.021
Sexual Activity Delay	3.44	.95	3.64	1.03	11.6	.001
Alcohol/Drug Use	1.75	1.7	1.34	1.62	16.8	.000

After controlling for gender, participant age, SES and parent marital status, there was a significant difference between those with half-siblings and those without half-siblings on *Coping*,  $F(1, 1299) = 5.36, p = .021$ , partial eta squared = .004. Similarly, after controlling for gender, participant age, SES, and parent marital status, there was a significant difference between those with half-siblings and those without half-siblings on *Sexual Activity Delay*,  $F(1, 1291) = 11.61, p = .001$ , partial eta squared = .009. Additionally, after controlling for gender, race, participant age, SES, and parent marital status, there was a significant difference between those with half-siblings and those without half-siblings on *Alcohol and Drug Use*,  $F(1, 1228) = 16.8, p = .000$ , partial eta squared = .013. On average, adolescents who have half-siblings had poorer coping skills, were less likely to delay sexual activity and more likely to engage in alcohol and drug use.

Figure 2.  
*The Effect of Half-Sibling Presence on Measures of Coping, Sexual Activity Delay, and Alcohol and Drug Use*



**Research Question 1: Are there differences in indicators of well-being based on combinations of half-sibling presence and family structure? This involved comparisons among 4 groupings of adolescents in two-parent families: (1) nuclear families, (2) biological children in step-nuclear hybrid families, (3) stepchildren in step-nuclear hybrid families, and (4) stepchildren in simple stepfamilies.**

A one-way between groups analysis of covariance (ANCOVA) was conducted using Sample 2 to compare the differences in measures of coping, sexual activity delay, and alcohol and drug use between four groupings of family structure based on parents' marital/relationship status and the presence of a half-sibling (Table 7; Figure 3).

Table 7.  
*Between-Groups Analysis of Covariance of Outcomes on Family Structure grouping by Parent-Child Relationship and Sibling Structure*

	Nuclear (N=295)		Bio in Hybrid (N=84)		Step in Hybrid (N=238)		Simple Step (N=119)		F	Sig
	M	SD	M	SD	M	SD	M	SD		
Coping	3.4	.77	3.19	.75	3.12	.81	3.22	.77	2.14	.09
Sex. Activity Delay	3.61	.94	3.46	.82	3.29	.93	3.46	.96	3.21	.023
Alc./Drug Use	1.16	1.48	1.62	1.67	1.91	1.84	1.82	1.62	6.1	.000

After controlling for gender, race, participant age, SES, and parent marital status, there was a significant difference between family structure groups on *Sexual Activity Delay*,  $F(3, 698) = 3.21, p = .023$ , partial eta squared = .014. Least significant difference (LSD) post hoc tests indicated a difference between adolescents in a nuclear family ( $M = 3.61, SD = .95$ ) and stepchildren in a step-nuclear hybrid family ( $M = 3.3, SD = .93$ ). On average, adolescents in nuclear families were more likely to delay sexual activity than stepchildren in step-nuclear hybrid families (i.e., those with half-siblings). There was also a difference found between

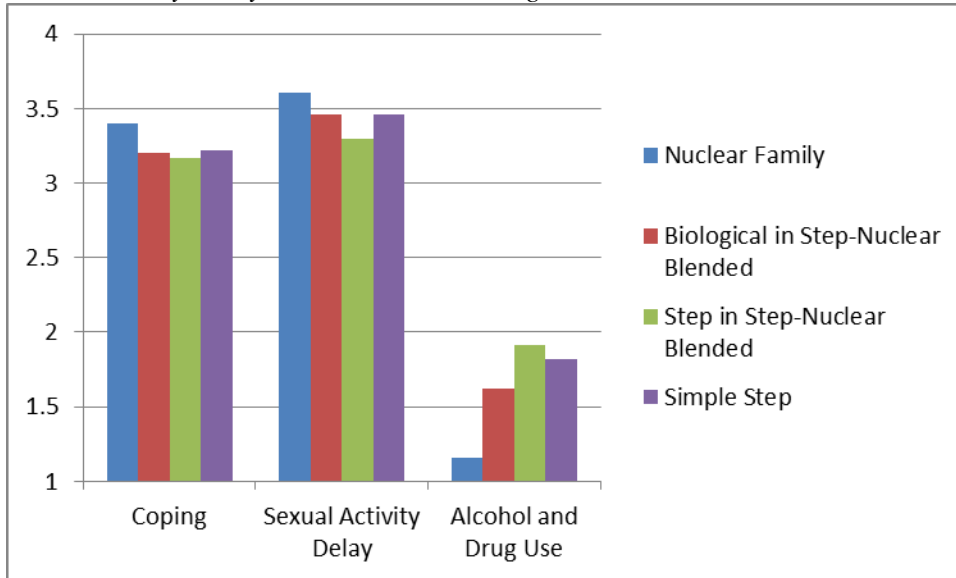


stepchildren in step-nuclear hybrid families ( $M = 3.3$ ,  $SD = .93$ ) and stepchildren in simple stepfamilies ( $M = 3.46$ ,  $SD = .96$ ) (i.e., stepchildren in simple stepfamilies were likely to delay sexual activity). No difference was found between biological and stepchildren in step-nuclear hybrid families or biological children in step-nuclear hybrid families and those in nuclear families. Additionally, there was no difference between adolescents in a nuclear family and those in a simple stepfamily.

Similarly, after adjusting for gender, participant age, SES, and parent marital status, there was a significant difference between family structure groups on *Alcohol and Drug Use*,  $F(3, 662) = 6.91$ ,  $p = .000$ , partial eta squared = .03. LSD Post hoc tests indicated a difference between adolescents in a nuclear family ( $M = 1.16$ ,  $SD = 1.48$ ) and biological children in step-nuclear hybrid families ( $M = 1.62$ ,  $SD = 1.67$ ), stepchildren in step-nuclear hybrid families ( $M = 1.91$ ,  $SD = 1.85$ ), and stepchildren in simple stepfamilies ( $M = 1.82$ ,  $SD = 1.62$ ). On average, adolescents in nuclear families were less likely to participate in alcohol and drug use than adolescents in any other family type. There were no differences among the youth in non-nuclear families.

