

Social Contexts and Moderators of the Relationship between Parental Separation
and Negative Youth Outcomes

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Abstract

Darci Powell. Social Contexts and Moderators of the Relationship between Parental Separation and Negative Youth Outcomes
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This dissertation examines how characteristics of the various social contexts in which youth live shape their response to parental separation and divorce. Specifically, I explore how the percent of school peers who live in alternative families, the percent of school peers who are conservatively Protestant, and the family and sibling environments modify the influence of a parental separation on youth delinquency and depression. Drawing on social ecological theories, the life course perspective, and theories of social norms, I formulate hypotheses about the modifying roles of these three contexts.

Analyses using three waves of the National Longitudinal Study of Adolescent Health (Add Health) show that higher percentages of school peers who live in alternative families are associated with lower delinquency rates for those who experience a parental separation only for those who live in higher socioeconomic status areas. Higher percentages of conservative Protestants in an adolescent's school are associated with higher levels of delinquency and depression for those who experience a parental separation, regardless of socioeconomic status. Higher levels of both family and sibling closeness pre-separation are associated with increased negative outcomes for those who experience a parental separation. Altogether, these findings suggest that the normative, religious, and family contexts in which youth live have the potential to limit or exacerbate possible negative effects of parental

separation. Better understanding the role of social context in shaping youth response to parental separation advances the sociological study of youth and families, and informs program and policymakers as to how interventions in the contexts in which youth live can benefit their wellbeing.

TABLE OF CONTENTS

LIST OF TABLES.....	v
LIST OF FIGURES.....	vii
Chapter	
I. Social Contexts and Moderators of the Relationship between Parental Separation and Negative Youth Outcomes.....	1
II. The Role of Peer Family Structure in Young Adults' Adaptation to Parental Separation.....	13
III. The Socio-Religious Context of Parental Separation: Does School Religious Context Moderate the Impact of Parental Separation on Children.....	55
IV. The Roles of Close Family Relationships and Relationships with Siblings in Young Adults' Adaptation to Parental Separation.....	99
APPENDICES.....	152
REFERENCES.....	171

LIST OF TABLES

Table

2.1. Weighted Descriptive Statistics for Analysis	36
2.2. Mean and Range of Percent Alternative Families by School by Parental Relationship Status.....	37
2.3. Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents.....	39
2.4. Coefficients of Regression Model of Difference between Waves in 8-Point Delinquency Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents.....	43
2.5. Coefficients of Regression Model of Log Transformed 8-Point Depression Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents	47
2.6. Coefficients of Fixed Effects Regression Model of Difference in Log Transformed 8-Point Depression Scale on Select Control Variables, Including the Percentage of School Peers who Do Not Live with Two Biological Parents.....	50
3.1. Weighted Descriptive Statistics of Analysis.....	79
3.2. Mean and Range of Percent of Conservative Protestants in School by Parental Relationship Status	80
3.3. Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Percentage of Conservative Protestant Students in School	82
3.4. Coefficients of Fixed Effects Model of Difference in 8-Point Delinquency Scale between Waves on Select Control Variables, Including Percentage of Conservative Protestant Students in School	86
3.5. Coefficients of Regression of Logged Depression Scale on Select Control Variables, Including Percentage of Conservative Protestant Students in School.....	90
3.6. Coefficients of Regression of Difference in Logged Depression Scale on Select Control Variables, Including Percentage of Conservative	

Protestant Students in School.....	92
4.1. Weighted Descriptive Statistics of Analysis, Family Analysis.....	124
4.2. Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Family Closeness	126
4.3. Coefficients of Fixed Effects Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Family Closeness	130
4.4. Coefficients of Regress Model of Logged Depression Scale on Select Control Variables, Including Family Closeness.....	134
4.5. Coefficients of Regression Model of Difference between Waves in Logged Depression Scale on Select Control Variables, Including Family Closeness.....	136
4.6. Weighted Descriptive Statistics of Analysis, Sibling Analysis.....	138
4.7. Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Love for Siblings.....	139
4.8. Coefficients of Fixed Effects Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Love for Siblings	142
4.9. Coefficients of Regression Model of Logged Depression Scale on Select Control Variables, Including Love for Siblings.....	144
4.10. Coefficients of Regression Model of Logged Depression Scale Between Waves on Select Control Variables, Including Love for Siblings.....	146

LIST OF FIGURES

Figure

1.1. Conceptual model of hypothesis regarding percentage of alternative families in the school	6
1.2. Conceptual model of hypothesis regarding conservative Protestants in school	8
1.3. Conceptual model of hypothesis regarding family closeness	10
2.1. Conceptual model of hypothesis.....	26
2.2. Predicted values of delinquency for varying percentages of alternative families in school by parental separation.....	41
2.3. Predicted values of delinquency for varying percentages of alternative families in school by parental separation.....	46
3.1. Conceptual Model of Hypothesis.....	68
3.2. Predicted values of delinquency for varying percentages of school conservative Protestantism by parental separation, lagged dependent variable model.....	84
3.3. Predicted values of change in delinquency for varying percentages of school conservative Protestantism by parental separation, fixed effects model.....	89
3.4. Predicted values of change in logged depression for varying percentages of school conservative Protestantism by parental separation, fixed effects model.....	95
4.1. Conceptual model of the analysis.....	112
4.2. Predicted values of delinquency for varying values of family closeness by parental separation, lagged dependent variable model.....	127
4.3. Predicted values of change in delinquency for varying values of family closeness by parental separation, fixed effects model.....	132
4.4. Predicted values of delinquency for varying values of love for siblings by parental separation, lagged dependent variable model.....	141
4.5. Predicted values of logged depression for varying values of love for siblings by parental separation, lagged dependent variable model.....	145

4.6. Predicted values of change in logged depression for varying values of
love for siblings by parental separation, fixed effects model.....147

Chapter 1: *Introduction*
Social Contexts and Moderators of the Relationship between Parental Separation
and Negative Youth Outcomes

By: Darci Powell

Parental separation has been shown to produce negative outcomes among children who experience it, including higher risk of delinquency and depression (Amato 2001; Teachman 2002; Doherty and Needle 1991; Forehand et al 1991; Demo and Acock 1988; McLanahan and Booth 1989; Cherlin et al 1995). However, there is a great deal of variation in how individuals respond to parental separation; some show many negative effects whereas others prove quite resilient (McLanahan and Sandefur 1994; Emery and Forehand 1996). With over 40 percent of individuals in the United States experiencing the separation of their parents during their lifetime, it is important to understand how the adaptation process works and what factors make this transition easier or more difficult (Bumpass 1990; Amato 2001).

Researchers have proposed many possible mechanisms through which parental separation influences children and through which variation in outcomes occurs, including parental conflict and the loss of economic, social and parental resources (Amato 1993; Demo and Acock 1991). Social-ecological and life course “linked lives” theories suggest it is also important to take into account the moderating role of social context when analyzing the importance of events, such as family transitions, in the lives of individuals (Kumpfer and Turner 1991; Bronfenbrenner 1979 and 1989; Elder 1998). However, the moderating effect of social context on the reaction to parental separation has not been thoroughly addressed in the literature.

In the following three papers, I draw on social ecological theories and the life course perspective to hypothesize how various aspects of social context moderate the effect of parental relationship dissolution on young adult outcomes. I then specifically hypothesize how the percentage of students in non-two biological parent families in an adolescent's school, the percentage of conservative Protestants in an adolescent's school, and closeness in family and sibling relationships each may moderate the relationship between parental separation and youth outcomes. To test my hypotheses, I use the three waves of the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative data set with over 15,000 respondents in the final wave. In the following introduction, I describe background information regarding parental separation, lay out theories to support my research, and discuss the three papers included in this dissertation.

Parental Separation: Effects and Mechanisms

Parental separation has been shown to be a moment of stress or crisis that can cause negative outcomes, including delinquency and depression (Morrison and Cherlin 1995; Ahrons 1980; Landis 1960; Aneshensel 1992; Sandler et al 1994; Amato 2001; Amato and Keith 1991a and 1991b; Teachman 2002; Doherty and Needle 1991; Forehand et al 1991; Demo and Acock 1988; McLanahan and Booth 1989; Cherlin et al 1995). Delinquency tends to be an external symptom of internalized stress, whereas depression is a more internalized symptom of stress (Aseltine et al 2000; Agnew 1985; Hagan 1997; Agnew and White 1992). Including both measures allows me to capture results both for adolescents who react to stress through externalized behavior and for those who react to stress through internalized emotional responses.

The relationship between parental separation and delinquency and depression may be due to parental conflict, the loss of parental resources, the loss of social resources, and the loss of economic resources. Parental conflict pre-separation is strongly linked to negative outcomes post-separation. Individuals who report high levels of parental conflict before a parental separation tend to show fewer negative outcomes than those who come from low conflict families because the separation ends an unstable situation for those in high conflict families (Forehand et al 1994; Hanson 1999; Amato, Loomis and Booth 1995; Vandewater and Lansford 1998).

The loss of parental economic and emotional resources has also been found to contribute to negative outcomes post-separation (Amato and Keith 1991; Amato 1993; Demo and Acock 1991). Separation is generally accompanied by a loss of income in the household, which may require a move to a different neighborhood or school district, increasing stress and decreasing continuous social support (Sorensen 1994; McLanahan and Sandefur 1994). In terms of the emotional resources of parents, contact and closeness with non-residential parents are often greatly reduced after a separation (McLanahan and Sandefur 1994). The separation can also impact the emotional availability of the residential parent. Having to fill in gaps caused by the absence of the other parent, the residential parent is likely to have increased demands outside of the home and to experience greater stress which can affect their emotional availability and lead to problems in the parent, such as depression or anxiety (McLanahan and Sandefur 1994; Amato 1993; Demo and Acock 1991).

Social support networks also contribute to how individuals adapt to separation (Emery and Forehand 1996). Having close relationships and a strong support network, often

measured using self-reported data of school attachment, peer support, and extra-familial support, can protect against the impact of parental relationship disruption on children, whereas the loss of these networks can lead to negative effects (Emery and Forehand 1996). However, authors have not fully explored the importance of the demographic characteristics of these networks, of the overall family context, and of sibling relationships in adjustment. To motivate this study of how features of the school and family context moderate the relationship between parental separation and youth outcomes, I turn to social ecological theories and the life course “linked lives” perspective.

Social Ecological and Life Course Theories

Social ecological theories suggest that, when looking at individual behavior, one must take into account, not only the individual, but also his/her social environment (Glasgow et al 2002; Kumpfer and Turner 1991; Bronfenbrenner 1979 and 1989; Schmeer 2005). Bronfenbrenner (1979 and 1989), a social-ecological theorist, suggests that individuals are nested in various levels of social context, including the microsystem and the macrosystem (Bronfenbrenner 1989; Seginer 2003). I examine the microsystem, consisting of relationships with peers and family members (Bronfenbrenner 1989; Seginer 2003). Broader cultural norms and values, or the macrosystem, are often communicated through the microsystem, especially through relationships with peers; these cultural values will also be discussed in these papers (Bronfenbrenner 1989; Seginer 2003).

Applications of social-ecological theory suggest that, for adolescents, characteristics of those within their school environment impact how individuals behave and respond. Bearman and Bruckner (2001), in their study of virginity pledges, find that the effectiveness

of the pledge is greatest when a moderate number of individuals take the pledge, enough to create a social group but not so many that the individual does not feel unique for having taken the pledge (Bearman and Bruckner 2001). The moral communities hypothesis (Stark 1989), which suggests that the benefits of personal religiosity are strongest for those who are embedded in a socially religious environment, has also been supported at the school level. Regnerus (2003) finds that personal religiosity is primarily associated with a decrease in delinquency in schools with high percentages of other religious students.

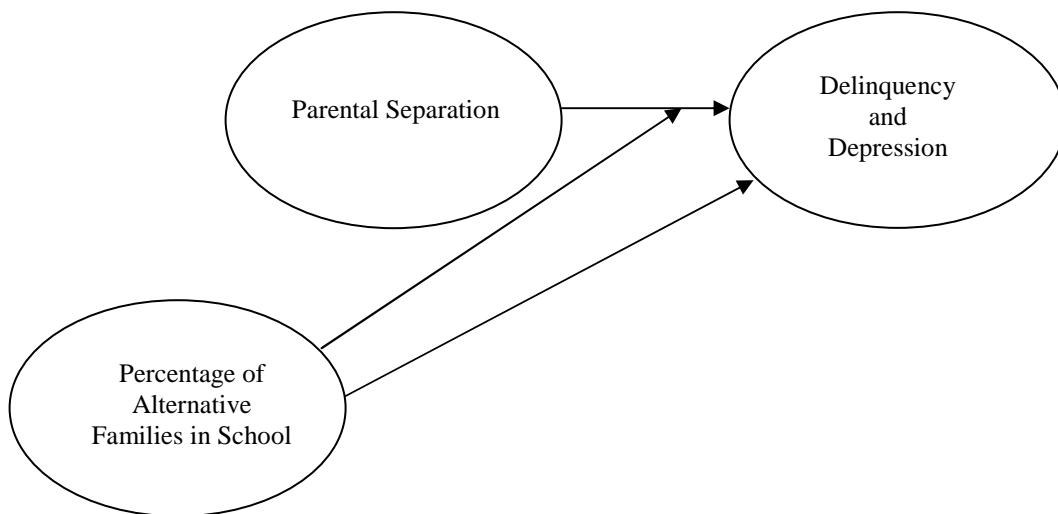
Life course theory similarly suggests that it is important to investigate the social context of events when examining individual responses (Elder 1998). The theory of “linked lives” states that lives of individuals are dependent on one another; one individual’s decisions are likely to impact the way other individuals act or behave (Elder 1998). When examining the effects of parental separation on individual outcomes, it is necessary to take into account characteristics of and relationships with others in the individual’s social context, including peers and family members. The life course theory of linked lives is especially important in the examination of relationships with family members. Living in such close proximity, relationships with siblings and family members are likely to play an important role in individual adaptation.

Family Structure Context of Schools Moderating the Influence of Parental Separation

Each of the papers presented here examines the moderating effect of young adults’ social context pre-parental separation on the relationship between parental separation and delinquency and depression. The first paper presented examines whether the pre-separation percentage of peers in an individual’s school who do not live in two biological parent homes

moderates the relationship between parental separation and young adult outcomes. I hypothesize that having a higher percentage of peers who have also experienced living in a non-two-biological-parent household will ease one's own adjustment to parental separation, due to increased normativity of non-intact families, to increased institutionalization of alternative family structures, and to increased access to similar others in these environments (Thoits 2001; Cherlin 1978). I also test whether these outcomes vary by the socioeconomic status of the respondent's county. I present the conceptual model of this hypothesis in Figure 1.1.

Figure 1.1 Conceptual model of hypothesis regarding percentage of alternative families in the school



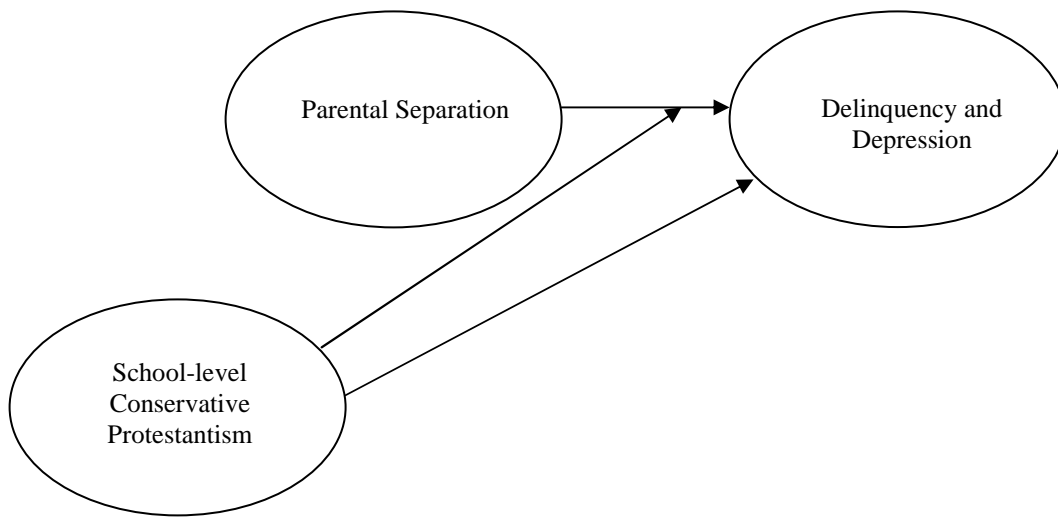
I do find that the social context of school peers moderates the relationship between parental separation and delinquency for those in higher socioeconomic status areas, although I do not find significant results for depression or for those in lower socioeconomic status areas. Individuals from higher socioeconomic status areas who experience a parental

separation in schools with higher percentages of alternative families report higher delinquency levels than those who experience a separation in schools with lower percentages of alternative families.

Religious Context of Schools Moderating the Influence of Parental Separation

In the second paper, I examine the moderating effect of the percentage of conservative Protestant students in the respondent's school on the relationship between parental separation and young adult outcomes. I hypothesize that attending schools with higher percentages of students who are conservative Protestants will be associated with increased difficulty adjusting to parental separation due to the strong disapproval of non-two biological parent families among conservative Protestants (Gay, Ellison and Powers 1996). I suggest that high percentages of conservative Protestants in an adolescent's school create a cultural environment that is not accepting of alternative families. In this environment, adolescents may feel stigmatized and not supported if they experience a parental separation. The conceptual model of this hypothesis is presented in Figure 1.2.

Figure 1.2: Conceptual model of hypothesis regarding percentage of conservative Protestants in school



I find that higher percentages of conservative Protestant students in the school moderate the relationship between parental separation and both delinquency and depression. Respondents who experience a parental separation in schools with higher percentages of conservative Protestant students report higher levels of delinquency and depression post-separation than those who experience a separation in schools with lower percentages of conservative Protestants. For those who do not experience a parental separation, the relationship is reversed: those who attend schools with higher percentages of conservative Protestants report lower levels of delinquency and depression at Wave 3 than those who attend schools with lower percentages of conservative Protestants.

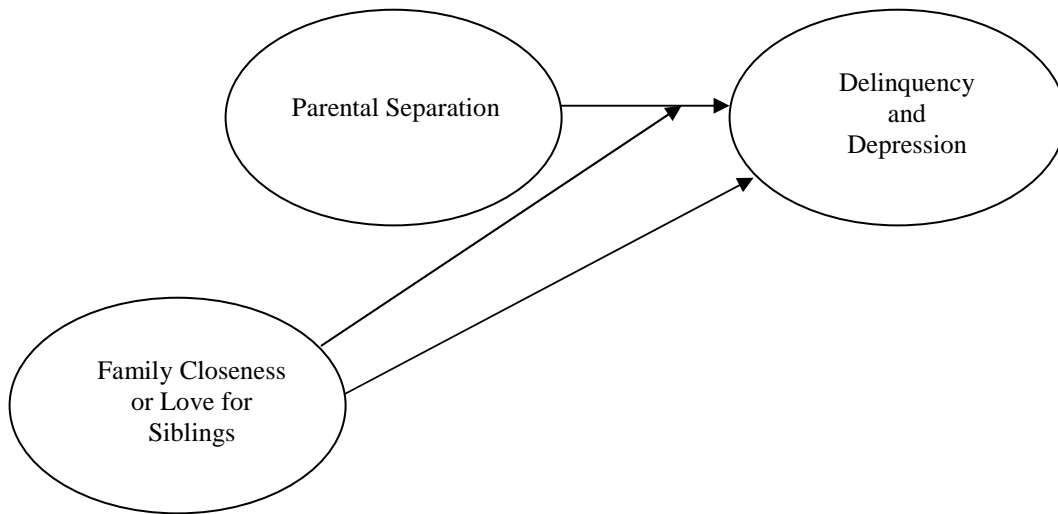
Family and Sibling Context Moderating the Influence of Parental Separation

In the third paper presented here, I examine whether close family relationships and close sibling bonds moderate the relationship between parental separation and young adult outcomes. I hypothesize that closer family relationships will be associated with more

difficulty adjusting to a parental separation. Because parental separation is associated with increased strain in familial relationships (White 1994), those who have closer ties with their family pre-separation may experience more stress if their family relationships are disrupted than someone from a family that is less close. Separation may also be less expected and, thus, more of a shock for those who come from closer families.

As concerns sibling relationships, there are two possible hypotheses. First, if siblings grow closer after a separation, they may provide an important source of support during the separation and protect against some of the negative effects of parental separation (Stinson 1991). However, some researchers find that sibling relationships can be strained during a separation due to increased competition for parental resources, to siblings having to fill in caretaker roles in the absence of a parent, and to disruptions in the family that can lead to siblings spending less time together (Hetherington 1989). It is also possible, then, that close relationships with siblings pre-separation will be associated with more negative outcomes post-separation due to increased strain on the sibling relationship. The conceptual model for this paper is presented in Figure 1.3.

Figure 1.3: Conceptual model of hypotheses regarding family closeness



My findings support the hypothesis regarding family closeness, and support the hypothesis that siblings who have closer relationships pre-separation experience more strain during the separation and, hence, more negative outcomes than those who are less close. Among those who experience a parental separation, both those who report higher levels of family closeness overall and those who report higher levels of sibling closeness tend to have higher delinquency rates and depression scores at Wave 3 than those who experience a parental separation in a family that is less close or among siblings who are less close.

Data and Analyses

In the analyses for all three of the papers making up this dissertation, I use data from the National Longitudinal Study of Adolescent Health (Add Health), an ongoing, nationally representative, school-based study of adolescents who were grades 7 to 12 in the first wave of the survey. I use data from the Wave 1 interview, conducted in 1994-95, from the Wave 2 sample, in 1996, and from the Wave 3 sample, in 2001-02. Having data from three waves

allows me to examine how the influence of parental separation or divorce between the first and second or third waves on delinquency and depression measured at the third wave is moderated by the social contexts in which youth were living before the separation occurred.

Implications

Taken altogether, the findings from the three papers making up this dissertation suggest that, although parental separation may, overall, have an effect on young adult outcomes, the effects may be more negative for those experiencing separation in a social context where they feel different, isolated, and/or stigmatized. In other words, the negative effects of parental separation may be greatly reduced, if not eliminated, in situations where individuals feel accepted and socially supported. These findings inform the sociological study of youth and family by emphasizing the key role of social context as a moderator. Other social contexts such as community resources for parents who separate, policies regarding those experiencing financial difficulty, and political views toward public support of families in transition should be explored to see if they too moderate the influence of a parental separation. In general, these papers add to the growing literature on how relationships, such as those between parental separation and youth outcomes, are conditional in size and direction on various elements of a person's social, normative, and family context. These findings provide support for programs that increase knowledge of the process of separation for those who experience it, for support groups for children of parental separation that may bring these individuals into contact with each other, and for interventions that help siblings maintain strong relationships after a parental separation.

Chapter 2

The role of peer family structure in young adults' adaptation to parental separation

By: Darci Powell

In the United States, approximately 1 million children experience the separation of their parents every year, and around 40 percent of individuals will experience the separation of their parents during their lifetime (Amato 2001; Bumpass 1990). The separation of parents has been shown to have many negative effects on children, including lowered academic achievement and job attachment, higher risk of delinquency and emotional/mental health problems, and higher tendency toward experiencing marital problems later in life (Amato 2001; Amato and Keith 1991a and 1991b; Teachman 2002; Doherty and Needle 1991; Forehand et al. 1998 and 1994; Demo and Acock 1988; McLanahan and Booth 1989; Cherlin et al. 1995). However, the prevalence of these negative effects varies greatly. Some individuals are extremely harmed by the separation of their parents, whereas others prove resilient and show few or no effects (McLanahan and Sandefur 1994; Emery and Forehand 1996). Some studies indicate that children can even have improved outcomes after a parental relationship is ended, especially in cases of high pre-separation parental conflict (Hanson 1999; Amato, Loomis and Booth 1995).

Researchers propose many possible mechanisms through which parental separation impacts children, including the loss of economic, social and parental resources (Amato 1993; Demo and Acock 1991). Children show more negative responses if the relationship dissolution is associated with a loss of social support, but show fewer negative outcomes

when strong support networks, measured through self-reports of school and friendship attachment, are maintained (Emery and Forehand 1996). Although social support has been found to be important, few studies have examined the importance of the demographic characteristics of social networks in moderating the relationship between parental separation and outcomes. Doing so would promote a deeper understanding of what characteristics of the social environment impact individual adaptation to the stress associated with parental separation.

Specifically, in this paper, I am interested in whether similarity of experiencing parental separation/divorce among school peers decreases stress levels associated with a family transition. For those who experience a parental separation, does being exposed to other individuals who do not live in a two biological parent family decrease or increase the stress involved in the transition of parental separation? No studies to date have examined whether the concentration of alternative family structures among peers has a moderating effect on the relationship between parental relationship disruption and negative outcomes among children of parental separation. Individuals who are exposed to more people whose parents have also been separated may experience parental separation differently than individuals who are not exposed to alternative family forms within their peer environment before their parents separate. It is important, then, to examine children's reactions to the separation of their parents within the framework of social-ecological and life course theories, both of which suggest that characteristics of the social environment alter how an individual reacts to and is influenced by life events.

Experiencing a parental separation can be seen as a crisis, stressor, or trauma within the lives of children that leads to differing amounts of emotional strain depending on the child's resources (Morrison and Cherlin 1995; Ahrons 1980; Landis 1960; Aneshensel 1992; Sandler et al. 1994). Delinquency and depression are primary outcomes that have been linked to stress in general and to stress associated with parental separation more specifically (Amato 2001; Amato and Keith 1991a and 1991b). Strain theory suggests that delinquency is an external symptom of internalized stress (Aseltine et al. 2000; Agnew 1985; Hagan 1997). Depression, on the other hand, is an internalized symptom of stress (Agnew and White 1992). Studying both outcomes allows for the assessment of results both for adolescents who react to stress through externalized behavior and for those who react to stress through internalized emotional responses.

In this paper, I examine whether the prevalence of alternative family structures among an adolescent's school peer group moderates the relationship between parental separation and youth outcomes, particularly delinquency and depression. First, I develop a theoretical framework based on the life course approach, social-ecological perspectives, theories of institutionalization and social comparison theories. Then, I develop hypotheses of the moderating effects of concentration of alternative family structures within an adolescent's peer groups using these theories. I test these hypotheses using the National Longitudinal Study of Adolescent Health, a stratified, longitudinal analysis of three waves with over 15,000 respondents in the most recent wave.

Social Contexts/Moderating Influence of Parental Relationship Disruption

Social ecological and life course theories provide an over-arching context for the significance of this study. Both approaches suggest that elements of the social environment, including characteristics of peers and other social context indicators, impact how people act within and react to certain situations (Glasgow et al. 2002; Kumpfer and Turner 1991; Bronfenbrenner 1979 and 1989; Schmeer 2005; Elder 1998). Bronfenbrenner (1979 and 1989), a social-ecological theorist, states that individuals are nested within layers of social context, including the microsystem, composed of family members, friends and peers, and the macrosystem, composed of the attitudes and norms expressed through these relationships (Bronfenbrenner 1979 and 1989; Seginer 2003). Characteristics of individuals within the microsystem and the cultural norms of the environment affect how individuals within these systems respond to events. Social ecological theories, then, suggest that it is important to look at community context and, more specifically, the concentration of individual and social characteristics within a community when examining individual outcomes.

As examples, Bearman and Bruckner (2001) find, in their investigation of virginity pledges in schools, that the pledge is most effective when there are enough students who take the pledge to create a social group but not so many students that the pledge no longer designates membership in an exclusive community. Stark et al. (1982) find that individual religiosity is only associated with decreased delinquency in communities with higher concentrations of religiosity overall (Stark et al. 1982). These examples support the idea, then, that it is important to look at the concentration of characteristics of those within the social environment when analyzing individual adaptation to events.

The life course theory of “linked lives” also suggests that it is important to take into account, not only individual factors, but also characteristics of people with whom individuals have relationships when determining the consequences of events. The theory of “linked lives” states that “lives are lived interdependently, and social and historical influences are expressed through this network of shared relationships” (Elder 1998: 4). The beliefs and behaviors of individuals in one’s social environment create a cultural framework, or “cultural toolkit,” that helps individuals decide how to behave and how to make sense of the world around them (Swidler 1986). For adolescents, characteristics of school peers are likely to impact this cultural framework and, thus, the way they respond to and understand parental separation.

Crosnoe (2000), in his survey of research regarding adolescent friendships, notes that it is important to view adolescent friendships in the “linked lives” perspective, as adolescent relationships both are shaped by social situations and shape adolescent lives by communicating social values and standards. For adolescents, school peers may be particularly important due to the large amount of time spent within the school environment and the amount of socialization that occurs within the school (Jenkins 1995). These theories provide general support, then, for the need to examine characteristics of peers, especially school peers for adolescents, and the social environment as well as individual level variables when studying the effect of family disruption on individuals.

Social Context of Family Structures

Other theories speak more directly to the issue of the social context of family structure rather than just social context in general. Cherlin (1978) discusses the effect of the

social institutionalization of family structures as an element of community context that is of particular importance. Social institutions make clear the roles that individuals are supposed to perform and define appropriate behavior within these roles (Cherlin 1978; Gerth and Mills 1953; Berger and Luckmann 1966). In his examination of families, especially families that include remarriages with children, Cherlin (1978) finds that, when a family form is rare, it is less institutionalized; thus, familial roles are less clearly defined. Life within the family is more stressful for members because they are unsure of how to behave toward one another and because expectations are uncertain. With fewer defined expectations, the likelihood of a conflict or disagreement is increased. For example, a biological parent and a stepparent may argue over the stepparent's role in raising the child, and children may have conflicts with stepparents over whether the stepparent should take a parental role or not. As alternative family structures become more common, they also tend to become more institutionalized. Through this process, roles become clearer, lessening some of the stress of navigating life in a non-intact family (Cherlin 1978).

This theory suggests, then, that children experiencing parental separation who live in an environment in which alternative family forms are more institutionalized would have an easier time adjusting to the transition than those who do not live in this type of environment. Because they know what to expect and what is expected of them, they likely experience less confusion and fewer inter-familial conflicts than adolescents in other environments. Framed another way, role clarity decreases the stress surrounding role transitions, whereas role ambiguity increases stress surrounding transitions (Steffensmeier 1982; Burr 1972). In situations where there is a higher concentration of individuals who have experienced a parental separation or at least the institution of a non-intact family, roles are more clearly

defined and so the transition into the new roles within these family structures is likely to be easier. Similarly, it is likely that, when roles are more institutionalized for those with greater numbers of peers who are also in alternative family structures, children experience fewer problems trying to explain their family situation because it is already understood (Landis 1960). Individuals may have less of a sense of not fitting in and being different with greater understanding from peers.

Theories of anticipatory socialization also support the idea that being exposed to other individuals who have experience in the roles associated with being in an alternative family ease the process of parental separation. Anticipatory socialization is “defined as the process of learning the norms of a role before being in a social situation where it is appropriate to actually behave in the role” (Burr 1972: 408). Contact with those already engaged in a role before having to adopt a role can ease transitions (Cottrell 1942; Merton and Kitt 1950). Seeing the part that a child plays in a family as a set of roles, as specified by Cherlin (1978), social contexts in which adolescents have greater exposure to other individuals who are in alternative families give the contact and exposure to alternative family roles that could provide anticipatory socialization. This anticipatory socialization could familiarize the individual with possible interactions within a non-intact family and with the role a child of parental separation plays within these interactions. Because the individual knows what to expect of his/her parents and what is expected of him/her, it is likely there are fewer surprises in the separation process and less strain and uncertainty. It is also likely that, if one is used to seeing other people go through a parental separation, the fact that one’s own parents separate is less unexpected and less of a shock. Thus, increased exposure to other individuals who live in non-intact homes, especially before the actual parental separation, as is the case in this

study, could decrease the strain and, thus, the negative consequences of experiencing a parental separation.

Minority stress theories also provide support for the idea that having exposure to a higher percentage of other individuals who are in non-intact families can ease the process of experiencing a parental separation. Minority stress research finds that, for individuals among the minority population, simply being in the minority contributes to stress and negative outcomes (Brooks 1981; Meyer 1995). Although most minority stress literature has focused on race/ethnicity, immigrant status and sexual orientation, it is not unlikely that minority status in general, no matter what the identity role, is stressful (Meyer 1995; Brooks 1981; Saldaina 1994; Balsam 2005; Harrell et al. 1993). Thus, for individuals experiencing a parental separation in a school in which living in an alternative family is not a minority status, the transition to this family pattern may be less difficult. They may experience less of a sense of being different or not fitting in, and so may show less evidence of strain. Further, schools that have higher percentages of alternative families may be more equipped to deal with the limitations and hardships of not living in a two biological parent home, including limited parental resources and parental stress, if the school has sufficient resources in general.

Social comparison theories also support the conclusion that children experiencing a parental separation benefit from proximity to others who have also experienced living in an alternative family. Social support has been shown to improve individual outcomes, especially in terms of physical and mental health (Thoits 2000; Emery and Forehand 1996). However, certain types of social support are more beneficial than others. During a crisis,

social support from “similar others,” “similar” meaning those who have experienced the same crisis, is often more beneficial than support from dissimilar others, regardless of the strength of the social tie (Thoits 2000). This type of support can be helpful for many reasons. Dissimilar others may give detrimental advice, having not experienced the crisis themselves, or may have unrealistic expectations of recovery from the crisis (Thoits 2000). Similar others, on the other hand, often give more realistic advice, provide a model of coping against which the person going through a crisis can compare him/herself, and provide evidence that, with time, one can move past the crisis (Thoits 2000). Similar others have been shown to provide higher quality, more continuous support through multiple types of life transitions, including health problems, becoming divorced, and widowhood (Suito 1995). Thus, although social support may be important in and of itself, the quality of social support may have a lot to do with its effectiveness.

Other factors related to outcomes

There are several factors related both to the outcomes focused on in this study and to the likelihood of experiencing parental separation or divorce. When studying how the family structure of a school modifies the experience of parental divorce or separation, the following factors should be taken into account. Age, gender, race/ethnicity and socioeconomic status have all been found to be associated with delinquency and depression. With age, both participation in delinquent behaviors and rates of depression tend to decline (Moffitt 1993; Agnew 2003; Mirowsky and Ross 1992). Delinquency rates tend to be higher for males and lower for females, but depression rates tend to be higher among females than among males (LaGrange and Silverman 1999; Broidy and Agnew 1997; Mirowsky 1996; Petersen et al. 1991). Age and gender are not significantly related to whether an individual experiences a

parental separation; however, they may impact how an individual responds to such a separation (Amato 1993; Glenn and Kramer 1985).

For race/ethnicity, Black respondents tend to report lower levels of delinquency, although some researchers suggest these findings are due to under-reporting (Hindelang 1978). Asian groups tend to report lower rates of delinquency than Whites; however, among some Southeast Asian groups, delinquency rates are higher than those of White respondents (Le and Stockdale 2005). Hispanic youth in general report higher levels of delinquency than Whites (Pozzi 1997). Although the association between race/ethnicity and depression has been studied, findings are often contradictory, with some studies showing higher rates of depression among minorities and some showing lower rates (George and Lynch 2003; Vega and Rumbaut 1991). Race/ethnicity is also significantly related to whether an individual experiences a parental separation. Black respondents are more likely and Hispanics are less likely than Whites to experience a separation (Trent and South 1992; Raley and Bumpass 2003; Norton and Miller 1991).

Socioeconomic status has been shown to be strongly linked both to delinquency and depression and to the risk of experiencing a parental separation. Strain theory suggests that individuals who live in more economically disadvantaged areas are more likely to turn to delinquent behavior to achieve their goals as they find other paths, which do not involve delinquency, closed to them (Aneshensel and Sucoff 2006). Individuals of lower socioeconomic status also tend to report higher rates of depression, and children from lower socioeconomic status backgrounds tend to have more developmental disorders (Brooks-Gunn and Duncan 1997; Bradley and Corwyn 2002; Miech and Shanahan 2000). Socioeconomic

status is also highly linked to experiencing a parental separation. Individuals of lower socioeconomic status tend to be much more likely than those with higher socioeconomic status to experience a separation (South 2001; Raley and Bumpass 2003).

School quality, often measured using characteristics such as the percentage of teachers with Master's degrees and the student-teacher ratio, has also been shown to be related to youth outcomes, although studies regarding the importance of school quality generally focus on later life measures such as job achievement and not on delinquency and depression outcomes (Betts 1995). Studies of school attachment and commitment, however, suggest that school attachment is negatively correlated with delinquent behavior, which suggests that characteristics of the school environment are important to consider when examining young adult outcomes (Jenkins 1995).

School racial composition may also play a role in how young adults respond to parental separation. Attitudes toward parental separation tend to vary by race. Black respondents tend to be more accepting of non-two biological parent families than White respondents, although they generally view separation more negatively when children are involved (Trent and South 1992). Views toward the family tend to be more traditional among Hispanics (Trent and South 1992). Thus, it is possible that the views in a school regarding parental separation will be different for varying concentrations of different race-ethnicities.

Variations by Community Socioeconomic Advantage

The research outlined above suggests that the percentage of non-two biological parent families in an adolescent's school moderates the relationship between parental separation and outcomes, with those who experience a parental separation in areas with higher percentages of alternative families showing fewer signs of strain associated with the separation. However, it is also important to consider that there may be variation in the degree to which this moderation occurs due to the socioeconomic status of the community in which an individual lives. People who live in communities of higher socioeconomic status may be more influenced by the family structure of their neighbors for multiple reasons. First, Maslow (1954) suggests that physical needs must be fulfilled before individuals focus on fulfilling the need for acceptance and belonging. Those who live in areas of low socioeconomic advantage are likely to be more concerned with basic needs such as paying the bills and having food and shelter rather than how they fit in to their social context; these tendencies in the parents may be communicated to the children. Additionally, the negative impact of stress due to concern over socioeconomic conditions in the neighborhood may have a strong enough effect to trump any benefit from higher percentages of alternative families in the school.

Further, areas of lower socioeconomic status have been shown to have greater heterogeneity of cultures than higher socioeconomic status areas (Harding 2007). The culture of the community provides "frames," or ways to interpret the world, and "scripts," or patterns of behavior and action, that help individuals make sense of the world and decide how to act within it (Harding 2007: 346; Swidler 1986). Greater heterogeneity of cultures means that individuals have more references through which to interpret the world around them and more possible patterns of actions to employ. A larger number of cultural options

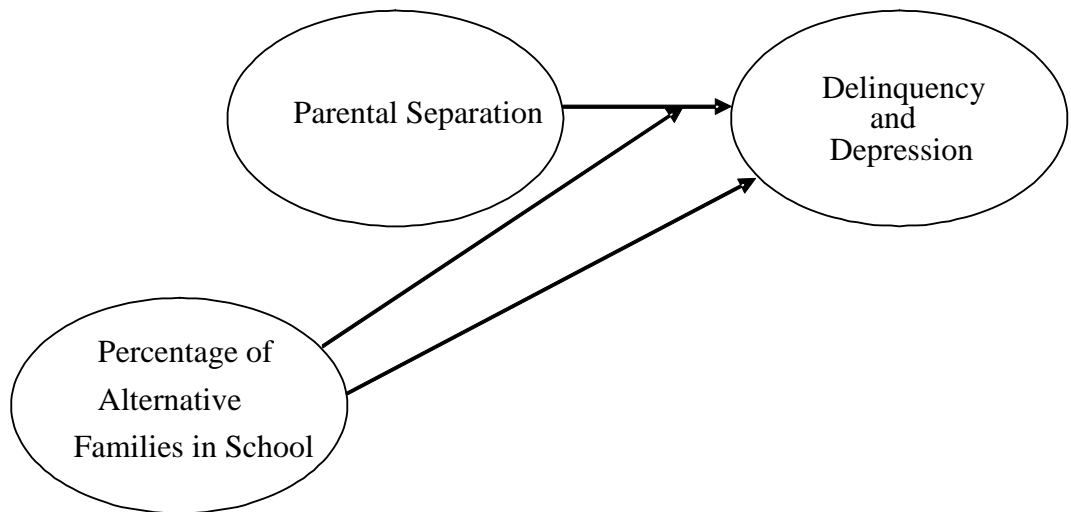
could lead to greater flexibility in reacting to events and to less of a sense of needing to fit into a dominant culture. More disadvantaged communities also tend to exhibit higher levels of social disorganization and less of a tendency to enforce strong cultural values, both because of the lack of consensus due to higher heterogeneity and because of weaker neighborhood ties and a lack of resources (Harding 2007). For individuals in lower socioeconomic status communities, because there is less of a consensus regarding cultural norms and values, the percentage of single parents in the community may not impact any dominant cultural leanings in the area and, thus, may have little effect on the adaptation of adolescents to parental separation. Further, because social ties tend to be weaker in these communities, social others may not have as much of an impact as in higher socioeconomic communities.

Further, because socioeconomic disadvantage is so highly correlated with parental separation (South 2001), marriage is often seen as less feasible in lower than in higher socioeconomic areas. Although marriage is highly valued in poorer communities, alternative families tend to be more accepted in these communities because the lack of money in these areas makes successful marriage much more difficult to attain (Edin and Kefalas 2005). Because of the tendency towards greater acceptance of alternative families that already exists in lower income areas, higher percentages of alternative families may not introduce much of a change in level of acceptance for and support of these families and so may not impact the relationship between parental separation and young adult outcomes for individuals in these areas.

Hypotheses

The primary hypothesis stemming from the theories described above is that having a higher concentration of alternative family structures in one's environment provides a protective barrier against some of the negative consequences of stress resulting from parental separation, including delinquency and depression. I hypothesize that the percentage of alternative families in an adolescent's school pre-separation will moderate the relationship between parental separation and outcomes. In addition, I expect the modifying role of school-level alternative family structures to be greater for those who live in communities of higher socioeconomic status. For those in communities with lower levels of socioeconomic advantage, these results may be weaker due to the cultural and structural factors listed above. I provide a conceptual model of my hypothesis in Figure 2.1.

Figure 2.1: Conceptual Model of Hypothesis



To sum, in this study, I address the following question: Does having a higher percentage of peers who live in alternative families within one's school ease an adolescent's adjustment to his/her own parents' separation? This analysis provides new insight into the

factors that make children of parental separation more or less resilient in the process of family disruption and into the specific characteristics that make some social environments better than others for adjustment.

Data and Methods

Data. In these analyses, I use data from the National Longitudinal Study of Adolescent Health (Add Health), an ongoing, nationally representative, school-based study of adolescents who were grades 7 to 12 in the first wave of the survey, conducted in 1994. I use data from the Wave 1 interview, conducted in 1994-95, and from the Wave 3 interview, conducted in 2001-02. The data is stratified by school. I use data from both the in-school questionnaire and from the in-home sample, which was selected using a random sample of respondents listed in the school roster.

Because I look at how a youth's social context at time 1 moderates the influence of a parental relationship dissolution between Waves 1 and 3 on outcomes at Wave 3, only respondents who lived with both biological parents at Wave 1 are included in this analysis. Although not including some respondents may introduce selection bias, it is not possible to estimate a change model without limiting the sample in this fashion. Therefore, this analysis only examines the effect of parental relationship dissolution that occurs during adolescence, not before.