After controlling for race, SES, and parent marital status, the difference between family structure groups on *Coping* approached significance,  $F(3, 712) = 2.14$ ,  $p = .09$ , partial eta squared = .009. LSD post hoc indicated a trend towards significant differences between adolescents in a nuclear family ( $M = 3.4$ ,  $SD = .77$ ) and stepchildren in a step-nuclear hybrid family ( $M = 3.12$ ,  $SD = .8$ ), such that on average, adolescents in a nuclear family indicated better coping skills than stepchildren in a step-nuclear hybrid family.

Figure 3.  
*The Effect of Family Structure by Parent-Child Relationship and Sibling Structure on Measures of Coping, Sexual Activity Delay, and Alcohol and Drug Use*



**Research Question 2: Do these differences exist within gender and racial subgroups?**

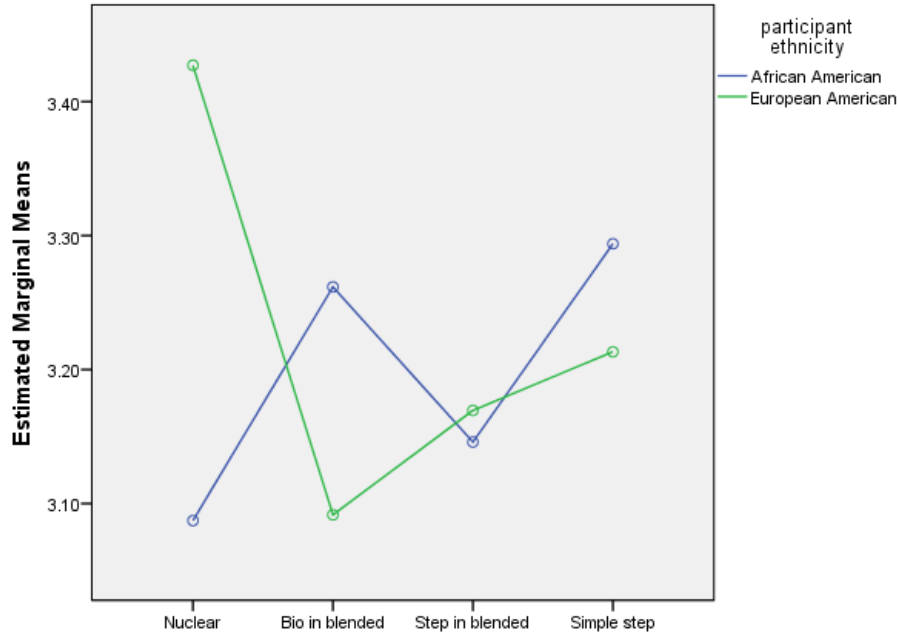
**That is, are there interactions of family structure and gender and family structure and race?**

In order to test for interactions of family structure and gender and family structure and race (RQ4), 2(gender) X 4(family structure) and 2(race) X 4(family structure) full factorial models were conducted using Sample 2.

After controlling for all relevant covariates, a significant race by family structure interaction effect was found for *Coping*,  $F(3, 539) = 2.65, p = .048$ , partial eta squared = .015 (See Figure 4). Post hoc analyses were conducted to determine the meaning of differences based on race. Analyses indicated a difference between European American adolescents in a nuclear family ( $M = 3.47, SD = .70$ ) and European American biological adolescents in a step-nuclear hybrid family ( $M = 3.09, SD = .68$ ) as well as European American stepchildren in a step-nuclear hybrid family ( $M = 3.15, SD = .74$ ). On average, European American adolescents

in nuclear families scored significantly higher on measures of coping than European American biological and stepchildren in step-nuclear hybrid families. This same pattern was not evident for African American youth. There was no significant gender by family structure interaction effect for *Coping*,  $F(3, 705) = .63, p = .596, \text{partial } \eta^2 = .003$ .

Figure 4.  
The Interaction Effect of Family Structure by Race on Coping



After controlling for participant age, SES, and parent marital status, there was no significant race by family structure interaction effect for *Sexual Activity Delay*,  $F(3, 695) = .382, p = .773, \text{partial } \eta^2 = .004$ . Additionally, there was no significant gender by family structure interaction effect for *Sexual Activity Delay*,  $F(3, 695) = .151, p = .916, \text{partial } \eta^2 = .001$ .

Similarly, after controlling for participant age, SES, and parent marital status, there was no significant race by family structure interaction effect for *Alcohol and Drug Use*,  $F(3, 658) = .942, p = .42, \text{partial } \eta^2 = .004$ . Additionally, there was no significant gender by family

structure interaction effect for *Alcohol and Drug Use*,  $F(3, 659) = 1.56, p = .198$ , partial eta squared = .007.

Although there was no significant race by family structure interactions for *Sexual Activity Delay* or *Alcohol and Drug Use*, further exploratory analyses indicated differences when examining within subgroups. For European American participants, a significant difference was found for *Sexual Activity Delay*,  $F(3, 48) = 2.86, p = .036$ , partial eta squared = .018. LSD post hoc analyses indicated a difference between adolescents in nuclear families ( $M = 3.66, SD = .95$ ) and stepchildren in step-nuclear hybrid families ( $M = 3.3, SD = .94$ ). On average, European American adolescents in nuclear families were more likely to delay sexual activity than European American stepchildren in step-nuclear hybrid families. No difference was found between family groups among African American youth,  $F(3, 211) = .76, p = .519$ , partial eta squared = .01.

Similarly, when examining European American participants, a significant difference was found for *Alcohol and Drug Use*,  $F(3, 447) = 5.1, p = .002$ , partial eta squared = .033. LSD post hoc analyses indicated a difference between adolescents in nuclear families ( $M = 1.18, SD = 1.51$ ) and stepchildren in step-nuclear hybrid families ( $M = 2.1, SD = 1.95$ ). On average, European American adolescents in nuclear families were less likely to use alcohol and drugs than European American stepchildren in step-nuclear hybrid families. There was no difference found between family groups for African American youth,  $F(3, 207) = 1.44, p = .233$ , partial eta squared = .02.

While there was no significant gender by race interaction for *Coping*, *Sexual Activity Delay*, or *Alcohol and Drug Use*, further exploratory analyses indicated differences on *Alcohol and Drug Use* when examining within subgroups. There was a significant difference found for

males between family structures on *Alcohol and Drug Use*,  $F(3, 290) = 4.68, p = .003$ , partial eta squared = .046. LSD post hoc analyses indicated a difference between adolescents in nuclear families ( $M = 1.4, SD = 1.6$ ) and biological adolescents in step-nuclear hybrid families ( $M = 2.1, SD = 1.86$ ), as well as stepchildren in step-nuclear hybrid families ( $M = 2.4, SD = 1.99$ ). On average male adolescents in nuclear families were less likely to use alcohol and drugs than both biological and stepchildren in step-nuclear hybrid families. There was no difference found for female adolescents in the sample,  $F(3, 336) = 2.43, p = .07$ , partial eta squared = .02.