The final sample size of the models is slightly over 7,000. Sample sizes vary due to differences in the dependent variables. Limiting the data only to those who live with two biological parents at Wave 1 and live with at least one biological parent at Wave 3 yields a

sample size of 7,610. Other deletes come primarily from data missing on the dependent variables. When analyses are separated by socioeconomic status, lower socioeconomic status areas yield a sample size of around 4,700 and higher socioeconomic status areas yield a sample size of around 2,300.

Family Structure Variables

Parental relationship dissolution. Respondents were asked to list the members of their household at all waves. If a respondent lived with both biological parents at Wave 1, these individuals are included in the sample as living in an intact household. Other respondents are excluded from these analyses. Children of adoptive parents are not included because I am unable to determine whether the child experienced a parental relationship dissolution before being adopted or not. If respondents both lived with only one biological parent at Wave 2 and lived with two biological parents at Wave 1, they are coded as having experienced a parental relationship dissolution. If they lived with two biological parents at this wave or if they were not included in this wave but did participate at Wave 3, I use information from Wave 3 to determine whether they experienced a parental separation.

If respondents lived with both biological parents at Wave 3 and lived with two biological parents in all previous waves, they are coded as not having experienced a parental separation. If they lived with one biological parent but not two, I code them as having experienced a parental separation. However, due to the age of respondents, many respondents lived in their own household. At this wave, the Add Health survey also includes questions asking whether the respondent's prior parents (from Wave 1 if the respondent did not participate in Wave 2 or from Wave 2 if the respondent participated in all waves) still

lived together. Respondents who lived in a two biological parent household at the most recent wave and report that their parents are no longer living together are coded as having experienced a parental separation. However, respondents who lived with two biological parents in the prior wave and who report that their parents are still living together in the same household are coded as not having experienced a parental relationship dissolution. Individuals who experience a parental death during the study are not included in the final analysis.

Concentration of non-two biological parent families in the school. I use the in-home roster from Wave 1 to determine the percentage of alternative families in the school. If a respondent listed living with two biological parents at Wave 1, they are coded as not living in an alternative family structure. Otherwise, they are coded as living in an alternative family structure. To determine the percentage of students living in non-two biological parent, or alternative, families in the school, I create a variable that represents the weighted percentage of students who are coded as living in a non-two biological parent family. Although this variable does not represent all adolescents in the school, the in-home sample is a random sample of the overall school survey. Schools that have very few (less than 25) respondents who completed the in-home survey are not included in this analysis, excluding 17 respondents.

Individual Control Variables

As control variables, I include measures of individual race/ethnicity, gender and socioeconomic status. Race/ethnicity is divided into five categories: non-Hispanic White, Black, Asian, Hispanic, and other; non-Hispanic White is the control group in these models.

Although coefficients for the “other” race category are difficult to interpret, this group is included in order to retain as many cases as possible. I code gender as “1” for females and “0” for males. For socioeconomic status, I include measures of family income and parental education at Wave 1. Information on family income is taken from the Wave 1 parents’ survey in which parents were asked the average income of their household in thousands. I create six dummy variables from this measure, including less than \$15,000, \$15,000 to \$25,000, \$25,000 to \$35,000, \$35,000 to \$50,000, more than \$50,000 and missing. The missing category is included due to the high percentage of respondents who do not have information regarding their parental income at Wave 1 (over 20 percent). Deleting such a high percentage of respondents could easily introduce sample bias and impact the analyses (Lee et al. 1994).

Respondents were asked to list the education of their residential mother and their residential father at Wave 1. I use the highest parental education reported to generate six dummy variables indicating the highest level of parental education in the household as less than a high school degree, a high school degree, some college, a college degree, graduate school or missing. Although there is less missing data for these variables than for income (about 2 percent are missing information on their parents’ education), I still include a missing category in order to minimize deletions. Receiving a high school degree is the control group in these models.

School-level control variables

To control for characteristics of the school that could impact adolescent adjustment, I include variables measuring the percentage of students by race/ethnicity, the percent of

teachers at the school who hold Master's degrees, the average class size in the school, and the percentage of parents in the school involved in a parent/teacher organization. The percentage of students by race/ethnicity at the school level is determined using the in-home data. I create variables indicating the weighted percentage of students who are Black, Asian or Hispanic for each school. The "other" category is not included in this analysis because this variable is difficult to interpret and does not impact the sample size. School administrators were asked the percentage of teachers who hold Master's degrees and the average class size in the school. They were also asked if there was a parent/teacher organization in the school and, if so, the percentage of parents involved in this association. If they reported no parent/teacher association, the school is coded as having no parents involved in a parent/teacher's association.

Community socioeconomic status

I also use a measure of the percentage of families in the respondent's community who make \$50,000 a year or more in income, taken from Census data that has been merged with the Add Health data. This variable is used as a way to delineate those who live in higher socioeconomic status areas from those who live in lower socioeconomic status areas. In these analyses, respondents who live in counties that fall into the top quartile on the measure of the percent of households who make \$50,000 a year in income or more are considered living in higher socioeconomic status areas. Higher socioeconomic status communities are designated as counties with at least 30.4 percent of households making \$50,000 or more a year.

Dependent Variables

Delinquency. The delinquency scales both for Waves 1 and 3 consist of the sum of 8 questions regarding participation in non-violent delinquent behavior in the last 12 months. Respondents are asked how often they participated in a list of activities, including property crime and theft, in the last 12 months, with responses ranging from “never” to “five or more times.” Responses are recoded as dummy variables, with “1” indicating the respondent participated in the activity and “0” indicating the respondent did not. Due to the later age at Wave 3, questions were altered for developmental appropriateness. The scale is standardized for missing data. A full list of measures is included in Appendix 2A. The Chronbach’s Alpha of the Wave 3 scale is 0.67. For Wave 1, the alpha of the scale is 0.75.

Depression. For depression, I use an additive scale created from ordered categorical variables. Respondents are asked whether they experienced multiple feelings during the past seven days, including feeling sad, crying a lot, having trouble shaking off the blues, having trouble concentrating, and feeling easily bothered. Each question had four possible responses, ranging from “never or rarely” to “most or all of the time.” Nine measures were repeated from Wave 1 to Wave 3. The variable asking how often the respondent enjoyed life is recoded so that higher values indicate less enjoyment. I performed a factor analysis on the variables and found that the scale reliability for both Waves 1 and 3 improves without the inclusion of the variable indicating feeling good about oneself. Therefore, this variable is not included in the analyses. The alpha of the Wave 1 scale is 0.80, and the alpha of the Wave 3 scale is 0.81. The scale is standardized for missing data. A full list of the eight variables used to create the scale is included in Appendix 2A. The combination of variables is a subset of those used in the Center for Epidemiological Studies Depression Scale (CES-D), a 20-item measure of depression (Radloff 1977).

Analysis Strategy

In these analyses, I do not try to control for all variables that could be associated with parental separation. I include only basic control variables in order to examine how network characteristics affect the relationship between parental separation and outcomes for adolescents overall. In future research, it may be appropriate to include more variables in the analysis in order to determine specific mechanisms and relationships.

I perform the models for this analysis using both the lagged dependent variable approach and fixed effects models to provide a more thorough longitudinal analysis of the data. For the lagged dependent variable models, the Wave 3 measure of the outcome variable is the dependent variable, and the Wave 1 variable is used as an independent variable to control for the initial level of delinquency or depression. This approach is similar to that used by Pearce and Haynie (2004). Halaby (2004), however, argues that fixed effects models are more accurate for measuring change than lagged dependent variable models, and so both methods are used in this analysis. In the fixed effects models, the Wave 1 variable is subtracted from the Wave 3 variable, and the difference serves as the dependent variable in the model. As such, the fixed effects model captures the quantity and direction of change between Waves 1 and 3, but loses some of the variation in the dependent variable at both waves. Individuals who participated in no delinquent activities at Wave 1 and participated in one delinquent activity at Wave 3 are treated the same as individuals who participated in six delinquent acts at Wave 1 and seven at Wave 3. It is likely, however, that the transition between no delinquent activities and some indicates more actual change than a change from some delinquent behavior to more. I use both methods in order to explore the data more fully and determine if the results hold up using different approaches.

For the lagged dependent variable approach to delinquency, I use negative binomial regression due to the skewed distribution of the dependent variable (Pearce and Haynie 2004). Many more respondents have participated in no or very few delinquent activities in the past twelve months than have participated in many activities, creating a high level of skew in the dependent variable. Approximately 75 percent of respondents report no delinquent behavior at Wave 3. Negative binomial regression deals more effectively with dependent variables that are not normally distributed than does linear regression and allows for overdispersion (the variance is greater than the mean) more effectively than does Poisson distribution (Allison and Waterman 2002). The negative binomial model varies from the Poisson distribution in that it incorporates an added error term that corrects for overdispersion (Long 2001). All models in the delinquency analyses show evidence of overdispersion, with alphas that are greater than zero. For the fixed effects approach to delinquency, I utilize linear regression models. Because the delinquency scale is standardized for missing data, some of the values in the scale are not integers. Thus, the difference between waves more closely represents a continuous variable than a categorical variable. In previous models, I conducted the analyses using ordered probit regression, which treats the difference as categorical, and found no difference in results.

For the analyses of depression, I use regression of the logged dependent variable. The depression variable is, again, highly skewed. Logging the dependent variable makes the distribution of the dependent variable closer to normal and helps limit problems associated with heteroscedasticity. To log the depression scale, I add one to the scale so that no values are zero. For the fixed effects models, I take the difference of the logs rather than the

difference between the original variables. I also use linear regression for the fixed effects models.

In order to deal with the correlated error structures inherent in the stratified nature of the Add Health sample, I use the *svy* command in STATA, which allows for the specification of primary sampling units (schools) and strata (region) (Chantala and Tabor 1999). The *svy* command is used for the lagged dependent variable models, but is not available for fixed effects methods. In order to test for whether peer family structure impacts children who experience a parental separation and those who do not differently, I include an interaction variable created by multiplying the indicator of whether a respondent has experienced a parental separation between waves with the variable measuring the percentage of students living in alternative families in the respondent's school. Equations representing the models are listed in Appendix 2B.

Results

Descriptives

Table 2.1 shows survey weighted descriptive statistics for the variables used in these analyses. Both delinquency and depression decrease between waves. For Wave 1, respondents average 0.88 delinquent acts, and, for Wave 3, respondents average 0.40 delinquent acts. Average depression levels at Wave 1 are 4.18 and at Wave 3 are 3.58. Approximately 11 percent of respondents experience a parental separation between Waves 1 and 3, and the average percentage of non-two biological parent families in the school is 44 percent.

Table 2.1: Weighted Descriptive Statistics for Analysis

	%/Mean	Standard Error	Min	Max
Wave 3 Depression: 8 point scale	3.58	0.06	0	21
Wave 1 Depression: 8 point scale	4.18	0.08	0	21
Wave 3 Delinquency: 8 point scale	0.40	0.02	0	8
Wave 1 Delinquency: 8 point scale	0.88	0.03	0	8
Parental Separation	11	0.01		
Percentage of Alternative Families in School	44	0.01	0	4
Female	48	0.01		
Age	15.84	0.12	13	22
Race				
White	73	0.03		
Black	8	0.01		
Asian	5	0.01		
Hispanic	12	0.02		
Other	1	0.00		
Income per year				
Less than \$15,000	5	0.01		
Less than \$25,000	8	0.01		
Less than \$35,000	10	0.01		
Less than \$50,000	18	0.01		
More than \$50,000	39	0.02		
Missing Income	20	0.01		
Highest Parental Education				
Less than High School	9	0.01		
High School	27	0.01		
Some College	21	0.01		
College	26	0.01		
Graduate School	14	0.01		
Education Missing	3	0.00		
School variables				
Percentage of parents with college or more educa	33	0.02		
Percentage of parents in PTA	22	0.02		
Classsize	25.41	0.46		
Percentage of teachers with Masters degree	50	0.03		
Percent by race				
Black	12	0.02		
Asian	4	0.01		
Hispanic	12	0.02		

(N=7023 for delinquency sample; N=7094 for depression sample)

Table 2.2 shows the breakdown of the percentage of students who live in alternative families in respondents' schools by whether the respondent experienced a parental

separation. The range and mean values of the percentage of students in alternative families is similar for those who have and those who have not experienced a parental separation.

Table 2.2: Mean and Range of Percent Alternative Families in School by Parental Relationship Status

	Mean % Alternative Families in School	Minimum	Maximum
Experienced Parental Separation	45.27	10.6	81.97
Did not Experience Parental Separation	43.39	10.6	81.97

Analyses.

In the following section, I present the results shown in Tables 2.3 through 2.6. Each table includes models with the variable indicating the percentage of peers not living with two biological parents in the school, parental separation, the control variables and a Wave 1 measure of the dependent variable without the interaction in order to determine the baseline effects of the variables. I then present the models with the interaction variable. I include three sets of models in each table: one for the full sample, one for those in lower income areas, and one for those in higher income areas. I am primarily interested in the effects of parental separation, the percentage of alternative families in the school, and the interaction of these two variables, so I focus primarily on these variables here.

Delinquency. In Model 1 of Table 2.3, which shows the lagged dependent variable model of delinquency for the full sample, experiencing a parental separation between waves is significantly positively related to delinquency. The percentage of alternative parents in the school is not significant. The interaction, included in the second model, is also not significant. The models for those in communities with fewer families that have incomes greater than \$50,000 show similar results, with parental separation significantly positively

related to delinquency in the model without the interaction and with none of these variables showing significance when the interaction is included.

When only the individuals in communities with higher percentages of families making more than \$50,000 a year are used for the analysis, however, the results are much different. The Chow test indicates that the models using only those in higher socioeconomic status communities are significantly different than the models including only lower income communities. Neither having experienced a parental separation nor the percentage of alternative families in the school is significant in the model without the interaction.

When the interaction is included, having experienced a parental separation is significantly positively related to delinquency, and the interaction is significantly negative. This model is easier to interpret using a chart of the equation. For the chart, shown in Figure 2.2, varying percentages of alternative families in the school along with whether the individual experienced a parental separation are filled into the equation listed in Appendix 2B to determine predicted values. For other variables, I use coefficients for White, male respondents who live in households with an average income of between \$25,000 and \$35,000 a year and who report the highest education of their parents as the high school level. I fill in means for all non-dummy variables.

Table 2.3: Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents

	Full Model 1	Full Model 2	Lower SES Model 1	Lower SES Model 2	Higher SES Model 1	Higher SES Model 2
Parental separation between waves 1 and 3	0.256 ** (0.109)	0.127 (0.402)	0.248 * (0.129)	-0.295 (0.503)	0.275 (0.175)	1.359 * (0.690)
Percentage of students in alternative families in school	0.225 (0.534)	0.180 (0.569)	0.091 (0.680)	-0.090 (0.729)	0.803 (0.884)	1.186 (0.935)
Interaction						
Separation * Percentage of students in alternative families		0.293 (0.852)		1.170 (1.024)		-2.894 * (1.689)
Female	-0.910 *** (0.077)	-0.910 *** (0.077)	-0.897 *** (0.097)	-0.894 *** (0.097)	-0.919 *** (0.117)	-0.909 *** (0.114)
Age Wave 1	-0.188 *** (0.022)	-0.188 *** (0.022)	-0.186 *** (0.026)	-0.187 *** (0.026)	-0.182 *** (0.032)	-0.180 *** (0.032)
Race ¹						
Black	0.066 (0.177)	0.065 (0.177)	0.088 (0.198)	0.087 (0.198)	-0.224 (0.225)	-0.216 (0.226)
Asian	-0.199 (0.200)	-0.202 (0.199)	-0.094 (0.268)	-0.084 (0.270)	-0.149 (0.264)	-0.116 (0.286)
Hispanic	-0.288 ** (0.142)	-0.292 ** (0.142)	-0.462 ** (0.226)	-0.472 ** (0.226)	-0.115 (0.161)	-0.106 (0.158)
Other	0.240 (0.287)	0.241 (0.287)	-0.144 (0.378)	-0.138 (0.376)	0.585 (0.390)	0.584 (0.376)
Income per year ²						
Less than \$15,000	0.047 (0.270)	0.042 (0.272)	-0.155 (0.279)	-0.178 (0.282)	1.043 * (0.549)	1.038 * (0.549)
Less than \$25,000	0.070 (0.175)	0.072 (0.175)	-0.096 (0.193)	-0.089 (0.192)	0.836 ** (0.380)	0.827 ** (0.380)
Less than \$50,000	-0.058 (0.155)	-0.059 (0.155)	-0.093 (0.173)	-0.097 (0.172)	0.274 (0.280)	0.270 (0.286)
More than \$50,000	0.264 * (0.148)	0.264 * (0.148)	0.273 (0.171)	0.271 (0.171)	0.479 ** (0.242)	0.481 * (0.245)
Missing Income	-0.018 (0.151)	-0.018 (0.151)	-0.041 (0.179)	-0.050 (0.178)	0.263 (0.263)	0.211 (0.266)

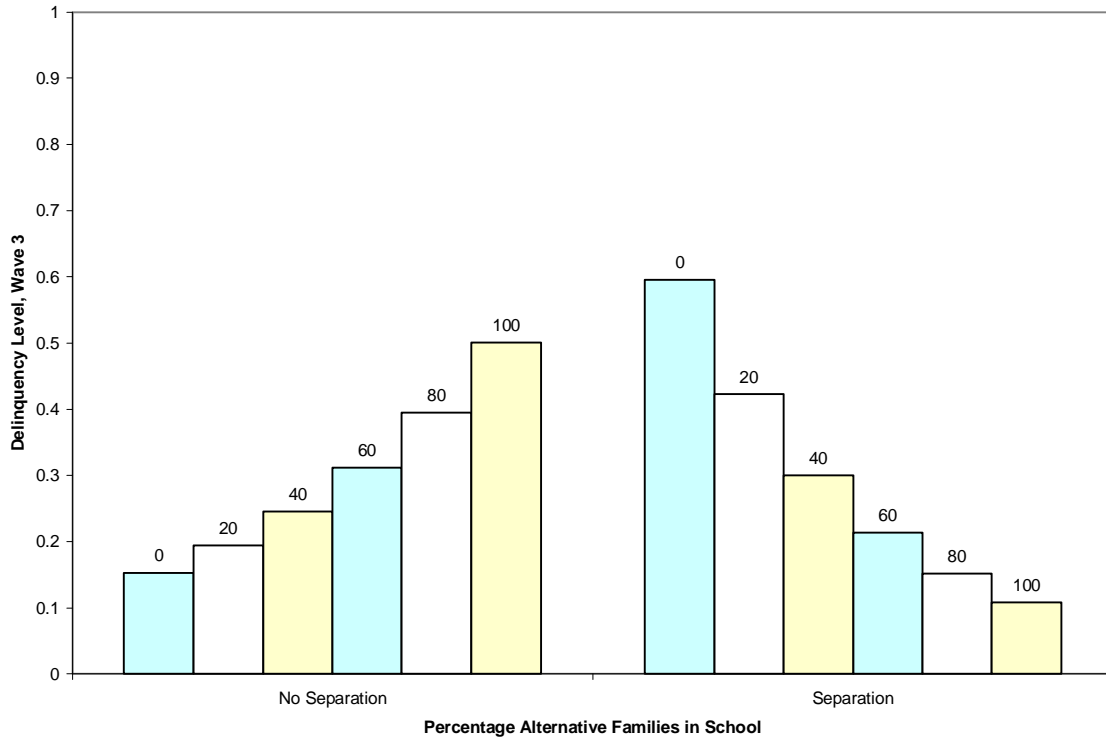
Table 2.3: continued.

Highest parental education wave 1 ³						
Less than high school	-0.003 (0.161)	-0.001 (0.160)	0.089 (0.178)	0.103 (0.178)	-0.113 (0.360)	-0.087 (0.363)
Some college	-0.003 (0.114)	-0.004 (0.114)	-0.018 (0.131)	-0.017 (0.130)	0.097 (0.201)	0.100 (0.202)
College	0.181 ** (0.088)	0.182 ** (0.088)	0.159 (0.111)	0.165 (0.112)	0.215 (0.141)	0.220 (0.139)
Graduate School	0.259 ** (0.107)	0.259 ** (0.107)	0.311 ** (0.124)	0.312 ** (0.123)	0.197 (0.191)	0.189 (0.188)
Education missing	-0.212 (0.275)	-0.208 (0.277)	-0.154 (0.323)	-0.120 (0.331)	-0.275 (0.441)	-0.198 (0.454)
School variables						
Percentage of parents with college or more education	0.284 (0.310)	0.281 (0.311)	0.188 (0.343)	0.188 (0.344)	0.896 ** (0.421)	0.917 ** (0.418)
Percentage of parents in PTA	0.009 (0.163)	0.012 (0.161)	-0.123 (0.200)	-0.125 (0.202)	0.351 (0.235)	0.295 (0.236)
Classsize	-0.003 (0.010)	-0.003 (0.010)	-0.016 (0.013)	-0.017 (0.013)	0.021 (0.015)	0.022 (0.015)
Percentage of teachers with Masters degree	0.270 (0.205)	0.270 (0.205)	0.370 (0.321)	0.372 (0.321)	0.358 (0.266)	0.350 (0.259)
Percent by race						
Black	-0.221 (0.250)	-0.228 (0.246)	0.000 (0.265)	-0.023 (0.258)	-1.175 * (0.652)	-1.093 * (0.627)
Asian	0.211 (0.297)	0.219 (0.296)	-3.577 ** (1.604)	-3.500 ** (1.619)	0.224 (0.386)	0.198 (0.392)
Hispanic	0.411 (0.326)	0.414 (0.325)	1.044 ** (0.421)	1.056 ** (0.420)	-0.893 ** (0.429)	-0.948 ** (0.421)
Wave 1 delinquency	0.287 *** (0.021)	0.288 *** (0.021)	0.285 *** (0.024)	0.286 *** (0.024)	0.301 *** (0.037)	0.300 *** (0.036)
N=	7023	7023	4752	4752	2271	2271
Constant=	1.469	1.495	1.844	1.949	0.043	-0.151
Alpha=	2.022	2.023	2.206	2.201	1.353	1.312

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school.