**Research Question 3: Among mutual children in step-nuclear hybrid families, what is the comparative influence of several demographic and contextual variables on outcomes (i.e., gender, race, age difference between siblings, gender match with half-sibling, residence of half-sibling, & shared parent gender)?**

Before conducting hierarchical linear regression (HLR) using the subsample of mutual children in step-nuclear hybrid families in Sample 2, initial correlation statistics for the predictors, controls, and outcomes were examined (see Table 4 presented previously). Results show only one significant correlation between age and alcohol and drug use, and one significant correlation between SES and coping. Therefore, HLR analysis could only be conducted on *Sexual Activity Delay* (Table 8).

Table 8.  
*Summary of Hierarchical Regression Analysis for Variables Predicting Sexual Activity Delay for Biological Adolescents in Step-Nuclear Hybrid Families (N = 49)*

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Parent Marital Status	1.52	.67	.37*	.92	1.11	.22
Gender				.59	.27	.30*
Ethnicity				.14	.28	.07
Age Difference				.06	.02	.32*
Shared Parent Gender				-.44	.25	-.24~
$R^2$		.13			.48	
<i>F</i> for change in $R^2$		5.69*			5.48**	

Note. ~  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Parent marital status was entered as a control at Step 1, explaining 13.3% of the variance in *Sexual Activity Delay*. After entry of age difference between siblings, gender, ethnicity, and shared biological parent gender at Step 2, the total variance explained by the model was 47.9%,  $F(5, 33) = 6.07, p < .001$ . The predictors explained an additional 34.6% of the variance after controlling for parent marital status,  $R^2$  change = .346,  $F$  change (4, 33) = 5.48,  $p < .001$ . In the final model, only age difference between siblings (beta = .32,  $p < .05$ ) and gender (beta = .30,  $p < .05$ ) were significant with age difference between siblings being the most potent predictor. The relationships indicate that, on average, participants who had a greater age difference with their half-sibling and participants who were female, were more likely to delay sexual activity. In turn, male participants and those closer in age to their half sibling were less likely to delay sexual activity. Shared biological parent gender approached significance (beta = -.24,  $p = .08$ ), such that participants who shared a mother with their half-sibling (and therefore are more like to live or have lived together) were less likely to delay sexual activity.

## **V. Discussion**

Recent studies of family structure that explore the presence or influence of complex sibling relationships indicate that children in hybrid families are at greater risk for negative outcomes. Traditional classifications of family structure that consider only the relationship between the parent(s) in the household and the children fail to capture the complexity of family structure for many adolescents, particularly shared biological children in step-nuclear hybrid families. While children in this type of family are most commonly classified as living in a nuclear family, their experience is distinct from other children in nuclear families due to the presence of one or more half-siblings. Additionally, using such broad classifications does not allow for the distinction between adolescents in stepfamilies who have half-siblings and those who do not. Therefore, the purpose of this study was to utilize a more nuanced view of family structure by capturing parent-child relationships as well as sibling relationships, and to extend previous work by utilizing a community-based, ethnically balanced, recent sample of youth and focus on a range of outcomes (i.e., coping, sexual activity delay, and substance use). Additional unique contributions are the examinations of the potential role of race and gender on family structure comparisons, and the within group examination of several contextual variables in predicting outcomes for biological children in step-nuclear hybrid families. Another contribution of the study is the summary of theoretical approaches and the synthesis and explication of a theoretical framework to guide research related to adolescent outcomes in complex family structures.

### **Traditional Family Structure Categories**

Consistent with previous findings (e.g., Cherlin, 2008; Coleman, Ganong, & Fine, 2000; Halpern-Meekin & Tach, 2008; Hetherington et al., 1999; Sweeney, 2010), comparisons of “traditional” family structure groupings of nuclear and stepfamilies revealed expected differences for two of the three outcomes measured. On average, adolescents living in nuclear families were more likely to delay sexual activity and less likely to use alcohol and drugs than adolescents living in stepfamilies. This finding offers support for bio-evolutionary, resource, stress, and selection theories which all suggest that living in a stepfamily enhances the likelihood of risk-taking behaviors of adolescents (e.g., Cherlin, 2008; Coleman, Ganong, & Fine, 2000). While these results were expected, traditional classification of family structure fails to capture the complexity and the variations within family structure groups, particularly those involving complicated sibling relationships.

### **The Effect of having a Half-Sibling regardless of Family Structure**

To explore the effect of complicated sibling relationships, the study then examined groups based on the presence of a half-sibling, regardless of family structure. Findings indicate a difference between adolescents with a half-sibling and those without on all three outcome measures. On average, adolescents with no half-siblings had higher coping scores, were more likely to delay sexual activity, and less likely to use alcohol and drugs compared to adolescents with one or more half-siblings. These findings are consistent with previous work (Tillman, 2008; Strow & Strow, 2008), and suggest further attention to sibling relationships is needed since the experiences of those in nuclear families who also have half-siblings are not represented in the nuclear/stepfamily comparison findings.



Of the adolescents who had at least one half-sibling (n=544), 37% of these youth were classified as living in a nuclear family (n=202) in the first set of analyses. Thus, 25% (n=202) of youth classified as living in a nuclear family for the first set of analyses (n=818) were actually living in step-nuclear hybrid families (i.e., a different “type” of nuclear family). Grouped one way, they appear to be part of an advantaged group; grouped another way, they appear to be part of a disadvantaged or at-risk group. Neither dichotomous split tells their story accurately. Clearly, there is a need to consider both parent-child relationship and sibling relationships when grouping youth based on family context to better understand distinct experiences.

### **Examining the Effect of Family Structure using a combination of Half-Sibling Presence and Parent Marital Status**

When comparing the four family structure groups based on sibling composition and parent marital status (i.e., nuclear families, biological children in step-nuclear hybrid families, stepchildren in step-nuclear hybrid families, and stepchildren in simple stepfamilies), the most advantaged group appeared to be youth in nuclear families and the comparatively most disadvantaged group appeared to be stepchildren in step-nuclear hybrid families. On average, adolescents in nuclear families were more likely to delay sexual activity than stepchildren in step-nuclear hybrid families. Although not significant, there appeared to be a trend towards higher coping skills for youth in nuclear families than stepchildren in step-nuclear hybrid families. Interestingly, there was also a significant difference between stepchildren in step-nuclear hybrid families and stepchildren in simple stepfamilies (i.e., with no half-siblings) on sexual activity delay, but no difference between youth in simple stepfamilies and youth in nuclear families. This is consistent with a finding in Strow and Strow (2008) study that also

found no difference between those in simple stepfamilies and those in nuclear families. This is an important finding that warrants future work as it suggests that previous summarizing empirical “truths” that children in stepfamilies are disadvantaged (e.g., Cherlin, 2008) are inaccurate and do not capture the diversity within stepfamilies. Depending on the sibling constellation and the outcome examined, being in a stepfamily may not elevate the risk for some negative outcomes, such as sexual activity and coping, as much as previously thought.

In the current study, we were most interested in outcome differences between youth in nuclear families and biological children in step-nuclear hybrid families. For alcohol and drug use, there was a difference seen between adolescents in a nuclear family and all other family structure types. On average, adolescents in nuclear families were less likely to use alcohol and drugs than biological and stepchildren with half-siblings, as well as stepchildren without half-siblings. These findings are consistent with those of Ginther and Pollak (2004), Gennetian (2005), Tillman (2008), Halpern-Meehin and Tach (2008), and Strow and Strow (2008), who found significant differences between biological children in step-nuclear hybrid families and those in nuclear families on all measures examined. Also similar to previous studies, there were no differences between biological and stepchildren in step-nuclear hybrid families on measures of alcohol and drug use (e.g., Evenhouse & Reilly, 2004; Halpern-Meehin & Tach, 2008). Not finding distinctions between youth in nuclear families and biological children in step-nuclear hybrid families on the other two outcome measures may have more to do with the greater diversity in this sample compared to samples in previous studies and will be discussed further in the following section on interactions of family structure and race and gender.

Results lend some support for assumptions explicated a priori from bio-evolutionary and POCT theory. Combined, the theories lead to the expectation for greater conflict between

non-biologically related family members (i.e., stepparent-stepchild). Thus, it is reasoned that extant children (i.e., the stepchild in a step-nuclear hybrid family) will experience more conflict with both residential parents and should fare worse on measures of well-being than the younger half-sibling (i.e., the biological child in a step-nuclear hybrid family) and stepchildren without younger half-siblings (Schlomer, et al., 2010). This theory offers explanation for why, in our sample, the stepchildren in step-nuclear hybrid families fared worse than any other group, but stepchildren without half-siblings were no worse than those in nuclear families on two of the three outcome measures.

The assumptions of FST are only partially supported by the current findings. FST would suggest similar outcomes for biological children in step-nuclear hybrid families and stepchildren in step-nuclear hybrid families, and this was found for one of the three outcome measures. Similarly, selection theory was only partially supported by the current findings. Based on this theory, we would expect to see no differences among youth in non-nuclear families (i.e., youth in stepfamilies with and without half-siblings and biological children in step-nuclear families). This was the case for only one of the three outcome measures and in fact, as mentioned above, on measures of coping and sexual activity delay, adolescents in simple stepfamilies fared no worse than those in nuclear families.

### **Interaction Effects for Family Structure and Race and Family Structure and Gender**

A better picture results when considering race. There was a significant race by family structure interaction effect for coping. For European American adolescents, the differences occurred between those in a nuclear family and those in a step-nuclear hybrid family (both biological and stepchildren). On average, European American adolescents in nuclear families scored significantly higher on measures of coping than European American biological children

in step-nuclear hybrid families and European American stepchildren in step-nuclear hybrid families. In contrast, there was no difference found between family structure groups on coping for African American adolescents.

This finding for European American youth is consistent with previous studies that also found differences between biological adolescents in step-nuclear hybrid families and those in nuclear families. Because of the diversity in the current sample, this difference was not evident when utilizing the full sample. It is possible, and probable, that had the current sample been more predominantly European American, as previous studies, the results would have indicated a more pronounced difference between adolescents in nuclear families and biological adolescents in step-nuclear hybrid families.

While no race by family structure interaction was seen for sexual activity delay or alcohol and drug use, exploratory analysis within racial groups revealed a pattern of differences between European Americans in nuclear families and European American stepchildren in step-nuclear hybrid families, but no differences based on family structure on either measure among African American youth. It is likely that the sample size was not sufficient to detect a significant interaction effect. Overall, the results highlight the value of considering ethnicity when examining outcomes for youth based on family structure.

The racial differences are consistent with recent suggestions and research that show no differences in well-being indicators across several large samples of African American youth in nuclear and stepfamilies (Adler-Baeder et al., 2010). Suggestions are that African American youth may be more acculturated to inclusivity of both biologically-related and nonbiologically-related family members. Suggestions are also that African American youth are more accustomed to transitions and may be exposed to adaptive family processes that are more

accepting of new (nonbiologically-related) members in the family system (Adler-Baeder, et al., 2010; McLanahan & Sandefur, 1994; Crosbie-Burnett & Lewis, 1993). It may be that having complicated sibling relationships does not necessarily increase the risk of negative outcomes for African American youth and that two-parent family structure, whether nuclear or stepfamily is the critical feature for predicting more positive outcomes (Moore & Chase-Lansdale, 2001).

### **Examining the Comparative Influence of Demographic and Contextual Variables on Mutual Children**

Further extending previous work, the current study aimed to move beyond simply comparing outcomes based on family structure and towards the next generation of research that will develop predictive models of youth outcomes within more nuanced and discrete family contexts. Among biological children in step-nuclear hybrid families, the study examined the effect of demographic variables (race and gender) and contextual variables (age difference between siblings, and shared biological parent gender) on sexual activity delay (i.e., an outcome considered a protective factor) based on assumptions from social learning theory. Interestingly, age difference between siblings had the strongest relationship with sexual activity delay. On average, those who were closer in age to their half-sibling were less likely to delay sexual activity than those who were farther apart in age. The gender of the responding adolescent also predicted sexual activity delay, such that, on average, males were less likely to delay sexual activity. There was also some indication that adolescents who shared a mother with their half sibling (i.e., likely had more shared time or residency with their half-sibling) were less likely to delay sexual activity.