* p<.05, one-tailed test; ** p<.05; *** p<.01

Figure 2.2: Predicted values of delinquency for varying percentages of alternative families in school by parental separation



In the chart, I show one set of columns for individuals who have and one for individuals who have not experienced a parental separation. Among those who have not experienced a parental separation, higher percentages of alternative families in the school are associated with increasing participation in delinquent activities. Those in schools with the highest percentages of alternative families have predicted values of delinquency that are more than 0.3 delinquent acts higher than those in schools with the lowest percentages of alternative families. Among those who have experienced a parental separation, however, the relationship is reversed, as hypothesized. Individuals from schools with the lowest percentages of alternative families have higher predicted values of delinquency, almost 0.5 acts, than those in schools with higher percentages of alternative families. This difference is

especially large considering that participation in delinquent activities is very low (less than 0.4 delinquent acts on average at Wave 3).

Table 2.4 shows the fixed effects regression model of change in delinquency. For the full sample, neither having experienced a parental separation nor the average percentage of alternative families in the school is significant. When the interaction is included, the interaction, too, is not significant. Results are similarly insignificant for the tables representing those who come from lower income communities.

Table 2.4: Coefficients of Regression Model of Log Transformed 8-Point Depression Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents

	Full Model 1	Full Model 2	Lower SES Model 1	Lower SES Model 2	Higher SES Model 1	Higher SES Model 2
Parental separation between waves 1 and 3	0.043 (0.035)	-0.022 (0.121)	0.042 (0.041)	-0.038 (0.154)	0.046 (0.066)	0.059 (0.166)
Percentage of students in alternative families in school	-0.079 (0.143)	-0.098 (0.147)	0.095 (0.166)	0.071 (0.175)	-0.569 *** (0.216)	-0.565 *** (0.211)
Interaction						
Separation * Percentage of students in alternative families		0.146 (0.263)		0.171 (0.327)		-0.034 (0.370)
Female	0.057 ** (0.023)	0.057 ** (0.023)	0.060 ** (0.024)	0.060 ** (0.024)	0.037 (0.058)	0.037 (0.058)
Age Wave 1	-0.040 *** (0.007)	-0.040 *** (0.007)	-0.032 *** (0.008)	-0.032 *** (0.008)	-0.066 *** (0.014)	-0.066 *** (0.014)
Race ¹						
Black	0.000 (0.042)	-0.001 (0.042)	0.004 (0.045)	0.003 (0.045)	-0.058 (0.096)	-0.058 (0.096)
Asian	0.087 (0.063)	0.087 (0.063)	0.073 (0.100)	0.074 (0.099)	0.130 (0.082)	0.131 (0.082)
Hispanic	-0.011 (0.044)	-0.012 (0.044)	-0.099 (0.061)	-0.099 (0.060)	0.104 (0.069)	0.104 (0.069)
Other	0.000 (0.124)	0.000 (0.124)	-0.024 (0.157)	-0.023 (0.158)	0.043 (0.186)	0.044 (0.186)
Income per year ²						
Less than \$15,000	0.041 (0.075)	0.039 (0.075)	0.007 (0.083)	0.005 (0.083)	0.305 * (0.158)	0.305 * (0.158)
Less than \$25,000	0.102 * (0.060)	0.102 * (0.060)	0.100 (0.069)	0.100 (0.069)	0.112 (0.110)	0.112 (0.110)
Less than \$50,000	0.075 (0.055)	0.075 (0.055)	0.058 (0.062)	0.057 (0.062)	0.153 (0.110)	0.153 (0.110)
More than \$50,000	0.079 (0.055)	0.078 (0.055)	0.070 (0.061)	0.070 (0.061)	0.130 (0.113)	0.130 (0.113)
Missing Income	0.077 (0.047)	0.077 (0.047)	0.073 (0.052)	0.072 (0.052)	0.110 (0.110)	0.109 (0.109)

Table 2.4: continued.

Highest parental education wave 1 ³						
Less than high school	0.163 *** (0.045)	0.164 *** (0.045)	0.167 *** (0.054)	0.169 *** (0.054)	0.203 ** (0.096)	0.203 ** (0.095)
Some college	0.002 (0.032)	0.002 (0.032)	-0.010 (0.036)	-0.010 (0.036)	0.048 (0.065)	0.048 (0.065)
College	0.044 (0.034)	0.044 (0.034)	0.004 (0.036)	0.004 (0.036)	0.143 * (0.079)	0.144 * (0.079)
Graduate School	0.001 (0.039)	0.002 (0.039)	-0.011 (0.044)	-0.011 (0.044)	0.052 (0.085)	0.052 (0.085)
Education missing	0.055 (0.086)	0.055 (0.086)	0.030 (0.095)	0.032 (0.095)	0.178 (0.161)	0.178 (0.161)
School variables						
Percentage of parents with college or more education	-0.033 (0.099)	-0.032 (0.099)	0.052 (0.114)	0.052 (0.114)	-0.178 (0.130)	-0.179 (0.130)
Percentage of parents in PTA	-0.008 (0.069)	-0.008 (0.069)	-0.036 (0.078)	-0.037 (0.078)	0.085 (0.084)	0.084 (0.084)
Classsize	-0.004 (0.003)	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)	-0.007 * (0.004)	-0.007 * (0.004)
Percentage of teachers with Masters degree	0.085 * (0.049)	0.085 * (0.049)	0.078 (0.057)	0.078 (0.057)	0.021 (0.102)	0.021 (0.102)
Percent by race						
Black	0.020 (0.090)	0.018 (0.089)	-0.023 (0.093)	-0.025 (0.093)	0.389 * (0.205)	0.390 * (0.207)
Asian	0.079 (0.160)	0.080 (0.161)	-0.308 (0.735)	-0.303 (0.736)	-0.220 (0.159)	-0.221 (0.160)
Hispanic	0.133 (0.085)	0.133 (0.084)	0.182 * (0.100)	0.182 * (0.100)	0.261 * (0.133)	0.260 * (0.133)
Wave 1 depression	0.304 *** (0.017)	0.304 *** (0.017)	0.300 *** (0.019)	0.300 *** (0.019)	0.323 *** (0.040)	0.324 *** (0.040)
N=	7094	7094	4799	4799	2295	2295
Constant=	1.413	1.425	1.258	1.271	2.019	2.017
R-Squared=	0.101	0.101	0.097	0.097	0.132	0.132

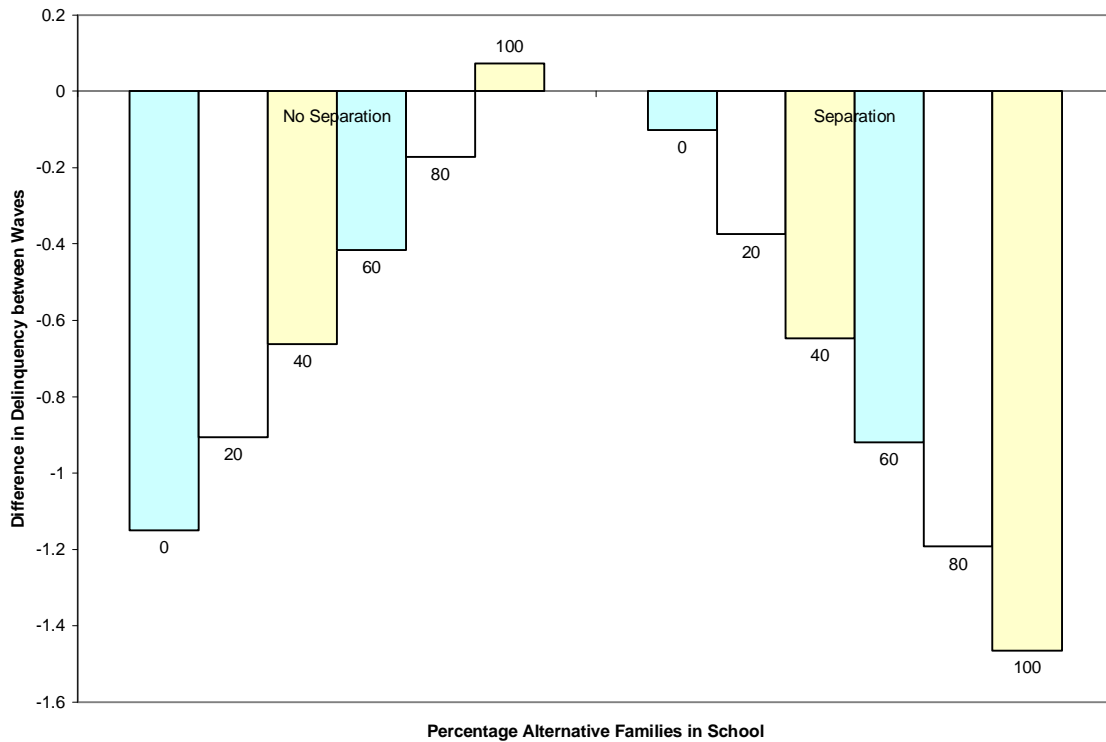
Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school.

* p<.05, one-tailed test; ** p<.05; *** p<.01

For those who come from higher income communities, however, higher levels of alternative families in the school are significantly positively related to delinquency without the inclusion of the interaction. When the interaction is included, the interaction is significantly negative. The Chow test indicates that the models using only those in higher income communities are significantly different than the models using only lower income communities.

The charts shown in Figure 2.3 represent the interaction effect. For the regression model, I chart the predicted value of change in delinquency between waves. Because delinquency tends to decrease with age, change in delinquency is negative for most respondents. Among those who have not experienced a parental separation, the predicted value of change in delinquency is much lower/more negative for those from schools with the lowest percentage of alternative families than for those in schools with higher percentages of alternative families. At the highest percentages of alternative families, delinquency increases between waves. Over the entire range, predicted values vary by about 1.2 delinquent acts. Among those who have experienced a parental separation, however, the results are reversed, as hypothesized. Those who attend schools with the lowest percentages of alternative families show a predicted value of change in delinquency that is much less negative (more than 1.3 points) than the predicted value of change in delinquency for respondents who are in schools with the highest percentage of alternative families. In other words, those who experience a separation in schools with higher percentages of alternative families have a larger decrease in delinquency between waves than those who experience separation in schools with lower percentages of alternative families.

Figure 2.3: Predicted values of delinquency for varying percentages of alternative families in school by parental separation



Depression. The results for depression indicate no significant interaction effects. Table 2.5, which includes the lagged dependent variable models of depression, shows no significant relationships between parental separation and delinquency and no significant relationships between the percentage of alternative families in the school and delinquency except in the final models, representing those from higher income communities. For these individuals, the percentage of alternative families in the school is significantly negatively related to depression. However, none of the interactions are significant; thus, there appear to be no moderating effects of the percentage of alternative families in the school on the relationship between experiencing a parental separation and depression in these models.

Table 2.5: Coefficients of Regression Model of Log Transformed 8-Point Depression Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents

	Full Model 1	Full Model 2	Lower SES Model 1	Lower SES Model 2	Higher SES Model 1	Higher SES Model 2
Parental separation between waves 1 and 3	0.043 (0.035)	-0.022 (0.121)	0.042 (0.041)	-0.038 (0.154)	0.046 (0.066)	0.059 (0.166)
Percentage of students in alternative families in school	-0.079 (0.143)	-0.098 (0.147)	0.095 (0.166)	0.071 (0.175)	-0.569 *** (0.216)	-0.565 *** (0.211)
Interaction						
Separation * Percentage of students in alternative families		0.146 (0.263)		0.171 (0.327)		-0.034 (0.370)
Female	0.057 ** (0.023)	0.057 ** (0.023)	0.060 ** (0.024)	0.060 ** (0.024)	0.037 (0.058)	0.037 (0.058)
Age Wave 1	-0.040 *** (0.007)	-0.040 *** (0.007)	-0.032 *** (0.008)	-0.032 *** (0.008)	-0.066 *** (0.014)	-0.066 *** (0.014)
Race ¹						
Black	0.000 (0.042)	-0.001 (0.042)	0.004 (0.045)	0.003 (0.045)	-0.058 (0.096)	-0.058 (0.096)
Asian	0.087 (0.063)	0.087 (0.063)	0.073 (0.100)	0.074 (0.099)	0.130 (0.082)	0.131 (0.082)
Hispanic	-0.011 (0.044)	-0.012 (0.044)	-0.099 (0.061)	-0.099 (0.060)	0.104 (0.069)	0.104 (0.069)
Other	0.000 (0.124)	0.000 (0.124)	-0.024 (0.157)	-0.023 (0.158)	0.043 (0.186)	0.044 (0.186)
Income per year ²						
Less than \$15,000	0.041 (0.075)	0.039 (0.075)	0.007 (0.083)	0.005 (0.083)	0.305 * (0.158)	0.305 * (0.158)
Less than \$25,000	0.102 * (0.060)	0.102 * (0.060)	0.100 (0.069)	0.100 (0.069)	0.112 (0.110)	0.112 (0.110)
Less than \$50,000	0.075 (0.055)	0.075 (0.055)	0.058 (0.062)	0.057 (0.062)	0.153 (0.110)	0.153 (0.110)
More than \$50,000	0.079 (0.055)	0.078 (0.055)	0.070 (0.061)	0.070 (0.061)	0.130 (0.113)	0.130 (0.113)
Missing Income	0.077 (0.047)	0.077 (0.047)	0.073 (0.052)	0.072 (0.052)	0.110 (0.110)	0.109 (0.109)

Table 2.5: continued.

Highest parental education wave 1 ³						
Less than high school	0.163 *** (0.045)	0.164 *** (0.045)	0.167 *** (0.054)	0.169 *** (0.054)	0.203 ** (0.096)	0.203 ** (0.095)
Some college	0.002 (0.032)	0.002 (0.032)	-0.010 (0.036)	-0.010 (0.036)	0.048 (0.065)	0.048 (0.065)
College	0.044 (0.034)	0.044 (0.034)	0.004 (0.036)	0.004 (0.036)	0.143 * (0.079)	0.144 * (0.079)
Graduate School	0.001 (0.039)	0.002 (0.039)	-0.011 (0.044)	-0.011 (0.044)	0.052 (0.085)	0.052 (0.085)
Education missing	0.055 (0.086)	0.055 (0.086)	0.030 (0.095)	0.032 (0.095)	0.178 (0.161)	0.178 (0.161)
School variables						
Percentage of parents with college or more education	-0.033 (0.099)	-0.032 (0.099)	0.052 (0.114)	0.052 (0.114)	-0.178 (0.130)	-0.179 (0.130)
Percentage of parents in PTA	-0.008 (0.069)	-0.008 (0.069)	-0.036 (0.078)	-0.037 (0.078)	0.085 (0.084)	0.084 (0.084)
Classsize	-0.004 (0.003)	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)	-0.007 * (0.004)	-0.007 * (0.004)
Percentage of teachers with Masters degree	0.085 * (0.049)	0.085 * (0.049)	0.078 (0.057)	0.078 (0.057)	0.021 (0.102)	0.021 (0.102)
Percent by race						
Black	0.020 (0.090)	0.018 (0.089)	-0.023 (0.093)	-0.025 (0.093)	0.389 * (0.205)	0.390 * (0.207)
Asian	0.079 (0.160)	0.080 (0.161)	-0.308 (0.735)	-0.303 (0.736)	-0.220 (0.159)	-0.221 (0.160)
Hispanic	0.133 (0.085)	0.133 (0.084)	0.182 * (0.100)	0.182 * (0.100)	0.261 * (0.133)	0.260 * (0.133)
Wave 1 depression	0.304 *** (0.017)	0.304 *** (0.017)	0.300 *** (0.019)	0.300 *** (0.019)	0.323 *** (0.040)	0.324 *** (0.040)
N=	7094	7094	4799	4799	2295	2295
Constant=	1.413	1.425	1.258	1.271	2.019	2.017
R-Squared=	0.101	0.101	0.097	0.097	0.132	0.132

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school.

* p<.05, one-tailed test; ** p<.05; *** p<.01

Table 2.6, which includes the results for the fixed effects model of change in logged depression between waves, shows no significant effects for experiencing a parental separation or for the percentage of alternative families in the school. Again, none of the interactions are significant, indicating that there are no significant moderating effects of the percentage of alternative families in the school on the relationship between experiencing a parental separation and the difference in logged depression in these models.

Although the models of depression show no significant interactions, the results for delinquency are consistently significant between models for those who live in higher income communities. There is a significant moderating effect of the percentage of alternative families in the school on the relationship between experiencing a parental separation and both delinquency at Wave 3 and change in delinquency between waves for those who live in communities with 30 percent or more of households who make \$50,000 or more a year in income. For those who do not experience a parental separation, higher percentages of alternative families in the school are associated with increased participation in delinquent behavior. However, among those who experience a parental separation, higher percentages of alternative families in the school appear to protect against some of the negative outcomes of parental separation. It is important to note that these results are only significant for those in higher income areas, indicating that, although the percentage of alternative families in the school moderates the relationship between parental separation and delinquency for some individuals, this social context may not provide much protection for those who experience a parental separation in socioeconomically disadvantaged areas.

Table 2.6: Coefficients of Fixed Effects Regression Model of Difference in Log Transformed 8-Point Depression Scale on Select Control Variables, including the Percentage of School Peers who Do Not Live with Two Biological Parents

	Full Model 1	Full Model 2	Lower SES Model 1	Lower SES Model 2	Higher SES Model 1	Higher SES Model 2
Parental separation between waves 1 and 3	-0.007 (0.041)	-0.087 (0.147)	0.020 (0.047)	-0.028 (0.185)	-0.096 (0.079)	-0.050 (0.222)
Percentage of students in alternative families in school	-0.012 (0.163)	-0.035 (0.163)	0.097 (0.193)	0.083 (0.195)	-0.296 (0.294)	-0.283 (0.289)
Interaction						
Separation * Percentage of students in alternative families		0.176 (0.306)		0.104 (0.378)		-0.117 (0.509)
Female	-0.069 ** (0.030)	-0.069 ** (0.030)	-0.057 * (0.032)	-0.057 * (0.032)	-0.114 * (0.067)	-0.114 * (0.068)
Age Wave 1	-0.079 *** (0.009)	-0.079 *** (0.009)	-0.065 *** (0.009)	-0.065 *** (0.009)	-0.120 *** (0.018)	-0.120 *** (0.018)
Race ¹						
Black	-0.086 (0.056)	-0.087 (0.056)	-0.089 (0.060)	-0.089 (0.060)	-0.159 (0.137)	-0.159 (0.138)
Asian	0.051 (0.084)	0.051 (0.084)	0.021 (0.134)	0.022 (0.133)	0.104 (0.099)	0.105 (0.100)
Hispanic	-0.048 (0.063)	-0.049 (0.063)	-0.155 * (0.090)	-0.155 * (0.090)	0.085 (0.087)	0.086 (0.088)
Other	-0.079 (0.157)	-0.079 (0.157)	-0.060 (0.214)	-0.060 (0.214)	-0.134 (0.202)	-0.133 (0.202)
Income per year ²						
Less than \$15,000	0.007 (0.087)	0.005 (0.087)	-0.018 (0.096)	-0.019 (0.097)	0.241 (0.162)	0.241 (0.162)
Less than \$25,000	0.125 * (0.072)	0.125 * (0.072)	0.131 (0.082)	0.131 (0.082)	0.069 (0.111)	0.069 (0.111)
Less than \$50,000	0.130 ** (0.065)	0.130 ** (0.065)	0.118 (0.075)	0.118 (0.076)	0.147 (0.110)	0.147 (0.109)
More than \$50,000	0.105 * (0.060)	0.104 * (0.060)	0.115 (0.070)	0.115 (0.071)	0.061 (0.097)	0.061 (0.097)
Missing Income	0.074 (0.050)	0.073 (0.050)	0.085 (0.057)	0.085 (0.057)	0.024 (0.087)	0.022 (0.087)

Table 2.6: continued.