These findings are consistent with expectations from social learning theory, in that influence is expected to be stronger when relationships are close (Deater-Deckard et al., 2002;

Hetherington et al., 1999). From this perspective, it is assumed that when an older sibling is closer in age, proximity, and is the same gender, behavioral imitation by the younger sibling is even more likely to occur (McHale, Bissell, & Kim, 2009). Empirical findings suggest that the nature of the influence from older half-siblings is more likely to be negative, given the evidence of greater risk-taking among stepchildren (Hetherington et al., 1999).

Notably, this pattern of relationships was not found for other outcome variables. While it may be owing solely to sample size, it is also likely due to the diversity within the sample and the evidence provided in other analyses that assumptions regarding negative influences and outcomes within stepfamilies may not hold within subsamples of stepfamilies. In certain contexts, family relationships may be warm and positive and older half-siblings may be providing a good example to their younger half-siblings (Hetherington et al., 1999). Both possibilities should be considered.

### **Limitations**

The current study offers some important insights into the experiences of adolescents living in various family structures and with varying biological relatedness to family members. Limitations of the study, however, are acknowledged and some cautions in the interpretations of the findings are suggested. Although the overall sample size is substantial, the sub-samples of family structure groups based on sibling composition and parent marital status are relatively small, particularly when considering other distinguishing characteristics such as race and gender. Furthermore, there is limited variability in the risk-taking measures used, which questions validity, as is common with self-report measures. A possible reason for this is the nature of the measures themselves. When asking about sexual behavior and alcohol and drug use, some youth may have been reluctant to answer truthfully, even with confidentiality

assurances. Previous research has found that with most risk behaviors, including sexual activity and substance use, there is often a problem with underreporting. It is assumed that social desirability and/or fear of reprimand lead some youth to deny the behavior (Dolcini, Adler, & Ginsberg, 1996). Objective measures of outcomes would increase confidence in results.

Another limitation of this study is significant missing demographic data given on half-siblings of biological children in the step-nuclear hybrid families, resulting in a smaller usable sample for the final test of predictors of outcomes for biological children in step-nuclear hybrid families. Likely because many of the half-siblings were much older than the adolescent respondent, information on older half-siblings was excluded from the demographic table for a significant portion of respondents who indicated on a previous item that at least one parent had a child from a previous relationship. Additionally, if the respondent indicated the half-sibling was living on his or her own, there was no way to determine where the half-sibling had resided previously. Thus, the sample of biological children in step-nuclear hybrid families who included enough information to be included in the analyses for RQ 3 was small (n=49) and limits our interpretation of results. An additional, and quite important, limitation relevant to RQ 3 is the lack of measures on half-sibling behaviors. Assumptions about the nature of the relationship between half-siblings and the nature of potential influence could not be tested.

### **Conclusions and Future Directions**

Given that a large percentage of American children are growing up in non-traditional family forms (Cherlin, 2010; Evenhouse & Reilly, 2004), further attention to family structure and family context is warranted. Rather than continuing to use broad family structure categories, efforts to further distinguish family types by considering multiple family characteristics reveal important differences in children's experiences and outcomes. While

more parsimonious categorizing of family types may be desirable for statistical and methodological reasons, researchers are encouraged to dive into the complexity of family structure and more finely distinguish children's family contexts and family structure transactional patterns. The current study offers additional information for this small, but growing literature on youth outcomes based on parent relatedness and sibling relatedness. Novel contributions to the field are made in several ways. First, the study examines the effect of distinct family structure classifications on various outcomes, extending the work beyond that of the educational/cognitive realm; including the consideration of well-being and risk-taking behaviors. Additionally, unique to this study, the role of race and gender were examined and differences were found based on race, exposing an important and virtually untapped area for future research. In addition, this study suggests and offers an initial step forward in testing predictive models of well-being specifically for biological children in step-nuclear hybrid families, a group essentially ignored and overshadowed in most previous studies of family structure and child and youth outcomes.

Efforts to expand this literature will inform both the adolescent development research literature as well as practice. Currently, practitioners are operating from an incomplete research base when working with children, youth, and families in complex family structures. It is important for practitioners to better understand the differences between ethnic groups so the information can be used to shape appropriate intervention and education criteria. Furthermore, given the findings of this and previous studies, it may be important for practitioners to focus on sibling relationships in addition to the parenting and marital relationships.

Overall, the influence of sibling relationships on adolescent outcomes is an understudied area. In future research it would be beneficial to examine the dynamics and the



influence of various sibling relationships within more complex family systems, given the growing prevalence of these family experiences. These families offer the opportunity to understand how relationships with siblings of varied biological relatedness affect indicators of adolescent well-being. The current study may also have provided a clue that there may be differences in objective accounts of who is in the household and subjective reports of who is considered part of the family, given that a significant portion of youth indicated a parent had a child from a previous relationship, yet did not list any half-siblings when detailing information in the "who is in your family" table. These "boundary ambiguity" issues (Boss, 1980) in step-nuclear hybrid families deserve further exploration.

Additionally, future research is needed that examines stepfamilies in which there are no half-siblings, as adolescents in this type of family did not appear to be disadvantaged compared to youth in nuclear families on several important well-being indicators. Furthermore, broadening the scope of research to examine sibling composition in all types of families, beyond two-parent households, may expose within group differences (e.g., single parent families) that have not yet been examined. Future research is also needed to better understand the nuanced mechanisms involved in the development of adolescent well-being. Of most importance, future studies should aim to involve more diverse samples and examine more nuanced differences within racial groups. Use of an eco-cultural lens is important in family studies overall and appears to be highly relevant in studies of complex families.

The current study offers new insight into the theoretical assumptions used in this area of research. Interesting ethnic differences indicate that while some theories hold for European Americans, no a priori theoretical assumptions were supported for the African American sample. For European Americans, findings partially support POCT, family systems, and social

learning theories. POCT suggests that extant children (i.e., the stepchild in a step-nuclear hybrid family) will experience more conflict with both residential parents and should fare worse on measures of well-being than the younger half-sibling (i.e., the biological child in a step-nuclear hybrid family) and stepchildren without younger half-siblings (Schlomer, et al., 2010). In conjunction with this theory, stepchildren in step-nuclear hybrid families did score worse on all measures than any other group. However, there was no significant difference found between biological children in step-nuclear families or stepchildren in simple stepfamilies and stepchildren in step-nuclear hybrid families. This can be partially explained through assumptions in family systems theory (Whitchurch & Constantine, 1993) and social learning theory (Deater-Deckard et al., 2002; Hetherington et al., 1999).