Highest parental education wave 1 ³						
Less than high school	0.060 (0.053)	0.061 (0.053)	0.058 (0.063)	0.059 (0.063)	0.135 (0.105)	0.135 (0.105)
Some college	0.053 (0.047)	0.053 (0.047)	0.037 (0.055)	0.038 (0.055)	0.106 (0.085)	0.106 (0.085)
College	0.120 *** (0.042)	0.121 *** (0.042)	0.085 * (0.045)	0.085 * (0.045)	0.203 ** (0.090)	0.203 ** (0.090)
Graduate School	0.064 (0.052)	0.064 (0.052)	0.064 (0.060)	0.064 (0.060)	0.090 (0.098)	0.090 (0.098)
Education missing	0.011 (0.100)	0.012 (0.100)	-0.030 (0.113)	-0.029 (0.113)	0.173 (0.169)	0.176 (0.170)
School variables						
Percentage of parents with college or more education	-0.008 (0.123)	-0.007 (0.123)	0.045 (0.142)	0.046 (0.142)	-0.042 (0.205)	-0.043 (0.205)
Percentage of parents in PTA	0.008 (0.083)	0.008 (0.083)	-0.023 (0.093)	-0.023 (0.093)	0.125 (0.105)	0.125 (0.105)
Classsize	-0.006 (0.005)	-0.007 (0.005)	-0.007 * (0.004)	-0.007 * (0.004)	-0.010 (0.008)	-0.009 (0.008)
Percentage of teachers with Masters degree	0.107 * (0.059)	0.108 * (0.059)	0.087 (0.070)	0.088 (0.070)	0.045 (0.121)	0.045 (0.121)
Percent by race						
Black	0.030 (0.119)	0.027 (0.119)	0.040 (0.126)	0.039 (0.126)	0.055 (0.344)	0.058 (0.344)
Asian	-0.210 (0.146)	-0.208 (0.147)	-1.210 * (0.705)	-1.207 * (0.708)	-0.501 *** (0.186)	-0.502 *** (0.188)
Hispanic	0.182 (0.111)	0.183 * (0.110)	0.276 ** (0.136)	0.275 ** (0.136)	0.290 (0.182)	0.288 (0.182)
N=	7094	7094	4799	4799	2295	2295
Constant=	1.094	1.108	0.839	0.847	1.983	1.976
R-Squared=	0.034	0.034	0.025	0.025	0.088	0.088

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school.

* p<.05, one-tailed test; ** p<.05; *** p<.01

Conclusions

These findings support the hypothesis that the concentration of students living in alternative families in an adolescent's school pre-separation moderates the relationship between parental separation and delinquency for those who live in more socioeconomically advantaged areas. In these communities, higher percentages of school peers who live in non-two biological parent families protect against some of the negative impacts of parental separation on delinquent behavior. Results for depression, however, are not significant, indicating that these impacts are significant only for externalizing behaviors in response to stress. Young adult delinquency may be a more immediate response to stigmatization and lack of social support than depression, so that delinquency yields significant results whereas findings are not significant for depression. Individuals may be more likely to respond to social stigmatization by joining a rebellious group to find support or by acting out against those they feel are stigmatizing them than they are to respond with depressive symptoms.

There are multiple possible explanations for this moderating effect for those who live in higher income areas. First, it may be that, in areas of higher concentration of alternative family structures, the roles for members of non-intact families are more institutionalized, which decreases the stress associated with a parental separation (Cherlin 1978). Further, adolescents experiencing a parental separation in an environment with a higher percentage of peers living in alternative families may find they have to explain their situation less because others already understand their family arrangement without a great deal of explanation. Greater understanding could decrease the sense of being different and increase the sense of fitting in with school peers. Anticipatory socialization

into alternative family structures is also likely higher in schools with higher percentages of students who live in non-intact families (Burr 1972). This anticipatory socialization could ease the transition of a parental separation.

Further, in schools with higher percentages of alternative families, the stress of parental separation is not accompanied by the stress of transitioning into a group that is as much of a minority, which likely reduces some negative outcomes. Again, individuals who experience a parental separation may be less inclined to feel they do not fit in if they attend schools with higher percentages of alternative families. In these environments, social institutions are also likely to be more prepared to accommodate the needs of parents who have separated. It could also be that increasing numbers of adolescents who live in alternative families are associated with greater access to similar others, other individuals who have also experienced a parental separation, which may be beneficial to young adults (Thoits 2001). Similar others have been shown to provide higher quality and more enduring social support during stressful situations.

For those who live in more disadvantaged areas, however, the percentage of alternative families in the respondent's school pre-separation does not seem to have the same protective impact. One possible explanation for this finding is that the benefits of experiencing a parental separation with the aid of anticipatory socialization, support from similar others and increased institutionalization of alternative families are not strong enough to outweigh the negative impacts of socioeconomic disadvantage. Further, because those in lower income areas are more concerned with making ends meet they may be less focused on social acceptance and what their neighbors are doing.

Additionally, areas with lower income have both higher heterogeneity of cultures and weaker social ties; therefore, strong social norms tend to be enforced less in these areas (Harding 2007). As such, higher percentages of non-intact families in the area likely do less to alter existing cultural values, and the impact of neighbors may be reduced. Further, because individuals in less advantaged areas tend already to be more accepting of non-intact families, higher percentages of single parent families may not decrease any sense of not fitting in or not being accepted and may not impact support among those who experience a parental separation in these areas (Edin and Kefalas 2005).

These analyses are limited by the fact that I can only measure context at Wave 1 and cannot repeat these context measures at Wave 3, which means I cannot measure the current social context of the young adult respondent and am not accounting for change in social environment. However, the social context experienced in adolescence should still have a strong impact on outcomes later in life, as a great deal of socialization occurs at the school level and during the adolescent years (Jenkins 1995). Further, the findings shown here are likely to be conservative estimates, measuring social context at time 1 rather than current social context. The power of these results would likely be even stronger if I were able to track social context over time rather than having to rely on previous social context.

This analysis provides evidence to suggest that, when analyzing the effect of family structure change on adolescents, it is important to take a life course “linked lives” perspective and to incorporate a social-ecological viewpoint into analyses (Elder 1998;

Bronfenbrenner 1979 and 1989). For delinquency, this analysis supports the conclusion that the social context of adolescence is important in determining how individuals respond to the stressors of experiencing a parental relationship dissolution. Higher percentages of alternative families in the school pre-separation do appear to have a protective impact for adolescents experiencing parental separations in higher socioeconomic status neighborhoods, although these results do not hold for those in lower socioeconomic status areas. These results suggest it is important to take into account multiple levels of social context when analyzing adolescent adjustment.

Chapter 3

The Socio-Religious Context of Parental Separation: Does school religious context moderate the impact of parental separation on children?

By: Darci Powell

For many young adults, having experienced a parental separation contributes to negative consequences, including lessened academic achievement, problems with later relationships, higher risk of mental disorders, problems within the workplace, and increased risk behavior (Amato 2001; Amato and Keith 1991a and 1991b). For some individuals, however, parental separation is not associated with the same negative effects (McLanahan and Sandefur 1994). Resilience varies significantly due to the personal, social and economic resources of children (Amato 1993; Demo and Acock 1991; McLanahan and Sandefur 1994). With around 60 percent of children in the United States living in non-two biological parent households at some point during their life, it is important to understand the mechanisms through which individuals prove more or less resilient to family separation (Hetherington and Stanley-Hagan 1999; Bumpass 1990; Norton and Miller 1991).

Personal religiosity is one element that has been shown to help individuals cope with stressful situations (Maynard et al. 2001; Pargamet et al. 1988; Ellison 1998; Nooney and Woodrum 2002), but religion is more than an individual-level factor. Religion is also a social institution, and the religious context in which an individual lives and interacts often shapes decision and actions. Researchers have found that the religious

composition of the community has an important impact on individual behavior (e.g., Beyerlein and Hipp 2005; Stark 1996; Stark et al. 1982; Regnerus 2003; Blanchard 2007). For example, religious individuals tend to show the benefits of religious participation primarily when embedded in religious communities (Stark 1996). High levels of conservative Protestantism in a community are associated with decreased crime among those who are conservative Protestants, but are associated with higher levels of crime among those who are not religious (Beyerlein and Hipp 2005). Evidence suggests, then, that socio-religious contexts shape individual behavior, but the role of these contexts in adjustment to parental separation has not been examined.

School is one of the most important contexts for the lives adolescents. School is one of their primary communities outside of the family. With much of an adolescent's time spent in school and a great deal of socialization occurring in the school environment (Jenkins 1995), the religious environment in one's school may be an important contextual factor modifying the influence of parental separation on outcomes.

Although there is some debate over whether parental separation represents a time-limited or a chronic stressor in the lives of children, there is general consensus that experiencing parental separation is often associated with increased delinquency and depression post-separation in response to stress associated with the separation (Amato 2000 and 2001; Amato and Keith 1991a and 1991b; Morrison and Cherlin 1995; Ahrons 1980; Landis 1960; Aneshensel 1992; Sandler et al. 1994). Strain theory suggests that delinquency is an externalized symptom of internalized stress, whereas depression is a more internalized symptom of stress (Aseltine et al. 2000; Agnew 1985; Hagan 1997). I

explore both outcomes in response to this literature and in order to capture results for individuals who respond to stress in varying ways.

In this paper, I examine the moderating effect of levels of conservative Protestantism in a young adult's school on the relationship between parental separation and both delinquency and depression from a social ecological and "linked lives" perspective. First, I lay out and explore the background theories that provide support for this research. Then, I develop hypotheses of the moderating effects of school religious context on the relationship between parental separation and young adult outcomes from these theories. Finally, I test these hypotheses using two waves of the National Longitudinal Study of Adolescent Health survey, a stratified, longitudinal study that is nationally representative.

Theorizing the Modifying Role of Conservative Protestantism

The social environment in which events take place has been shown to have a large impact on how individuals adapt and respond. Social-ecological theories, theories of social norms, and the "linked lives" perspective support the idea that the concentration of conservative Protestantism within an individual's social environment moderates the relationship between experiencing a parental separation and young adult outcomes.

Social ecological theories suggest that individuals are embedded in different layers of social context and that attributes of the social environment impact how people act within and react to certain situations (Glasgow et al. 2002; Kumpfer and Turner 1991; Bronfenbrenner 1979 and 1989; Schmeer 2005; Elder 1998). Individuals are strongly

impacted by the norms, values and characteristics of others within their social network, and the concentrations of varying demographic and cultural traits can have a strong impact on individual behavior.

Religiosity is one such characteristic that has a varying impact depending on its concentration within the social environment. The importance of the religious composition of communities in determining the strength of a relationship between two variables is highlighted in the “moral communities” hypothesis, which suggests that individuals who are religious tend to report fewer delinquent activities primarily when they are also embedded in a community with a high percentage of religious adherents (Stark 1996). Other studies provide evidence suggesting that conservative Protestantism, although it benefits those within the conservative religious group, is not beneficial to communities overall. Beyerlein and Hipp (2005), in their analysis of community violent crime rates, find that areas with high evangelical Protestantism, as opposed to greater percentages of mainline Protestantism, tend to have higher crime rates. They suggest that this effect is due to the strong bonding networks of conservative religious traditions, which are beneficial to those in the religious group by providing tight social networks but are deleterious to the community overall, due to decreased ties within the broader community (Beyerlein and Hipp 2005). Blanchard (2007) similarly finds that higher percentages of conservative Protestantism in a community are associated with increased levels of racial segregation due to weaker ties across the community and stronger closed networks in areas with higher percentages of conservative Protestants. This literature provides evidence to suggest that, in general, the concentration of religiosity, especially

conservative Protestantism, in an individual's environment has important consequences for behavior.

In terms of the family more specifically, higher concentrations of conservative Protestants in an area likely influence how individuals respond to parental separation due to the strong views toward the family held by individuals in conservative Protestant traditions. Gay, Ellison and Powers (1996) find that conservative Protestant denominations have high levels of homogeneity in attitudes when it comes to beliefs regarding the family. Conservative Protestant denominations generally favor “pro-family” attitudes, which coincide with traditional gender and family roles, neither of which support separation and divorce. These ideas tend to persist throughout generations through the process of socialization, so that younger adherents are likely to hold the same views (Gay et al. 1996). Hertel and Hughes (1987) also find evidence to suggest that conservative Protestant denominations hold more traditional attitudes, including those regarding divorce. Booth and Amato (1991) find that adults who hold conservative attitudes, such as the belief that divorce is immoral, tend to have a harder time adjusting to separation. Although churches make efforts to provide support networks for non-intact families, single parents still generally report feeling out of place and uncomfortable in the church environment because churches are largely geared toward married families with children (Edgell 2005).

It is likely that individuals in alternative families feel out of place in a conservative Protestant environment both because alternative families are less institutionalized in these communities and because the cultural values in these areas

provide less support for and more disapproval of non-intact family structures. Cherlin (1978), in his discussion of social norms, finds that the institutionalization of family practices can have a large effect on how individuals cope with certain family structures. Social institutions make clear the roles that individuals are supposed to perform, define appropriate behavior within these roles, and provide organization for social life (Cherlin 1978; Gerth and Mills 1953; Berger and Luckmann 1966). In areas where alternative family structures are less accepted, the expectations for behaviors in family roles may not be discussed as clearly or favorably and may not be as clearly defined. As a result, adaptation to these family environments can be more stressful because of the lack of clear expectations and rules for behavior.

The “linked lives” perspective in life course theory similarly suggests that individuals are embedded in their historical time and place, including the cultural ideas by which they are surrounded (Elder 1998). These cultural trends are expressed through social ties and relationships, influencing individual action and decisions. The values and beliefs of those in one’s community, then, provide a set of social institutions around which to govern behavior as well as a cultural framework, or “cultural toolkit,” around which individuals structure their attitudes and beliefs and make sense of the world around them (Swidler 1986).

Religion is one such socio-cultural institution. As part of the “cultural toolkit,” religion informs individual beliefs and enforces behavioral rules and conformity (Swidler 1986; Barnes 2005). The religious beliefs of those in one’s community have an impact on individual belief and behavior both by providing social norms and rules by which to

behave and by providing a set of cultural beliefs and values that inform individual behavior and attitudes. Because conservative Protestant churches generally tend to convey disapproval of divorce and separation, the social institution of conservative Protestantism is less likely to make clear the roles that individuals perform in non-intact families and is less likely to provide a cultural atmosphere of acceptance for these families. Regardless of whether an individual is a conservative Protestant or not, the higher the concentration of conservative Protestants in the community, the more conservative Protestant values will be the norm, the more the culture will lean toward disapproval of separation, and the more stigmatized parental separation and divorce will be. These factors are likely to be associated with added stress associated with a parental separation in social environments with high percentages of conservative Protestants, and this added stress could translate into higher delinquency and depression for youth in these environments.

Importance of School Context

Social context has been measured at the regional level, the county level, and at the school-level (Stark et al. 1982; Regnerus 2003; Beyerlein and Hipp 2005). For adolescents, school effects are likely to be stronger than neighborhood effects considering the important role the school plays as a source of socialization in the lives of adolescents (Jenkins 1995). In general, the school social context has been shown to be important for adolescents. For example, Bearman and Bruckner (2001) find, in their investigation of virginity pledges in schools, that the pledge is most effective when there are enough students who take the pledge to create a social group but not so many students that a culture is created where the pledge has no meaning.

The school context of conservative Protestant religiosity has also been found to be important. Regnerus (2003), in his test of the “moral communities” hypothesis, examines the impact of the relationship between county- and school-level conservative Protestantism and individual level religiosity on delinquency, measured by theft and minor delinquency. He finds that, although individual level religiosity has an effect on participation in delinquent activities, this relationship is heightened by high levels of conservative Protestant homogeneity at both the community- and the school-levels for those in conservative Protestant traditions (Regnerus 2003). Along the lines of the “moral communities” thesis, he suggests that a great deal of this effect is due to the social control networks created by homogenous, conservative Protestant religious traditions (Regnerus 2003; Stark 1996).

Because the school is such a focal point of adolescents’ lives and because so much socialization occurs there, the cultural values expressed in an adolescent’s school among an adolescent’s peers likely have a strong impact on individual behavior. The culture created by a higher percentage of conservative Protestant students in an adolescent’s school environment is likely to be less supportive and understanding of parental separation and is likely to be characterized by lower levels of institutionalization of alternative families because conservative Protestants tend to have more negative views of parental separation. These cultural characteristics are liable to create a sense of not fitting in and of being stigmatized in the adolescent, which could lead to increased negative outcomes, including delinquency and depression, in response to parental separation.

Other Factors Related to Outcomes

There are many other factors related both to delinquency and depression and to the probability of experiencing a parental separation that are important to take into account. Age is a strong determinant of both delinquency and depression. Participation in delinquent behavior usually begins in adolescence, peaks during late adolescence and decreases with approaching adulthood (Moffitt 1993; Agnew 2003). Depression, too, has been shown to decrease in young adulthood (Mirowsky and Ross 1992). Gender is also highly correlated with both delinquency and depression. Males tend to participate in delinquent activities more frequently than females (LaGrange and Silverman 1999; Broidy and Agnew 1997). However, females tend to report higher levels of depression than males (Mirowsky 1996; Petersen et al. 1991). Although age and gender do not make individuals more or less likely to experience a parental separation, both age and gender are likely to be related to how individuals experience a parental separation (Amato 1993; Glenn and Kramer 1985).

Although race has been shown to be connected to delinquency and depression, the exact relationship between race and outcomes is not always clear. For Black respondents, some authors find lower levels of self-reported delinquency than among Whites but suggest that this finding is due to underreporting (Hindelang 1978). Matsueda and Heimer (1987) find that Black respondents from non-intact families tend to report higher levels of delinquency than White respondents. Hispanic youth have been shown to have higher delinquency rates than Whites (Pozzi 1997). Asians tend to show lower levels of delinquency than Whites in general, but some Southeast Asian groups report higher levels of delinquency (Le and Stockdale 2005).

In terms of depression, findings are also unclear. For Black respondents, some studies suggest that Black respondents report higher levels of depression than Whites, whereas others report the opposite (George and Lynch 2003). Studies regarding Hispanics and Asians are similarly inconclusive, with some studies indicating higher and some lower rates of mental illness (Vega and Rumbaut 1991). Race/ethnicity is also connected to the probability of experiencing a parental separation. Black respondents are much more likely to live in a non-intact family and to experience a separation than either White or Hispanic respondents (Trent and South 1992; Raley and Bumpass 2003; Norton and Miller 1991). Hispanic respondents are less likely than either White or Black respondents to have experienced a separation (Norton and Miller 1991).

Socioeconomic status has been shown to be connected both to delinquency and depression and to the likelihood of experiencing a parental separation. Strain theory suggests that individuals of lower socioeconomic status are more likely to turn to delinquent activities to achieve their goals because of a lack of other opportunities (Mirowsky and Ross 2006). For depression, lower socioeconomic status has consistently been found to be associated with higher levels of depression and mental disorders (Miech and Shanahan 2000), and children from lower socioeconomic status tend to have more developmental problems (Brooks-Gunn and Duncan 1997; Bradley and Corwyn 2002). Socioeconomic status has also been shown to be associated with higher risk of experiencing a separation (South 2001; Raley and Bumpass 2003).

Individual religiosity is often found to be protective against delinquency and poor mental health (Maynard et al. 2001; Pargamet et al. 1988; Ellison 1998; Baier and Wright

2001). Religiosity provides ways of making meaning out of crises and provides valuable social networks that can help individuals deal with stressful situations (Maynard et al. 2001; Pargamet et al. 1988; Ellison 1998; Nooney and Woodrum 2002). Although this paper focuses on the role of the socio-religious context in adolescent adjustment, it is important to acknowledge that there may be some effect of personal religiosity and of religious attendance that should be taken into account.

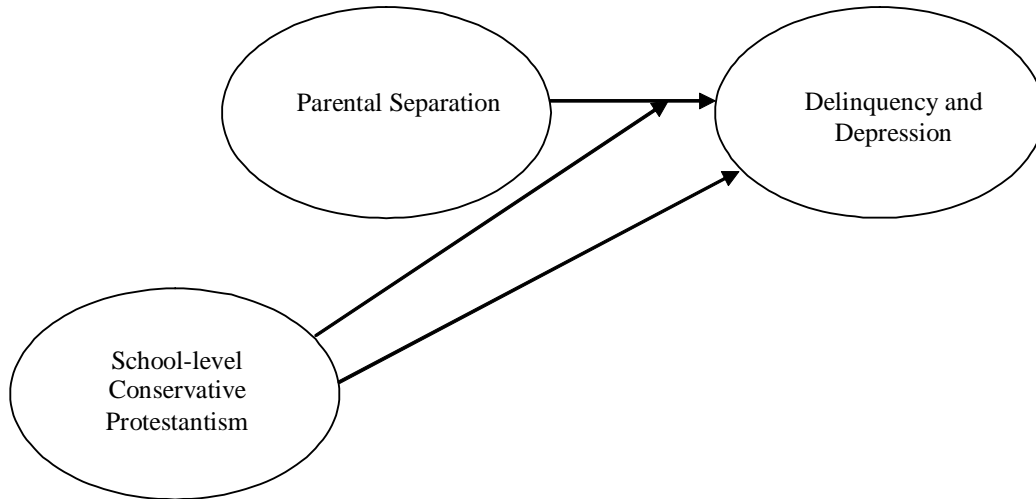
There might also be school characteristics related to youth outcomes. School quality has been shown to impact outcomes in later life, with lower school quality having a negative relationship with later earnings (Betts 1995). Little of the literature on school quality focuses on delinquency and depression. The literature does show, however, that school commitment is associated with decreased delinquency, suggesting that the school environment has an impact on outcomes (Jenkins 1995).

The racial composition of the school may also play an important role in how parental separation affects youth because different racial and ethnic groups have varying average views of parental separation. Black respondents are found to have less traditional attitudes toward marriage and the family than Whites in general, perhaps because of greater divorce and single-motherhood rates among the Black population; however, Black respondents tend to more strongly disapprove of divorce when children are involved (Trent and South 1992). Hispanics, on the other hand, generally tend to have more traditional views toward family life than Whites (Trent and South 1992). The racial/ethnic composition of the school, then, may impact a respondent's adaptation to parental separation.

Hypotheses

The literature presented above strongly suggests that, although personal religiosity tends to help people cope with family transitions, a social environment of conservative Protestant religiosity could make the process of parental separation or divorce more difficult. For both attenders and non-attenders, higher levels of conservative Protestant involvement in the school represent a general trend toward conservative beliefs toward the family and a lack of social institutionalization of alternative families, which could make any individual who experiences a parental separation feel out of place and less supported and which may be associated with increased insecurity in the transition due to a lack of rules or expectations of behavior. I hypothesize, then, that the percentage of conservative Protestants in an adolescent's school will moderate the relationship between parental separation and youth delinquency and depression outcomes, with those who experience a separation after having attended a school with higher percentages of conservative Protestant students showing more negative effects than those who experience a separation in schools with lower percentages of conservative Protestant students. The conceptual model of this hypothesis is provided in Figure 3.1.

Figure 3.1: Conceptual Model of Hypothesis



To sum, I intend to examine religiosity at the school level as a social contextual factor, a set of attitudes, beliefs and behaviors with which an adolescent going through a family transition must contend. I plan to address and answer the following question: Does a social context of high conservative Protestantism moderate the relationship between having experienced a parental relationship dissolution and delinquency and depression? This analysis provides new insight into factors that account for the variance in resilience seen in individuals who have experienced a parental breakup.

Data and Measures

In these analyses, I use data from the National Longitudinal Study of Adolescent Health (Add Health), an ongoing, nationally representative, school-based study of adolescents, who were grades 7 to 12 in the first wave of the survey. I use data from the Wave 1 interview, conducted in 1994-95, and from the Wave 3 sample, collected in

2001-02. The data is stratified by school; 80 high schools and 52 middle schools were originally selected to participate in the survey, with over 70 percent of those selected participating. In-school data was collected for all students of these schools.

Administrators were also asked to fill out a survey regarding school characteristics. Respondents for the in-home survey were then selected at random using school rosters. Seventy-nine percent of those selected participated in the survey. Approximately 77.4 percent of those in the original Wave 1 sample participated in the Wave 3 survey.

Only respondents who lived with both biological parents at Wave 1 are included in this analysis. Although not including some respondents may introduce selection bias, it is not possible to estimate a change model without limiting the sample in this fashion. Therefore, this analysis only shows the effects of parental relationship dissolution that happens during adolescence, not before. Children with two adoptive parents at Wave 1 are not included because of the difficulty of determining whether they had experienced the dissolution of a parental relationship before they were adopted.

The final sample size of these models is a little over 6,900. The sample size of respondents who live with two biological parents at Wave 1 and have information regarding their parents' relationship at Wave 3 is 7,258. Other deletions are due primarily to missing data for the dependent variables and for school-level data.

School Religiosity Measures

Percent Conservative Protestants in School. Among students in the school, conservative Protestantism is measured using a combination of three variables. First,

adolescents were asked their religious denomination. Using a classification system outlined by Tom Smith (1987), respondents are first classified as conservative Protestant or not conservative Protestant according to their denomination. Conservative Protestant denominations include Adventist, Assemblies of God, Baptist, Christian Science, Holiness, National Baptist, Latter Day Saints, and Pentecostal denominations. Black Baptist churches are not included as conservative because they generally have more liberal political views than White Baptist churches, despite their conservative theology (Woodberry and Smith 1998). I have included only Protestant Christian conservatives in this designation because much of the literature focuses on these denominations and because the Add Health survey does not separate other religions, including Catholicism, Judaism, Islam and Buddhism, into conservative or non-conservative categories. However, Smith's classification system states that Catholic and Jewish respondents are considered moderate and liberal, respectively, indicating that the highest percentage of non-Protestant respondents would be classified as non-conservative anyway.

Because adolescent respondents may be affiliated with a conservative denomination simply because their parents attend, I also include two measures of personal religious belief that indicate the strength of their conservative Protestant religiosity. I use a measure of belief in the scriptures of one's tradition as the word of God, completely without mistake, which has been used as a factor indicating conservative Protestant theology (Sherkat and Ellison 1997). Because so many respondents answered that they agree with this statement (around 70 percent), I also felt it was important to include a measure of the importance of a respondent's religious faith to him or her. Respondents were asked whether their religion was very important, fairly important, not

very important or not at all important to them. I create a dummy variable that indicates the importance of religious belief to an individual. If they answered that their religion was very important to them, they are coded as “1” for this measure. If they answered their religion was fairly important, not very important or not at all important to them, or if they were not religious, they are coded as “0”.

Using the measure of conservative Protestantism, the measure of scriptural belief, and the measure of religious importance, I create a dummy variable indicating conservative Protestant religiosity. If the respondent was affiliated with a conservative Protestant denomination, believed in scriptural inerrancy and felt religion was very important to him/her, he/she is coded as being strongly conservatively Protestant. Otherwise, the respondent is coded as not conservatively Protestant. For the measure of the school level of conservative Protestantism, I create a variable indicating the weighted percentage of students who were conservatively Protestant by school. Although this measure is only available for the portion of the school that took the in-home survey, this sample is randomly selected and should be representative of the student body in general. Respondents who had less than 25 respondents in their school respond to the in-home questionnaire are not included, so this measure is a more accurately representative sample of the school.

Parental relationship dissolution. Respondents were asked to list the members of their household at all three waves. Respondents who lived with both biological parents at Wave 1 are included in the sample as living in an intact household. Other respondents are not included. Respondents were again asked to list the members of their household at

Wave 2. If they lived with only one biological parent at this time and lived with two biological parents at Wave 1, they are coded as having experienced a parental relationship dissolution. If they lived with two biological parents again or if they were not included in this wave but did participate at Wave 3, I then look to Wave 3 for information regarding their most recent family status. Respondents were again asked to list the members of their household at Wave 3. If they lived with both biological parents in this wave as well as the other two waves, they are coded as not having experienced a parental separation. If they lived with one biological parent but not two, I code them as having experienced a parental separation.

However, due to the age of respondents, many respondents lived in their own household. At this wave, the Add Health survey also includes questions asking whether the respondent's prior parents (from Wave 1 if the respondent did not participate in Wave 2 or from Wave 2 if the respondent participated in both surveys) still live together. If a respondent lived in a two biological parent household at a prior wave and reported that his/her two previous parents or biological parents were no longer living together, then he/she is coded as having experienced a parental separation. However, respondents who lived with two biological parents in the prior wave and who report that their prior parents are still living together in the same household are coded as not having experienced a parental relationship dissolution.

Control Variables

As control variables, I include measures of race/ethnicity, gender, socioeconomic status, individual religiosity, and school characteristics.

Age, Race/ethnicity and Gender. The measure of age is taken from the Wave 1 survey. Respondents were asked their birth date at the time of the interview. Age was determined by subtracting their date of birth from the date of the interview.

Race/ethnicity is divided into five categories: non-Hispanic White, Black, Asian, Hispanic, and other. Although the “other” race category is difficult to interpret, it is included in the models in order to retain as many cases as possible. Gender is coded as “1” for females and “0” for males.

Income and parental education. For socioeconomic status, I include measures of family income and parental education at Wave 1. Information on family income is taken from the Wave 1 parents’ survey in which parents were asked to report the average income of their household in thousands. This variable is split into six dummy variables, indicating the family income was less than \$15,000, \$15,000 to \$25,000, \$25,000 to \$35,000, \$35,000 to \$50,000, more than \$50,000 or missing. The variable indicating missing data is included because of the high percentage of respondents with no information on family income (20 percent) (Lee et al. 1994). Parental education is taken from the in-home survey at Wave 1. Respondents were asked the education of both their residential mother and their residential father. Parental education is coded as the highest reported education of a residential parent. These variables include less than high school, high school graduate, some college, college graduate, graduate school or missing. High school graduate is the reference category. Although fewer respondents are missing data on parental education (about 2 percent), I have included a missing category to retain as many respondents as possible in the analyses.

Religious attendance. Respondents were asked how often they attended religious services in the last 12 months at Wave 1. I create a series of four dummy variables indicating the respondent never attended religious services/was not religious, attended less than once a month, attended between once a month and once a week, or attended once a week. The individual-level measure of conservative religiosity is also used as a control variable.

School-level variables. I include variables measuring school characteristics including racial composition, average class size, the percentage of teachers with Master's degrees, and the percentage of parents involved in a parent-teacher's organization in the school. Racial composition is the average percentage of students in the school who are White, Black, Asian, or Hispanic. "Other" race is not included in this analysis because it is difficult to interpret and does not affect sample size. The other three school-level variables are indicators of school quality and come from surveys taken of school administrators. School administrators reported the average class size at the school, the percentage of teachers with Master's degrees, whether they had a parent-teacher organization and, if so, the percentage of parents involved. The percentage of teachers with Master's degrees and the student/teacher ratio, a measure similar to class size, have all been used to indicate school quality in other studies (Betts 1995). The percentage of parents involved in a parent-teacher organization is included as a reflection of parental investment in and attachment to the school.

Dependent Variables

Delinquency. For Wave 1, delinquency is measured as the sum of eight yes/no questions about participation in activities considered delinquent, such as minor property crime and theft, within the last 12 months. Respondents were asked how often they participated in these activities, with four possible responses ranging from never to five or more times. Responses are recoded as dummy variables; “0” indicates having never participated in the activity and “1” indicates having participated in the activity at least once. Responses are then summed. Because some respondents do not answer all questions, the scale is standardized for missing data to range from zero to eight. A full list of variables is included in Appendix 3A. The alpha of the Wave 1 scale is 0.75. The alpha of the Wave 3 scale is 0.67.

Depression. Depression is measured as the sum of eight questions indicating the frequency with which respondents experienced varying feelings over the last week. The feelings include being sad, feeling blue, crying, feeling tired, and having trouble keeping their mind on things. A full list of variables is included in Appendix 3A. Because the alpha of the measure improves when it is omitted, feeling good about oneself is not included in the scale. The alpha of the Wave 1 scale is 0.80. The alpha of the Wave 3 scale is 0.81. Response categories include having experienced the feeling never or rarely, sometimes, a lot of the time, or most or all of the time, ranging from zero to three. The scale is standardized for missing data and ranges from zero to 24.

Analysis Strategy

In order to test for whether the percentage of conservative Protestants in the school moderates the relationship between parental separation and youth outcomes, I

include an interaction variable created by multiplying the indicator of whether a respondent has experienced a parental marital dissolution between waves with the variable measuring school conservative Protestant religiosity. In these analyses, I do not try to control for all variables that might be associated with the relationship between parental separation and outcomes. I am interested in the *overall* effects of parental separation and the interaction between parental separation and school religious context, and so include only limited control measures.¹

I use multiple methods to analyze the moderating effects of school-level conservative Protestant religiosity on the relationship between parental separation and young adult outcomes in order to provide a more thorough analysis of the data. I use lagged dependent variable and fixed effects models. The lagged dependent variable models include both the Wave 3 measure of the outcome and the Wave 1 measure in order to determine whether change in behavior is significant. This approach allows for the retention of all of the variation in the dependent variable at both waves and is similar to that used by Pearce and Haynie (2004). Halaby (2004), however, suggests that the fixed effects approach, which uses the difference between the Wave 3 and the Wave 1 variable as the dependent variable, more effectively diminishes heterogeneity bias. Because the outcome is the difference between the Wave 3 and the Wave 1 dependent variable, some of the variation in the dependent variable is lost using this method. All changes of the same magnitude are seen as indicating the same amount of change. For

¹ I have tried the analyses with interactions between separation and county level income, unemployment, percent kids with single parents, and poverty rate. Although the correlation between these variables and religiosity are significant, and some of the interactions were significant, none of the interactions were powerful enough to account for the significant interaction between parental separation and conservative religiosity.

instance, a change from participating in four delinquent acts at Wave 1 to five delinquent acts at Wave 3 is considered the same as a change from zero delinquent acts at Wave 1 to one delinquent act at Wave 3. It is likely, though, that a change from no delinquent behavior to some delinquent behavior indicates a more meaningful change than a move from some delinquent behavior to more delinquent behavior. Because both approaches have strengths and weaknesses, I utilize both in order to provide a more comprehensive assessment of the data.

I use negative binomial regression in the lagged dependent variable analyses of delinquency due to the skewed distribution of the dependent variable (Pearce and Haynie 2004). Approximately 60 percent of respondents have participated in no delinquent activities in the past 12 months, and very few have participated in multiple delinquent activities. Negative binomial regression deals more effectively with dependent variables that are not normally distributed than does linear regression and allows for overdispersion more effectively than does Poisson distribution (Allison and Waterman 2002). All models in the preliminary analyses show evidence of overdispersion, with alphas that are greater than zero. The negative binomial model varies from the Poisson distribution in that it incorporates an added error term that corrects for overdispersion (Long 2001). Because the delinquency scale is standardized for missing data, some of the values in the scale are not integers. The difference between waves, therefore, more closely represents a continuous than a categorical variable, so I use linear regression for these models rather than ordered probit, which would treat the difference as categorical. In previous analyses, I ran the models using ordered probit and found no differences.

For the analysis of depression, I use a regression of the logged dependent variable. Because the dependent variable is highly skewed, the logged transformation helps limit the threat of heteroscedasticity in the model. For the lagged dependent variable analyses, I add one to the depression scale before I log it so that no values are equal to zero, as zeros cannot be logged. For the fixed effects models, I use the difference between the logs. For both approaches, I use linear regression. In order to deal with the correlated error structures inherent in the stratified nature of the Add Health sample, I use the survey commands in STATA, which allow for the specification of primary sampling units (in this case, schools) and strata (region) (Chantala and Tabor 1999). Equations representing the models are listed in Appendix 3B.

Results

Descriptives

Survey weighted descriptive statistics of the variables used in the school-level and community-level models are listed in Table 3.1. Around 11 percent of respondents experience a parental separation between waves. The average level of conservative Protestantism within the school is 16 percent, and around 17 percent of respondents are conservative Protestants themselves. Both delinquency and depression decrease between waves. At Wave 1, respondents report 0.88 delinquent acts on average, and at Wave 3 respondents report 0.40 delinquent acts. For depression, respondents score 4.18 on the depression scale on average at Wave 1 and score 3.58 at Wave 3.

Table 3.1: Weighted Descriptive Statistics of Analysis

	%/Mean	Standard Error	Min	Max
Wave 3 Depression: 8 point scale	3.58	0.06	0	21
Wave 1 Depression: 8 point scale	4.18	0.08	0	21
Wave 3 Delinquency: 8 point scale	0.40	0.02	0	8
Wave 1 Delinquency: 8 point scale	0.88	0.03	0	8
Parental Separation	11	0.01		
Percentage of Conservative Protestants in School	16	0.01	0	4
Female	48	0.01		
Age	15.84	0.12	13	22
Race				
White	73	0.03		
Black	8	0.01		
Asian	5	0.01		
Hispanic	12	0.02		
Other	1	0.00		
Income per year				
Less than \$15,000	5	0.01		
Less than \$25,000	7	0.01		
Less than \$35,000	10	0.01		
Less than \$50,000	18	0.01		
More than \$50,000	40	0.02		
Missing Income	20	0.01		
Highest Parental Education				
Less than High School	9	0.01		
High School	27	0.01		
Some College	21	0.01		
College	26	0.01		
Graduate School	14	0.01		
Education Missing	2	0.00		
Religious service attendance				
Never	20	0.01		
Less than once a month	16	0.01		
Once a month	19	0.01		
Once a week or more	45	0.01		
Individual is conservatively religious	17	0.01		
School variables				
Percentage of parents with college or more education	33	0.02		
Percentage of parents in PTA	22	0.02		
Classsize	25.44	0.46		
Percentage of teachers with Masters degree	49	0.03		
Percent by race				
Black	12	0.02		
Asian	4	0.01		
Hispanic	12	0.02		

(N=6916 for delinquency analyses; N=6974 for depression analyses)

Table 3.2 shows the mean and range of percentage of conservative Protestants in respondents' schools. There is little difference in the mean or range of the percentage of conservative Protestants in school for those who have and those who have not experienced a parental separation.

Table 3.2: Mean and Range of Percent Conservative Protestants in School by Parental Relationship Status

	Mean % Conservative Protestants in School	Minimum	Maximum
Experienced Parental Separation	16.98	0	81.15
Did not Experience Parental Separation	15.58	0	81.15

In the following section, I present the results from these analyses. In each table, I present a model that includes the variable indicating having experienced a parental separation, the percentage of the school that is conservative, and other select control variables. I then present the models including the interaction.

Delinquency. In Table 3.3, I show the lagged dependent variable negative binomial regression model of delinquency. Because the main focus of this paper is on the moderating effect of the percentage of conservative Protestants in an individual's school on the relationship between parental separation and outcomes, I concentrate on these variables and their interaction in these analyses. Model 1, which does not include the interaction, shows that having experienced a parental separation is associated with higher levels of delinquency at Wave 3. The percentage of conservatively religious students in the school, however, is not significant. In Model 2, which includes the interaction, the

interaction between having experienced a parental separation and the percentage of conservative students in the school is significantly positive.

Table 3.3: Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Percentage of Conservative Protestant Students in School

	Model 1	Model 2
Parental separation between waves 1 and 3	0.236 ** (0.109)	-0.027 (0.149)
Percentage of students in school who are conservative Protestants	-0.238 (0.281)	-0.501 * (0.291)
Interaction		
Separation * Students who are conservative Protestants		1.551 *** (0.446)
Female	-0.905 *** (0.078)	-0.906 *** (0.078)
Age Wave 1	-0.189 *** (0.021)	-0.190 *** (0.022)
Race ¹		
Black	0.092 (0.181)	0.083 (0.178)
Asian	-0.201 (0.200)	-0.218 (0.196)
Hispanic	-0.292 ** (0.140)	-0.294 ** (0.140)
Other	0.226 (0.289)	0.215 (0.288)
Income per year ²		
Less than \$15,000	0.046 (0.264)	0.033 (0.264)
Less than \$25,000	0.068 (0.176)	0.046 (0.175)
Less than \$50,000	-0.073 (0.155)	-0.091 (0.155)
More than \$50,000	0.234 (0.146)	0.216 (0.145)
Missing Income	-0.036 (0.153)	-0.051 (0.153)
Highest parental education wave 1 ³		
Less than high school	-0.011 (0.162)	-0.013 (0.161)
Some college	-0.011 (0.115)	-0.011 (0.114)
College	0.184 ** (0.092)	0.201 ** (0.091)
Graduate School	0.264 ** (0.112)	0.273 ** (0.110)
Education missing	-0.240 (0.297)	-0.240 (0.294)

Table 3.3: continued

Religious service attendance ⁴		
Never	0.098 (0.142)	0.109 (0.142)
Less than once a month	0.065 (0.130)	0.073 (0.131)
Once a week or more	0.018 (0.105)	0.025 (0.106)
Individual is conservatively religious	-0.126 (0.127)	-0.116 (0.128)
School variables		
Percentage of parents with college or more education	0.171 (0.255)	0.134 (0.253)
Percentage of parents in PTA	0.023 (0.159)	0.066 (0.157)
Classsize	-0.004 (0.010)	-0.004 (0.010)
Percentage of teachers with Masters degree	0.245 (0.195)	0.245 (0.195)
Percent by race		
Black	-0.009 (0.244)	-0.043 (0.242)
Asian	0.107 (0.304)	0.123 (0.301)
Hispanic	0.363 (0.325)	0.373 (0.325)
Wave 1 delinquency	0.285 *** (0.021)	0.288 *** (0.021)
N=	6916	6916
Constant=	1.698	1.753
Alpha=	2.026	2.013

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference is attends once a month.
* p<.05, one-tailed test; ** p<.05; *** p<.01

The interaction is easier to interpret using a chart. Figure 3.2 shows the chart of Model 2. For the charts, I fill the coefficients from the table into the equation of the model presented in Appendix 3B. I show bar charts for those who have experienced a parental separation and for those who have not across varying percentages of conservative students in the school. I calculate predicted values by varying the concentration of conservative Protestantism in the equation. I use coefficients for White males who attend religious services once a month but are not conservative Protestants,

with the highest parental education level in their home being high school education and the income of their household being between \$25,000 and \$35,000. I have filled in means for all non-dummy variables.

Figure 3.2: Predicted values of delinquency for varying percentages of school conservative Protestantism by parental separation, lagged dependent variable model

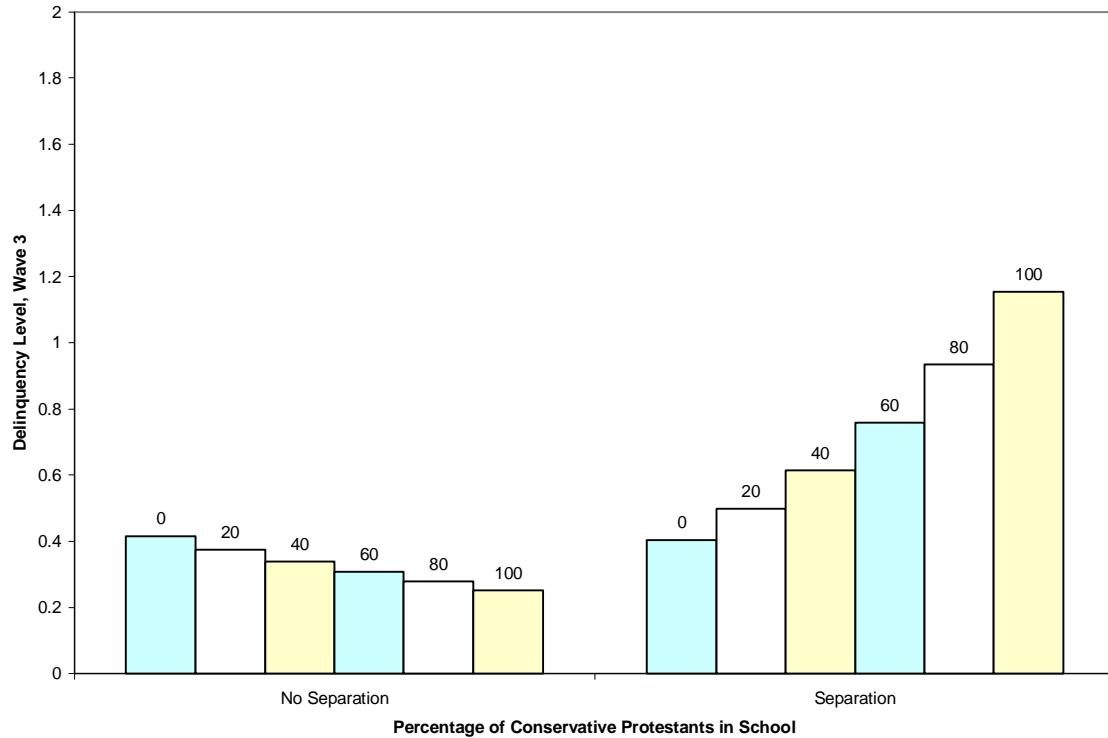


Figure 3.2 shows that for those who have not experienced a parental separation, rising percentages of conservatively Protestant students in the school are associated with slightly decreased delinquency. Over the full range of percentage of conservatively Protestant students in school, delinquency levels decrease by less than 0.2. For those who have experienced a parental separation, however, the relationship is reversed: higher levels of conservatively Protestant students in the school are associated with higher levels

of delinquency for these individuals, as hypothesized. Over the full range of school-level conservative Protestantism, delinquency levels vary by more than 0.7 delinquent acts. Considering that most people are not involved in delinquency, this change is conceptually large.