Family systems theory suggests the conflict experienced by the stepchild with his/her biological parent and with the stepparent may spill over and negatively affect the biological child in the hybrid stepfamily as well. This assumption is supported by current findings which indicate a difference between biological children in step-nuclear hybrid families and those in nuclear families on measures of coping, but no difference between biological and stepchildren in step-nuclear hybrid families on any measure. These findings are also in congruence with assumptions of social learning theory that suggest biological children in step-nuclear families may be negatively influenced by older half-siblings (Deater-Deckard et al., 2002; Hetherington et al., 1999). Further support of this theory is offered by the finding that biological children in step-nuclear hybrid families who had half-siblings closer in age and proximity were less likely to delay sexual activity.

Less support is offered for bio-evolutionary and stress theories which expect clear advantages for children living with both of their biological parents. For African Americans, no

differences were found between groups. For European Americans, no difference was found between biological and stepchildren in step-nuclear hybrid families, suggesting that even biological children in this family type may be at risk for more negative outcomes. Furthermore, there was also no difference between those in simple stepfamilies and those in nuclear families. Assumptions of biological and stress theories would suggest that these children would fare worse due to conflict and lack of investment from stepparents as well as the experience of at least two transitions (Halpern-Meekin & Tach, 2008). Resource and selection theories were partially supported, but only among European Americans, as those in nuclear families fared better than any other group on all outcomes.

The current study offers an initial step forward in building a broader literature on family structure that examines both sibling relatedness and ethnic differences within various family structure types. Future research with more precise definitions of family structure that considers the child's unique perspective and relationships within families will highlight the experiences of the "unseen."

Dilworth-Anderson and colleagues (1993) remind us:

"Culturally speaking, the importance of a people's culture and its impact on family life can and does exist before the observer is aware of it and determines its relevance." (p. 638).

## References

- Adler-Baeder, F., Russell, C., Kerpelman, J., Pittman, J., Ketring, S., Smith, T., Lucier-Greer, M., Bradford, A. & Stringer, K. (2010). Thriving in stepfamilies: Exploring competence and well-being among African American youth. *Journal of Adolescent Health, 46*(4), 396-398. doi:10.1016/j.jadohealth.2009.10.014
- Amato, P. R. (2000). The consequences of divorce for adults and children. *Journal of Marriage & Family, 62*(4), 1269-1287.
- Amato, P. R. (2010). Research on divorce: Continuing trends and new developments. *Journal of Marriage & Family, 72*(3), 650-666. doi:10.1111/j.1741-3737.2010.00723.x
- Apel, R., & Kaukinen, C. (2008). On the relationship between family structure and antisocial behavior: Parental cohabitation and blended households. *Criminology, 46*(1), 35-70. doi:10.1111/j.1745-9125.2008.00107.x
- Bandura, A. (1969). Social-learning theory of identificatory processes. In D.A. Goslin (Ed.), *Handbook of Socialization Theory and Research* (pp. 213-262). Chicago, IL: Rand McNally & Company.
- Bowlby, J. (1969). Disruption of affectional bonds and its effects on behavior. *Canada's Mental Health Supplement*.
- Boss, P. G. (1980). Normative family stress: Family boundary changes across the life-span. *Family Relations, 29*(4), 445-450.
- Brody, G. H. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review*

*of Psychology*, 49(1), 1.

- Bumpass, L. L., Kelly Raley, R. R., & Sweet, J. A. (1995). The changing character of stepfamilies: Implications of cohabitation and nonmarital childbearing. *Demography*, 32(3), 425-436.
- Cherlin, A. (1978). Remarriage as an incomplete institution. *American Journal of Sociology*, 84(3), 634-650. doi:10.1086/226830
- Cherlin, A. J. (2005). American marriage in the early twenty-first century. *The Future of Children*, 15(2), 33-55. doi:10.1353/foc.2005.0015
- Cherlin, A. J. (2008). Multiple partnerships and children's wellbeing. *Family Matters*, (80), 33-36.
- Cherlin, A. J. (2010). Demographic trends in the united states: A review of research in the 2000s. *Journal of Marriage & Family*, 72(3), 403-419. doi:10.1111/j.1741-3737.2010.00710.x
- Cleveland, H., Wiebe, R., van den Oord, E., & Rowe, D. (2000). Behavior problems among children from different family structures: The influence of genetic self-selection. *Journal of Child Development*, 71 (3), 733-751.
- Coleman, M., Ganong, L., & Fine, M. (2000). Reinvestigating remarriage: Another decade of progress. *Journal of Marriage & Family*, 62(4), 1288-1307.
- Criss, M. M., & Shaw, D. S. (2005). Sibling relationships as contexts for delinquency training in low-income families. *Journal of Family Psychology*, 19(4), 592-600. doi:10.1037/0893-3200.19.4.592
- Crosbie-Burnett, M., & Lewis, E. A. (1993). Use of african-american family structures and functioning to address the challenges of european-american postdivorce families.

*Family Relations*, 42(3), 243-248.

Deater-Deckard, K., Dunn, J., & Lussier, G. (2002). Sibling relationships and social-emotional adjustment in different family contexts. *Social Development*, 11(4), 571-590.

doi:10.1111/1467-9507.00216.

Dolcini, M., Adler, N. E., & Ginsberg, D. (1996). Factors influencing agreement between self-reports and biological measures of smoking among adolescents. *Journal of Research on Adolescence*, 6(4), 515-542.

Dupuis, S. (2010). Examining the blended family: The application of systems theory toward an understanding of the blended family system. *Journal of Couple & Relationship Therapy*, 9(3), 239-251. doi:10.1080/15332691.2010.491784

Edin, K., & Reed, J. M. (2005). Why don't they just get married? Barriers to marriage among the disadvantaged. *The Future of Children*, 15(2), 117-137. doi:10.1353/foc.2005.0017

Evenhouse, E., & Reilly, S. (2004). A sibling study of stepchild well-being. *Journal of Human Resources*, 39(1), 248-276.

Feinberg, M. E., & Hetherington, E. (2000). Sibling differentiation in adolescence: Implications for behavioral genetic theory. *Child Development*, 71(6), 1512.