Table 3.4 shows results for the fixed effects regression model of change in delinquency. In Model 1, which does not include the interaction, the percentage of the school who is conservatively Protestant is significantly related to an increase in delinquency over time, which is unexpected since conservative Protestantism in the school is negatively related to delinquency in Table 3.3. Previous analyses, shown in Appendix 3C, Table 3.1c, show that high percentages of conservative Protestantism are associated with lower delinquency levels at Wave 1. One possible explanation for the finding that conservative Protestantism is positively associated with change in delinquency is that, because delinquency generally decreases with age and because those in schools with high percentages of conservative Protestant religiosity start out at lower levels of delinquency, there is less room for their delinquency to decrease over time and so they show smaller rates of change. Parental separation is not significant in this model. In Model 2, the interaction is, again, positively significant.

Table 3.4: Coefficients of Fixed Effects Model of Difference in 8-Point Delinquency Scale between Waves on Select Control Variables, Including Percentage of Conservative Protestant Students in School

	Model 1	Model 2
Parental separation between waves 1 and 3	-0.017 (0.095)	-0.158 (0.144)
Percentage of students in school who are conservative Protestants	0.451 ** (0.218)	0.341 (0.224)
Interaction		
Separation * Students who are conservative Protestants		0.834 * (0.499)
Female	0.004 (0.053)	0.004 (0.054)
Age Wave 1	-0.064 *** (0.017)	-0.064 *** (0.017)
Race ¹		
Black	0.085 (0.082)	0.082 (0.081)
Asian	-0.075 (0.119)	-0.076 (0.118)
Hispanic	-0.280 *** (0.098)	-0.280 *** (0.097)
Other	-0.097 (0.221)	-0.098 (0.220)
Income per year ²		
Less than \$15,000	0.046 (0.160)	0.041 (0.159)
Less than \$25,000	0.120 (0.112)	0.118 (0.112)
Less than \$50,000	0.066 (0.098)	0.062 (0.097)
More than \$50,000	0.202 ** (0.094)	0.197 ** (0.093)
Missing Income	0.113 (0.103)	0.110 (0.102)
Highest parental education wave 1 ³		
Less than high school	0.162 * (0.095)	0.159 * (0.095)
Some college	-0.013 (0.071)	-0.015 (0.071)
College	0.061 (0.073)	0.064 (0.073)
Graduate School	0.099 (0.089)	0.099 (0.089)
Education missing	-0.168 (0.178)	-0.165 (0.177)

Table 3.4: continued

Religious service attendance ⁴		
Never	-0.017 (0.085)	-0.013 (0.084)
Less than once a month	-0.102 (0.084)	-0.100 (0.084)
Once a week or more	0.086 (0.069)	0.089 (0.069)
Individual is conservatively religious	0.039 (0.084)	0.044 (0.084)
School variables		
Percentage of parents with college or more education	-0.335 (0.202)	-0.337 * (0.202)
Percentage of parents in PTA	-0.029 (0.135)	-0.024 (0.135)
Classsize	-0.007 (0.007)	-0.007 (0.007)
Percentage of teachers with Masters degree	0.021 (0.130)	0.017 (0.129)
Percent by race		
Black	-0.128 (0.141)	-0.138 (0.138)
Asian	-0.283 (0.409)	-0.286 (0.406)
Hispanic	0.095 (0.187)	0.099 (0.187)
N=	6916	6916
Constant=	0.595	0.618
R-Squared=	0.021	0.021

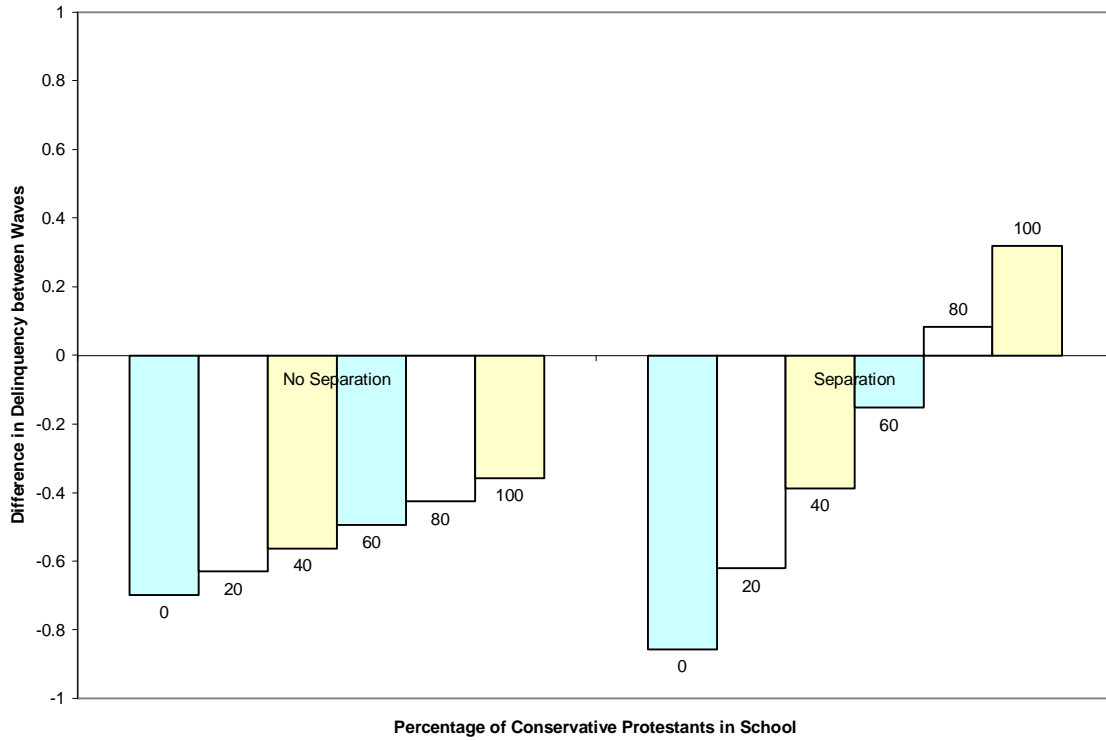
Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference is attends once a month.
* p<.05, one-tailed test; ** p<.05; *** p<.01

Figure 3.3, which shows the chart representing the model, makes it easier to interpret the interaction effects. In these charts, I plot the predicted value of change in delinquency for varying levels of percentages of conservative Protestants in schools for those who did and did not experience a parental separation. For most respondents, delinquency decreases over time. Among those who did not experience a parental separation, the predicted values of change in delinquency are less negative with increasing percentages of conservatively Protestant students in school at Wave 1. Over the entire range of percentages of conservative Protestant students in the school, change

in delinquency varies by 0.3. As mentioned earlier, it is likely that this finding is the result of students from schools with higher percentages of conservative Protestant students already having delinquency levels at Wave 1 that are very low and so their delinquency rates cannot decrease very much.

For those who have experienced a parental separation, the difference is much greater between those who attend more conservative and less conservative schools. Those in schools with the highest percentages of conservative Protestants report a positive change in delinquency between waves, whereas those who attend schools with lower levels of conservative Protestant students report a negative change in delinquency. Predicted values of change in delinquency vary by more than 1.75 points across the range of percentages of conservative Protestants in the school. Although the direction of the effect is the same as among those who do not experience a parental separation, because those who experience parental separation in schools with higher percentages of conservative Protestant students show an increase in delinquency, it is clear that the significant effect is not simply the result of a lower starting point of delinquency at Wave 1 among those in schools with higher percentages of conservative Protestant students. Those who experience a parental separation in a more conservatively Protestant school show an increase in delinquency rates between waves rather than a decrease, as among most other respondents, indicating that higher levels of conservative Protestant students increase negative effects for those who experience a parental separation. The moderating effects of conservative Protestantism in the school on the relationship between parental separation and delinquency outcomes, then, are robust across methods.

Figure 3.3: Predicted values of change in delinquency for varying percentages of school conservative Protestantism by parental separation, fixed effects model



Depression. Table 3.5 shows the results for the lagged dependent variable analysis of depression. Model 1, which includes the results without the interaction, shows that the percentage of conservatively religious students in the school is associated with lower levels of depression at Wave 3. However, in Model 2, the interaction is not significant.

Table 3.5: Coefficients of Regression of Logged Depression Scale on Select Control Variables, Including Percentage of Conservative Protestant Students in School

	Model 1	Model 2
Parental separation between waves 1 and 3	0.041 (0.035)	0.012 (0.046)
Percentage of students in school who are conservative Protestants	-0.299 *** (0.103)	-0.321 *** (0.107)
Interaction		
Separation * Students who are conservative Protestants		0.167 (0.198)
Female	0.059 ** (0.023)	0.059 ** (0.023)
Age Wave 1	-0.040 *** (0.007)	-0.040 *** (0.007)
Race ¹		
Black	-0.006 (0.039)	-0.006 (0.039)
Asian	0.081 (0.063)	0.081 (0.062)
Hispanic	-0.003 (0.045)	-0.003 (0.045)
Other	-0.010 (0.123)	-0.011 (0.123)
Income per year ²		
Less than \$15,000	0.034 (0.076)	0.032 (0.076)
Less than \$25,000	0.087 (0.059)	0.086 (0.059)
Less than \$50,000	0.071 (0.054)	0.070 (0.054)
More than \$50,000	0.062 (0.054)	0.061 (0.054)
Missing Income	0.071 (0.047)	0.070 (0.047)
Highest parental education wave 1 ³		
Less than high school	0.160 *** (0.045)	0.159 *** (0.045)
Some college	-0.005 (0.032)	-0.005 (0.032)
College	0.044 (0.035)	0.045 (0.035)
Graduate School	0.008 (0.039)	0.008 (0.039)
Education missing	0.007 (0.088)	0.007 (0.087)

Table 3.5: continued

Religious service attendance ⁴		
Never	-0.019 (0.038)	-0.018 (0.038)
Less than once a month	-0.005 (0.038)	-0.005 (0.038)
Once a week or more	-0.041 (0.036)	-0.040 (0.036)
Individual is conservatively religious	0.013 (0.037)	0.014 (0.037)
School variables		
Percentage of parents with college or more education	-0.030 (0.089)	-0.031 (0.088)
Percentage of parents in PTA	0.019 (0.067)	0.020 (0.067)
Classsize	-0.005 * (0.003)	-0.005 * (0.003)
Percentage of teachers with Masters degree	0.029 (0.050)	0.028 (0.050)
Percent by race		
Black	0.126 (0.086)	0.124 (0.085)
Asian	-0.013 (0.153)	-0.014 (0.153)
Hispanic	0.109 (0.083)	0.110 (0.083)
Wave 1 depression	0.297 *** (0.017)	0.297 *** (0.017)
N=	6974	6974
Constant=	1.517	1.521
R-squared=	0.100	0.100

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference is attends once a month. * p<.05, one-tailed test; ** p<.05; *** p<.01

Table 3.6 shows the difference model of the depression analysis. Model 1, which does not include the interaction, shows that the percentage of conservatively Protestant students in the school is significantly negatively related to change in logged depression between waves; those who have higher percentages of conservatively Protestant students in their school at Wave 1 are more likely to experience a decrease in their depression levels by Wave 3. Parental separation, however, is not significant. In Model 2, the interaction is positively significant.

Table 3.6: Coefficients of Regression of Difference in Logged Depression Scale on Select Control Variables, Including Percentage of Conservative Protestant Students in School

	Model 1	Model 2
Parental separation between waves 1 and 3	-0.006 (0.042)	-0.074 (0.058)
Percentage of students in school who are conservative Protestants	-0.284 *** (0.106)	-0.338 *** (0.115)
Interaction		
Separation * Students who are conservative Protestants		0.399 * (0.205)
Female	-0.070 ** (0.030)	-0.070 ** (0.030)
Age Wave 1	-0.082 *** (0.009)	-0.082 *** (0.009)
Race ¹		
Black	-0.115 ** (0.054)	-0.116 ** (0.054)
Asian	0.041 (0.085)	0.040 (0.084)
Hispanic	-0.045 (0.064)	-0.045 (0.064)
Other	-0.085 (0.156)	-0.085 (0.156)
Income per year ²		
Less than \$15,000	0.006 (0.089)	0.003 (0.089)
Less than \$25,000	0.118 * (0.071)	0.117 (0.072)
Less than \$50,000	0.119 (0.065)	0.117 * (0.065)
More than \$50,000	0.092 (0.060)	0.089 (0.059)
Missing Income	0.068 (0.051)	0.066 (0.051)
Highest parental education wave 1 ³		
Less than high school	0.057 (0.054)	0.056 (0.053)
Some college	0.045 (0.047)	0.044 (0.047)
College	0.118 *** (0.043)	0.119 *** (0.043)
Graduate School	0.063 (0.051)	0.064 (0.051)
Education missing	-0.075 (0.094)	-0.073 (0.094)

Table 3.6: continued

Religious service attendance ⁴		
Never	-0.048 (0.044)	-0.046 (0.044)
Less than once a month	-0.001 (0.048)	0.000 (0.048)
Once a week or more	-0.018 (0.042)	-0.017 (0.042)
Individual is conservatively religious	0.049 (0.038)	0.051 (0.038)
School variables		
Percentage of parents with college or more education	-0.010 (0.110)	-0.012 (0.109)
Percentage of parents in PTA	0.016 (0.084)	0.018 (0.084)
Classsize	-0.007 (0.005)	-0.007 (0.005)
Percentage of teachers with Masters degree	0.061 (0.059)	0.059 (0.059)
Percent by race		
Black	0.142 (0.111)	0.137 (0.111)
Asian	-0.294 ** (0.146)	-0.296 ** (0.146)
Hispanic	0.164 (0.110)	0.166 (0.110)
N=	6974	6974
Constant=	1.229	1.240
R-squared=	0.038	0.038

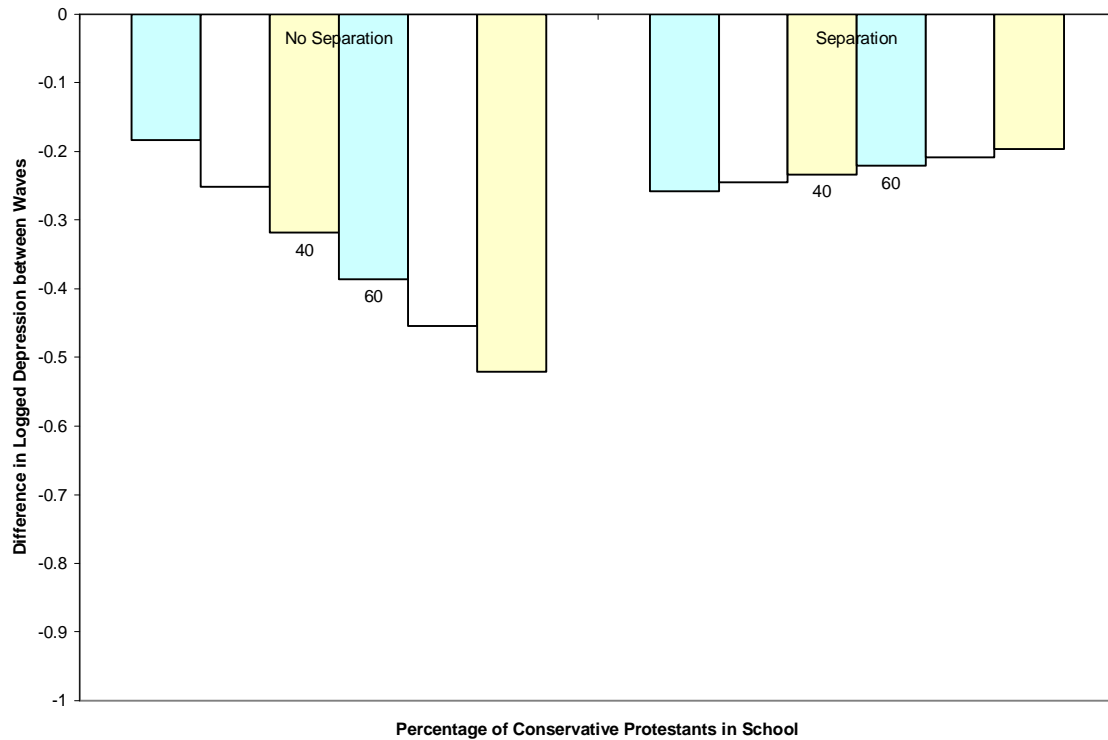
Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference is attends once a month.
* p<.05, one-tailed test; ** p<.05; *** p<.01

The charts shown in Figure 3.4 represent the model with the interaction. It is important to note that for both groups depression is likely to decrease between waves, so all of the results are negative. What is different, however, is how negative the predicted value of change in logged depression is. For those who do not experience a parental separation, the logged value of depressed feelings is likely to decrease more between Waves 1 and 3 with increasing percentages of students who are conservatively religious in school. For all levels of conservative religiosity, depression is likely to decline between waves, but the decline is greater for those with higher percentages of

conservative Protestant students in their school. The difference in change in logged depression for those in the least and those in the most conservatively Protestant environments is a little over 0.3.

For those who have experienced a parental separation, the relationship is reversed. The difference between Waves 1 and 3 becomes less negative with rising rates of conservative religiosity in school. The change is slight (less than 0.1) but is still significant and indicates that conservative Protestantism at the school level does not provide the same protective effect against depression for those who have experienced a parental separation as it does for those who have not. The findings for depression are not as robust as those for delinquency, being significant with only one method. However, there is still evidence to suggest that conservative Protestantism in school does not protect the children of parental separation from depressive outcomes in the same way that it protects respondents who have not experienced a parental separation.

Figure 3.4: Predicted values of change in logged depression for varying percentages of school conservative Protestantism by parental separation, fixed effects model



The two methods, lagged dependent variable and fixed effects analyses, show different angles on this analysis. The lagged dependent variable model allows for the inclusion of more of the variation in the dependent variable and shows the impact of the independent variables on Wave 3 outcomes controlling for Wave 1. The fixed effects models, using change between Waves as the dependent variable, effectively control for heterogeneity, but treat all changes of equal quantity as the same, which masks some of the variation in the dependent variable. The fixed effects model is generally a more conservative estimate. The findings regarding delinquency are more robust, showing significant interaction effects using both models. However, the depression analyses still provide evidence to support my hypotheses. Students experiencing a parental separation after having attended schools with high percentages of conservative Protestant students

tend to have less negative levels of change in depression between waves and do not experience the same levels of decrease in depression as do respondents who attend schools with high percentages of conservative Protestant students but do not experience a parental separation, according to the fixed effects method.

Conclusions

These results provide evidence to suggest that attending a school with high levels of conservative Protestantism moderates the relationship between parental separation and young adult outcomes. Experiencing a separation in an environment of high conservative Protestantism seems to be more difficult than experiencing a separation in areas of low conservative Protestantism. Results are robust across all models for delinquency and are significant for the difference model of depression. First, and most generally, these findings support life course and social ecological theories in suggesting that characteristics of the social environment are important in determining how individuals deal with their life situations. The cultural environment of religion has a strong impact on those experiencing a parental separation.

More specifically, these findings support the idea that the culture of conservative Protestantism increases signs of stress, including delinquency and depression, among adolescents experiencing a parental separation. Although I do not test specific mechanisms for this relationship, the theories cited at the beginning of this analysis suggest multiple possibilities. Conservative Protestant traditions tend to be less accepting of alternative family structures (Gay et al. 1996; Hertel and Hughes 1987). In response,

individuals in these environments may experience a sense that their parents have done something wrong or that is not in line with the dominant culture when they separate.

It is also possible that, because conservative Protestant traditions are not accepting of parental separation, adolescents who experience parental separation in conservative Protestant environments sense disapproval from those around them and do not feel that they fit in. This feeling could cause existing social ties to weaken and become less supportive and could lead to a sense of not belonging or being an outsider. Single parents do tend to report feeling out of place in religious environments, even when churches try to provide support groups, because the church environment tends to be geared toward married families with children (Edgell 2005). The children of single parents are likely to have a similar sense of discomfort and of being out of place, which could increase stress and negative outcomes.

Last, alternative family forms are likely less institutionalized in conservatively Protestant environments, which could lead to uncertainty of how to behave and subsequent stress (Cherlin 1978). Because conservative Protestants tend to disapprove of alternative families, it is likely that there is less preparation for and openness regarding alternative family forms. Although conservative churches may make efforts to support alternative families after the fact (Edgell 2005), if individuals feel that the separation of their parents is wrong and do not know what to expect, they may still lack the sense of how to navigate the transition of parental separation and may feel increased uneasiness and stress.