Fomby, P., & Cherlin, A. J. (2007). Family instability and child well-being. *American Sociological Review*, 72(2), 181-204.

Ganong, L.H., & Coleman, M. (1988). Do mutual children cement bonds in stepfamilies? *Journal of Marriage and Family*, 50, 687-698.

Ganong, L.H., & Coleman, M. (2004). *Stepfamily relationships: Development, dynamics, and interventions*. New York, New York: Kluwer Academic/Plenum Publishers.

Garasky, S. (1995). The effects of family structure on educational attainment: Do the effects

- vary by the age of the child?. *American Journal of Economics & Sociology*, 54(1), 89-105.
- Gardner, S. P., Giese, K., & Parrott, S. M. (2004). Evaluation of the connections: Relationships and marriage curriculum. *Family Relations*, 53(5), 521-527.
- Gennetian, L. (2005). One or two parents? Half or step siblings? The effect of family structure on young children's achievement. *Journal of Population Economics*, 18(3), 415-436. doi:10.1007/s00148-004-0215-0.
- Ginther, D., & Pollak, R. (2004). Family structure and children's educational outcomes: Blended families, stylized facts, and descriptive regressions. *Demography*, 41 (4), 671-696.
- Halpern-Meekin, S., & Tach, L. (2008). Heterogeneity in two-parent families and adolescent well-being. *Journal of Marriage and Family*, 70(2), 435-451. doi:10.1111/j.1741-3737.2008.00492.x.
- Heppner, P., Cook, S. W., Wright, D. M., & Johnson, W. (1995). Progress in resolving problems: A problem-focused style of coping. *Journal of Counseling Psychology*, 42(3), 279-293. doi:10.1037/0022-0167.42.3.279
- Hetherington, E., Henderson, S., O'Connor, T., Insabella, G., Taylor, L., & Anderson, E. (1999). I. Family functioning and the adjustment of adolescent siblings in diverse types of families. *Monographs of the Society for Research in Child Development*, 64(4), 1-25.
- Hetherington, E., Henderson, S., O'Connor, T., Insabella, G., Taylor, L., & Anderson, E. (1999). V. Sibling, half-sibling, and stepsibling relationships in remarried families. *Monographs of the Society for Research in Child Development*, 64(4), 101-126.
- Hetherington, E., Henderson, S., O'Connor, T., Insabella, G., Taylor, L., & Anderson, E.

- (1999). VI. Adolescent adjustment in nonstepfamilies and stepfamilies. *Monographs of the Society for Research in Child Development*, 64(4), 1-25.
- Higgins, J. V., Reed, E. W., & Reed, S. C. (1982). Intelligence and family size: A paradox resolved. *Biodemography and Social Biology*, 29(3-4), 193-199.
- Hofferth, S. L., & Anderson, K. G. (2003). Are all dads equal? Biology versus marriage as a basis for paternal investment. *Journal of Marriage & Family*, 65(1), 213-232.
- Kelly, J. B. (2007). Children's living arrangements following separation and divorce: Insights from empirical and clinical research. *Family Process*, 46(1), 35-52.  
doi:10.1111/j.1545-5300.2006.00190.x
- Linares, L., MiMin, L., Shrout, P. E., Brody, G. H., & Pettit, G. S. (2007). Placement shift, sibling relationship quality, and child outcomes in foster care: A controlled study. *Journal of Family Psychology*, 21(4), 736-743.
- Manning, W. D., & Lamb, K. A. (2003). Adolescent well-being in cohabiting, married, and single-parent families. *Journal of Marriage & Family*, 65(4), 876-893.
- McHale, S. M., Bissell, J., & Kim, J. (2009). Sibling relationship, family, and genetic factors in sibling similarity in sexual risk. *Journal of Family Psychology*, 23(4), 562-572.  
doi:10.1037/a0014982
- McHale, S. M., & Crouter, A. C. (1996). The family contexts of children's sibling relationships. In G. H. Brody, G. H. Brody (Eds.), *Sibling relationships: Their causes and consequences* (pp. 173-195). Westport, CT US: Ablex Publishing.
- McLanahan, S., & Percheski, C. (2008). Family Structure and the Reproduction of Inequalities. *Annual Review of Sociology*, 34(1), 257-276.
- McLanahan S, Sandefur G. 1994. *Growing up with a single parent: What hurts, what helps?*



Cambridge, MA: Harvard Univ. Press.

Minuchin, S. & Fishman, C. (1981). *Family therapy techniques*. Massachusetts. Harvard University Press.

Moore, M. R., & Chase-Lansdale, P. (2001). Sexual intercourse and pregnancy among african american girls in high-poverty neighborhoods: The role of family and perceived community environment. *Journal of Marriage & Family*, 63(4), 1146.

Padilla-Walker, L. M., Harper, J. M., & Jensen, A. C. (2010). Self-regulation as a mediator between sibling relationship quality and early adolescents' positive and negative outcomes. *Journal of Family Psychology*, 24(4), 419-428. doi:10.1037/a0020387

Painter, G., & Levine, D. (2000). Family structure and youth outcomes: Which correlations are causal?. *Journal of Human Resources*, 35(3), 524-549.

Parker, K. (2011). A portrait of stepfamilies. *Pew Social Trends*.

Pike, A., Coldwell, J., & Dunn, J. F. (2005). Sibling relationships in early/middle childhood: Links with individual adjustment. *Journal of Family Psychology*, 19(4), 523-532. doi:10.1037/0893-3200.19.4.523

Rowe, D. C., & Gulley, B. L. (1992). Sibling effects on substance use and delinquency. *Criminology*, 30(2), 217-233.

Saudino, E., McGuire, S., Reiss, D., Hetherington, E., & Plomin, R. (1995). Parent ratings of EAS temperaments in twins, full siblings, half-siblings, and step siblings. *Journal of Personality and Social Psychology*, 68 (4), 723-733.

Schlomer, G., Ellis, B., & Garber, J. (2010). Mother-child conflict and sibling relatedness: A test of hypotheses from parent-offspring conflict theory. *Journal of Research on Adolescence*, 20(2), 287-306.

- Slomkowski, C., Rende, R., Novak, S., Lloyd-Richardson, E., & Niaura, R. (2005). Sibling effects on smoking in adolescence: Evidence for social influence from a genetically informative design. *Addiction*, 100(4), 430-438. doi:10.1111/j.1360-0443.2004.00965.x
- Steelman & Powell (1985). The social and academic consequences of birth order: Real, artifactual, or both? *Journal of Marriage and Family*, 47 (1), 117-124.
- Stewart, S. D. (2005). How the birth of a child affects involvement with stepchildren. *Journal of Marriage & Family*, 67(2), 461-473. doi:10.1111/j.0022-2445.2005.00128.x
- Stewart, R.B., Mobley, L.A., Van Tuyl, S., & Salvador, M. (1987). The firstborn's adjustment to the birth of a sibling: A longitudinal assessment. *Journal of Child Development*, 58, 341-355.
- Strow, C., & Strow, B. (2008). Evidence that the presence of a half-sibling negatively impacts a child's personal development. *American Journal of Economics and Sociology*, 67 (2), 177-206.
- Sweeney, M. (2010). Remarriage and stepfamilies: Strategic sites for family scholarship in the 21st century. *Journal of Marriage and Family*, 72, 667-684.
- Tillman, K. (2008). Coresident sibling composition and the academic ability, expectations, and performance of youth. *Sociological Perspectives*, 51(4), 679-711. doi:10.1525/sop.2008.51.4.679.
- Tillman, K. (2008). 'Non-traditional' siblings and the academic outcomes of adolescents. *Social Science Research*, 37(1), 88-108. doi:10.1016/j.ssresearch.2007.06.007.
- Wichman, A. L., Rodgers, J., & MacCallum, R. C. (2006). A multilevel approach to the relationship between birth order and intelligence. *Personality and Social Psychology Bulletin*, 32(1), 117-127. doi:10.1177/0146167205279581

- Wilson, M. & Daly, M. (1996). *Evolutionary psychology and marital conflict: The relevance of stepchildren*. In D.M. Buss & N. Malamuth (Eds.), *Sex, power, conflict: feminist and evolutionary perspectives*. New York: Oxford University Press, 9-28.
- Winters, K., Zenilman, J. (1994). *Simple screening instrument for outreach for alcohol and other drug abuse and infectious diseases* (Vol. 11, Publication No. (SMA) 02-3683). Rockville, MD: Center for Substance Abuse Treatment: US Department of Health and Human Services (SAMHSA).
- Whitchurch, G.G. and Constantine, L.L. *Systems theory*. In P.G. Boss, W.J. Doherty, R. LaRossa, W.R. Schumm, S.K. Steinmetz, Eds. *Sourcebook of Family Theories and Methods: A Contextual Approach*. Plenum, New York, 1992.
- Yuan, A. (2009). Sibling relationships and adolescents' mental health: The interrelationship of structure and quality. *Journal of Family Issues*, 30(9), 1221-1244.  
doi:10.1177/0192513X09334906.
- Zajonc, R. B., & Mullally, P. R. (1997). Birth order: Reconciling conflicting effects. *American Psychologist*, 52(7), 685-699. doi:10.1037/0003-066X.52.7.685

## Appendix A

### The Problem-Focused Style of Coping (PF-SOC; Heppner, Cook, Wright, & Johnson, 1995)

#### Reflective coping.

When you are faced with a really tough problem, how do you usually deal with it? For each statement, FILL IN THE CIRCLE that best describes what you do when dealing with problems.

	NOT AT ALL like me	More UNLIKE me than like me	Somewhat like me	More LIKE me than unlike me	VERY MUCH like me
A. I think about ways that I solved similar problems in the past.	○	○	○	○	○
B. I consider the short-term and long-term consequences of each possible solution to my problems.	○	○	○	○	○
C. I get in touch with my feelings to identify and work on problems.	○	○	○	○	○
D. I have alternate plans for solving my problems in case my first attempt does not work.	○	○	○	○	○

#### Reactive coping.

Think about how you act in relationships – in general – with friends, family, and/or your partner. Use the scale to tell how well the statement describes you. FILL IN ONE CIRCLE PER ITEM.

	Not at all like me	Somewhat like me	Very much like me
L. I misread another person's motives and feelings without checking with the person to see if my conclusions are correct.	○	○	○
M. I act too quickly, which makes my problems worse.	○	○	○

## Appendix B

### Waiting to Have Sex (Gardner, Giese, & Parrott, 2004)

Below are some questions about attitudes toward having sex before marriage. Please indicate the degree to which you agree/disagree with each statement by filling in the circle that describes you best. Some of these questions may seem extremely sensitive to you, but please try to answer them to the best of your ability. Remember that all your answers will remain completely confidential.

	Strongly Disagree	Disagree	Mixed/ Neutral	Agree	Strongly Agree
A. It is too risky for young teens to have sex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. Not having sex until marriage is the best choice a teen can make.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. I intend to have sex when I am a teen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. I intend to wait to have sex until I can handle the things that may result from having sex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. Most people who are important to me think a person should finish high school before having sex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
F. I intend to finish high school without having sex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix C

### Alcohol and Drug Use (Winters, K., Zenilman, J., 1994)

**Please answer the following set of questions. Remember that your answers to these questions remain confidential.**

	<b>Yes</b>	<b>No</b>
<b>A.</b> Have you used alcohol (such as wine, beer, hard liquor)?	<input type="radio"/>	<input type="radio"/>
<b>B.</b> Have you felt that you use too much alcohol?	<input type="radio"/>	<input type="radio"/>
<b>C.</b> Have you tried to cut down or quit drinking alcohol?	<input type="radio"/>	<input type="radio"/>
<b>D.</b> Do you feel that you have a drinking problem now?	<input type="radio"/>	<input type="radio"/>
<b>E.</b> Has anyone ever suggested that you might have an alcohol problem?	<input type="radio"/>	<input type="radio"/>
<b>E.</b> Have you used drugs (such as pot, coke, heroin or other opiates, uppers, downers, hallucinogens, or inhalants)?	<input type="radio"/>	<input type="radio"/>
<b>F.</b> Have you felt that you use too many drugs?	<input type="radio"/>	<input type="radio"/>
<b>G.</b> Have you tried to cut down or quit using drugs?	<input type="radio"/>	<input type="radio"/>
<b>H.</b> Do you feel that you have a drug problem now?	<input type="radio"/>	<input type="radio"/>
<b>I.</b> Has anyone ever suggested that you might have an alcohol problem?	<input type="radio"/>	<input type="radio"/>