It is important to note that these findings are limited by the lack of social context data at Wave 3. I have had to rely on social context at Wave 1 rather than the current social context of the respondent when analyzing the school context. As a result, I am unable to account for change in social context in these analyses. However, the social context of adolescents is likely important for outcomes later in life, due to the large amount of socialization that occurs during this time period and due to the significant role that the school environment plays in this socialization process (Jenkins 1995). Further, any estimates presented would likely be stronger if I were able to track changes in social context over time. These findings are conservative estimates and would likely have greater power if I were able to use current social context rather than social context at a previous time period.

In these analyses, I only test the moderating effects of conservative Protestantism on the relationship between parental separation and young adult outcomes. I have focused on Protestantism in response to the literature in the sociology of religion addressing the community context of conservative Protestantism on delinquency and depression. Further, by focusing on one tradition, it is easier to interpret the effects of the variable. The classification of religiosity in the National Longitudinal Study of Adolescent Health data also limited me to using only conservative Protestantism. In future research, it would be beneficial to look at other traditions to see if the effects are similar. I would also like to explore more fully differences in response between individuals who are conservatively Protestant themselves and those who are not. As a starting point, however, these results provide strong evidence that experiencing a parental

separation in a conservative Protestant environment is associated with higher levels of negative outcomes than experiencing a separation in an environment without high levels of conservative Protestantism.

Chapter 4

The roles of close family relationships and relationships with siblings in young adults' adaptation to parental separation

By: Darci Powell

In the United States, only 40 percent of all children live with two biological parents (Hetherington and Stanley-Hagan 1999; Bumpass 1990; Amato 2001). Instability and transitions are increasingly common in families with children, with nearly half of all marriages and more than half of all non-marital unions ending in divorce or separation (Bumpass and Lu 2000; Raley and Wildsmith 2004). Although for many children the separation of parents is associated with negative effects, including higher risk of mental disorders and increased risk behavior (Amato 2001; Amato and Keith 1991a and 1991b), much research suggests that these outcomes vary, with many children proving resilient and showing few effects (McLanahan and Sandefur 1994). Relationships within the family have been shown to be one factor that impacts how children of parental separation respond to this family change. For example, parental separation is particularly harmful for children who experience low inter-parental conflict pre-separation, whereas it has been shown to cause fewer negative effects and perhaps some benefits for children who experience high levels of inter-parental conflict, as the separation removes them from an unstable situation (Forehand et al. 1994; Hanson 1999; Amato, Loomis and Booth 1995). These studies have primarily focused on parent-parent relationships or post-separation parent-child relationships, whereas the importance of overall family dynamics and sibling relationships pre-separation have not been thoroughly addressed in the literature.

Parental separation has been found to be associated with increased rates of delinquency and depression among youth (Amato 2001; Amato and Keith 1991a and

1991b). Delinquency and depression have both been shown to be signs of internalized strain resulting from a stressful experience such as a parental separation (Morrison and Cherlin 1995; Ahrons 1980; Landis 1960; Aneshensel 1992). Strain theory suggests that delinquency is an external symptom of internalized stress (Aseltine et al. 2000; Agnew 1985; Hagan 1997). Depression, on the other hand, is an internalized symptom of stress (Agnew and White 1992). Using both measures, then, allows for analysis both of individuals who respond to strain through externalizing behavior and of those who are more prone to internalize stress.

In the following analyses, I examine the moderating impact of perceptions of overall family closeness and relations with siblings pre-separation on the relationship between parental separation and outcomes. I use social-ecological and life course “linked lives” perspectives to inform this analysis (Bronfenbrenner 1979 and 1989; Elder 1998). First, I describe and explore the background theory that supports this study. Then, I develop hypotheses taken from this literature. Finally, I test these hypotheses using three waves of the National Longitudinal Study for Adolescent Health, a stratified, longitudinal study with over 15,000 respondents in the final wave.

Background

Social Ecological and Life Course Theories

Social ecological and life course theories provide a general framework within which to discuss the importance of familial relationships in response to events. Both approaches suggest that the behavior and reactions of individuals are impacted by close relationships. Bronfenbrenner (1979 and 1989), a social-ecological theorist, posits that

individuals are embedded in multiple systems of social context within which their behaviors take place such as the microsystem, which is composed of close familial and peer relationships (Bronfenbrenner 1979 and 1989; Seginer 2003). Interactions that take place within the microsystem are important in determining individual responses to events. For instance, the decisions of the parent impact child outcomes. This element of social-ecological theory, then, suggests that, in order to understand individual actions, it is necessary to take into account relationships in close social networks, such as the family.

The life course theory of “linked lives” also suggests that it is important to take into account relationships within close social contexts, such as the family, when determining the effects of events on individuals (Elder 1998). Decisions made and actions taken by family members are likely to have an effect on other family members, as demonstrated by the fact that parental separation and parental conflict have such a strong impact on child outcomes (Elder 1998; Amato 2001; Amato and Keith 1991a and 1991b; Forehand et al. 1994; Hanson 1999; Amato, Loomis and Booth 1995). According to life course and social-ecological theories, then, it is important to keep in mind the inter-dependent nature of relationships within social contexts and the fact that individuals are impacted, not only by events, but by the people who participate in these events with them (Elder 1998). The foundation of these analyses, then, is that it is important to take into account the social context of events and the relationships between individuals taking part in events when analyzing individual reactions. Characteristics of these relationships likely moderate the relationship between parental separation and outcomes.

Inter-parental conflict

Inter-parental conflict has been shown to be related to many negative effects in children both for those who experience a separation and for those who do not. Children who experience high levels of inter-parental conflict are shown to have lower quality relations with peers as well as more internalizing and externalizing problem behavior and lowered self-esteem (Vandewater and Lansford 1998; Forehand et al. 1994; Amato 1986). Shagle and Barber (1993), in their analysis of family structure, find that inter-parental conflict, parent-child conflict, and overall family conflict, measured by self-report variables indicating violence and arguing among family members, are related to self-derogation and suicidal thoughts.

Specifically as parental conflict relates to parental separation, researchers show that parental conflict accounts for many of the negative outcomes of separation and that, in cases of high pre-separation parental conflict, separation can be beneficial for children. Amato, Loomis and Booth (1995), in their longitudinal study of young adults, find that young adults who experience less parental conflict, measured by parental self-reports, pre-parental separation have the hardest time adjusting to the separation, whereas those who experience the highest levels of conflict pre-separation show fewer negative consequences. Hanson (1999) similarly finds that children in high-conflict families in which the parents separate do either the same as or better than children in high-conflict, intact families, and that separation is particularly detrimental for children from low-conflict families. When parents have high levels of conflict in their relationship, a separation may remove a child from an unstable environment. In situations of low conflict, however, the separation may come as more of a surprise to the child and may disrupt what the child sees as a stable environment.

Inter-parental relations have also been shown to be an important part of children's adjustment post-separation. Good inter-parental relations post-separation, marked by high co-parental decision-making and lower levels of legal conflict, decrease negative child outcomes such as depression, delinquency and academic problems (Maccoby et al. 1993). Overall, these findings suggest that the closeness of family relationships should be taken into account when exploring how young adults adjust to parental separation. In this study, I am particularly interested in the role of overall family closeness and relations with siblings in the adaptation to parental separation.

Family closeness

Family closeness and the structure of family relationships have been shown to play an important role in the psychological well-being of children. Cooper et al. (1983), in their analysis of family cohesiveness patterns in Australia, demonstrate that family cohesion has an impact on self-esteem through lowered social support. Children in intact homes who feel a division between their parents or who feel isolated from family members often report low social support, measured through child self-reports of conflict and closeness within their families, which can have a negative impact on self-esteem (Cooper et al. 1983). However, children in families, whether one- or two-parent, in which all family members have close connections and in which the adolescent reports no divisions within the residential family tend to report higher levels of social support (Cooper et al. 1983). This analysis is not longitudinal and, therefore, does not account for changes in family structure; however, it does suggest that, although family structure is important, overall family dynamics may be as or more important than family structure in determining outcomes. Mechanic and Hansell (1989), in a longitudinal analysis, find that

the effects of fighting within the family are larger than the effects of parental separation long-term. These findings all suggest that, although parental separation is an important event, the dynamics surrounding this separation may be as important in determining outcomes as the separation itself.

Sibling relationships

Sibling relationships have also been shown to play important roles in the life course. Having grown up in the same household, co-residential siblings share a great deal of common background and heritage and provide a primary source of social support for each other (Goetting 1986; Lamb 1982). Relationships with siblings also last longer than other familial relationships, giving them a unique place within the life course (Bank and Kahn 1997). A great deal of socialization in childhood happens through contact with siblings; conflict with siblings, for example, has been shown to provide a child with information regarding social boundaries and family roles (Raffaelli 1992). Further, siblings have been shown to fill in caretaking roles when parents are not available or are not adequately meeting their children's needs (Bank and Kahn 1982). Closer relationships with siblings have also been connected to lower levels of depression and higher life satisfaction in adulthood, although this connection is primarily relevant for individuals with sisters (Cicerelli 1995; White and Riedmann 1992).

Some researchers suggest that the importance of these sibling relationships is growing with changes in family structure. Bank and Kahn (1982) suggest that, with decreasing family size and high family instability, siblings play a unique role in providing close emotional support and maintaining continuity during the life course. Drapeau et al.

(2000) find that siblings can provide support for each other during family transitions, such as being placed in foster care, and that being separated from a sibling can increase negative outcomes. Siblings, then, have been shown to provide stability and continuity in times of instability, stress and change (Bank and Kahn 1982; Drapeau et al. 2000).

Experiencing a parental relationship disruption is often a time of such stress and instability (Morrison and Cherlin 1995; Ahrons 1980; Landis 1960; Aneshensel 1992). Although there is some debate over whether parental separation is a crisis followed by chronic stressors or a time-limited crisis, there is agreement that the separation itself constitutes a crisis that can lead to differing amounts of emotional strain depending on the child's resources (Morrison and Cherlin 1995; Sandler and West 1994). Thus, it seems likely that, if siblings provide a resource during other stressful events, they may also provide a sense of stability in a parental separation, a theory which has been presented but never formally tested (Bank and Kahn 1982; Drapeau et al. 2000).

However, it may be that closer relationships with siblings pre-separation make the separation harder, especially if separation is associated with any disruption of the sibling relationship. Parental separation has been shown to upset relationships within the family. The most conclusive evidence speaks of relationships between children and parents. White (1994) finds that solidarity between parents and children, measured by frequency of contact, degree of support, and self-reports of the quality of relationships with parents, is lower in single-parent families of divorce than in intact families. This effect appears to be stronger for sons. Amato and Booth (1996) find evidence that parental separation has a detrimental effect on relationships both with mothers and with fathers, measured using

parental reports of satisfaction received from the parent-child relationship and using parental reports of closeness to children. The effect of parental separation appears to be especially problematic for relationships with fathers, however. Many researchers show that parental separation decreases the quality of the paternal relationship, measured through self-reports of closeness, reports of frequency of contact, and degree of helping between fathers and children, more so than the maternal relationship (Furstenberg et al. 1987; Amato et al. 1995; Cooney 1994). Parental conflict has been suggested as being responsible for some of the lower relationship quality between children and parents post-divorce (Rossi and Rossi 1990). However, there do appear to be independent effects of both conflict and separation (Booth and Amato 1994).

Findings regarding the relationship between siblings are mixed. In situations of stress, siblings have been shown to draw closer and provide support for each other (Bank and Kahn 1982; Drapeau et al. 2000), and there is some evidence to suggest that sibling relationships become closer after a parental separation (Stinson 1991). Hetherington (1989), however, finds that any increased closeness is experienced primarily among girls and is often associated with increased care-giving on the part of an older sister. If this relationship becomes too intense or dependent, it can increase strain. Hetherington (1989) also finds evidence to suggest that parental separation can lead to an increase in stressful competition and animosity among siblings due to a lack of parental resources. Further, any positive effects of siblings generally come into play later in the divorce process, when the highest levels of stress associated with the separation have passed. In initial phases, stressors involved with parental separation are too strong to be ameliorated by close sibling relationships (Hetherington 1989). If parents have split custody after

separation, with one child spending most of the time with one parent and other children with another, sibling relationships can be particularly harmed (Kaplan et al. 1991). Although siblings may draw closer in some cases of parental separation, the research suggests that the sibling relationship can be heavily strained by the separation in many cases. If siblings are split due to custody arrangements, if they feel torn loyalties between parents, if they feel any competition for decreased parental resources, or if one sibling is put too much in charge of another, these relationships run the risk of being strained and increasing tension in the separation process.

The literature to date has not examined the differences in adjustment to parental separation between individuals who feel closer to and less close to their siblings. Because sibling relationships have been shown to play such an important part in the lives of adolescents and young adults, it is likely that the quality of the sibling relationship moderates the relationship between parental separation and young adult outcomes. It is possible that closer sibling relationships may become even closer and provide support during the time of crisis. If siblings were to draw closer, sibling relationships would likely mitigate the impact that parental separation has on negative outcomes such as delinquency and depression. However, it is also possible that having a closer sibling relationship increases the potential for strain. First, it seems likely that closer siblings would take on more responsibility for their sibling in cases of decreased parental resources, which can increase stress for the older sibling and be an indicator of a lack of parental resources for the younger sibling (Bank and Kahn 1982). Further, if there is any stress on a close sibling relationship, individuals could feel a double-loss of the decrease in parental resources and the decreased affection of a close sibling. In these situations, a

closer relationship with a sibling pre-separation would augment the negative impacts of parental separation on negative outcomes.

Youth Outcomes Influenced by Separation/Divorce

There are many other factors related both to delinquency and depression and to the risk of experiencing a parental separation that are important to take into account, including age, gender, race and socioeconomic status. Both delinquency and depression generally decrease with increasing age and approaching adulthood (Moffitt 1993; Agnew 2003; Mirowsky and Ross 1992). For gender, males tend to participate in more delinquent activities than females, but females generally report higher rates of depression than males (LaGrange and Silverman 1999; Broidy and Agnew 1997; Mirowsky 1996; Petersen et al. 1991). The age and gender of an adolescent are not significantly related to whether he or she will experience a parental separation, but age and gender are likely to be related to how an individual experiences a parental separation (Amato 1993; Glenn and Kramer 1985).

In terms of race/ethnicity, Black respondents tend to report lower delinquency rates, but some researchers call this finding into question and suggest it is due to underreporting (Hindelang 1978). Asian respondents also tend to report lower delinquency rates than Whites, although some Southeast Asian groups have been found to participate in more delinquent activity (Le and Stockdale 2005). Hispanic respondents are generally found to participate in more delinquent activity than Whites (Pozzi 1997). Results are unclear regarding the impact of race/ethnicity on depression outcomes; some researchers find that non-White respondents report higher depression levels than Whites,

and some find the opposite (George and Lynch 2003; Vega and Rumbaut 1991). Race/ethnicity has also been found to be related to whether an individual will experience a parental separation. Black respondents are much more likely than White respondents to experience a separation, and Hispanic respondents are less likely than either Black or White respondents to experience separation (Trent and South 1992; Raley and Wildsmith 2004; Norton and Miller 1991).

Socioeconomic status is also found to be related both to delinquency and to depression. For delinquency, individuals of lower socioeconomic status may turn to delinquency as a way to achieve their goals when they find more mainstream paths are closed off to them, according to strain theory (Aneshensel and Sucoff 2006). Lower socioeconomic status has also been shown to be related to higher levels of depression and to increased developmental problems in children (Brooks-Gunn and Duncan 1997; Bradley and Corwyn 2002; Miech and Shanahan 2000). Socioeconomic status has also been found to be related to whether an individual experiences a parental separation. Individuals of lower socioeconomic status are much more likely to experience a separation than those of higher socioeconomic status (South 2001; Raley and Wildsmith 2004).

Hypotheses

Based on the ideas developed above, I hypothesize that overall family closeness will moderate the relationship between parental separation and youth outcomes such as delinquency and depression. Disruptions in the family environment caused by separation will likely be more difficult to deal with for respondents from situations of high family

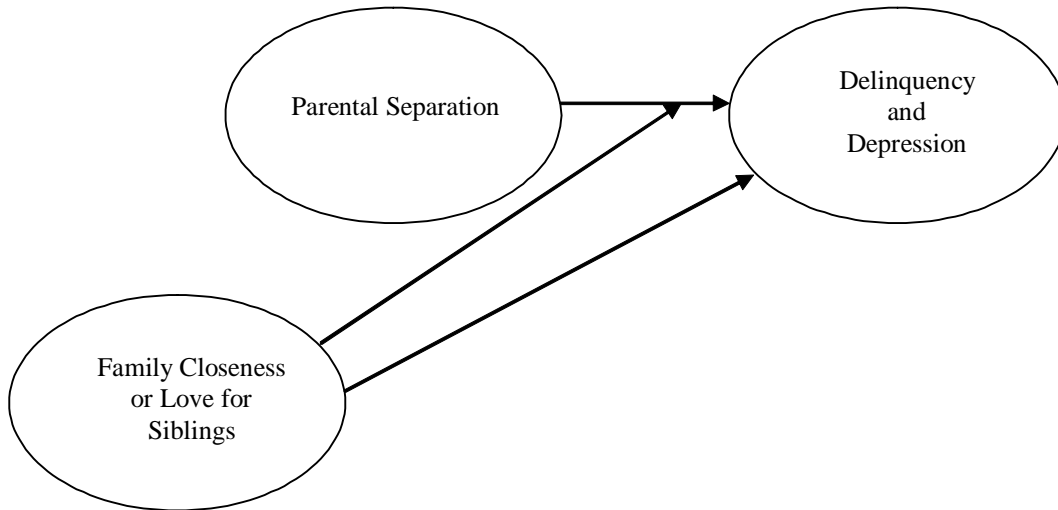
closeness pre-separation than for those who experience little family closeness pre-separation. I hypothesize that those from closer family environments will show higher levels of delinquency and depression after experiencing a parental separation than those from less close families.

The literature on siblings is less conclusive and suggests two possible hypotheses. One possibility is that siblings draw closer and provide important support after a parental separation. If this hypothesis is true, sibling closeness will moderate the relationship between parental separation and outcomes; respondents who report closer relationships with their siblings pre-separation will show fewer negative impacts of the parental separation than those who report relationships that are less close.

Other aspects of the literature, however, suggest an alternative hypothesis. Parental separation has been shown to cause increased competition among siblings and to sometimes lead to strain due to siblings taking on caretaking roles (Hetherington 1989). Closer siblings may feel more responsibility to take on these caretaking roles, which could lead to strain in the relationship. Further, a sense of competition or strain within a close sibling relationship may cause more emotional distress than in a more distant relationship. These theories suggest that respondents who report having closer siblings will experience more strain after a parental separation and will show more negative outcomes at Wave 3 than those who report less close relationships with siblings. The sibling relationship will still moderate the relationship between experiencing a separation and outcomes, but in the opposite direction of the first hypothesis; respondents who have higher levels of sibling closeness pre-separation will show more negative outcomes than

those who have lower levels of sibling closeness pre-separation. The conceptual model of this paper is provided in Figure 4.1.

Figure 4.1: Conceptual Model of the Analysis



To sum, in this study, I plan to answer the following question: Do closer ties to family members and to siblings before parental separation buffer against negative outcomes like delinquency and depression after a parental separation, or do individuals show evidence of increased strain associated with a separation when they have closer relationships with family and siblings? This analysis provides new insight into extra-parental factors that modify how adolescents and young adults respond to the separation of their parents.

Data and Methods

Data. In these analyses, I use data from the National Longitudinal Study of Adolescent Health (Add Health), an ongoing, nationally representative, school-based

study of adolescents who were grades 7 to 12 in the first wave of the survey. I use data from the Wave 1 interview, conducted in 1994-95, from the Wave 2 interview, in 1996, and from the Wave 3 interview, in 2001-02. The data is stratified by school; 80 high schools and 52 middle schools were originally selected to participate in the survey, with over 70 percent of those selected participating. Respondents for the in-home survey were then selected at random using school rosters. Seventy-nine percent of those selected participated in the survey, yielding a Wave 1 sample of 20,745 adolescents. A little less than 15,000 respondents also participated at Wave 2 (around 75 percent of the original sample). There is a smaller sample size at Wave 2 than in both Waves 1 and 3 because most of the adolescents in the 12th grade and those from the disabled sample were not surveyed at Wave 2. Many of these individuals were eligible to participate in the Wave 3 interview, however. Approximately 77 percent of those in the original Wave 1 sample participated in the Wave 3 survey (over 15,000 respondents).

In this analysis, I look at the way in which a youth's closeness with family or siblings at time one moderates the relationship between experiencing a parental relationship dissolution and young adult outcomes at Wave 3. For some analyses, I use only Waves 2 and 3 because of the availability of questions. All respondents were asked about their general feelings toward their family at Wave 1, and so these analyses use change between Waves 1 and 3. Not all respondents were asked about their relations

with their siblings at Wave 1, however. Therefore, analyses concerning siblings focus on the difference between Waves 2 and 3.²

Because I analyze the effect of a parental separation between waves on respondents, only respondents who lived with both biological parents at Wave 1 are included in this analysis. Although not including some respondents may introduce selection bias, it is not possible to estimate a change model without limiting the sample in this fashion. Therefore, these analyses only show the effects of parental relationship dissolution that happens during adolescence and young adulthood, not before. Children with two adoptive parents at Wave 1 are not included because of the difficulty of determining whether they experienced the dissolution of a parental relationship before they were adopted. For the analyses regarding change between Waves 2 and 3, the sample is further limited to respondents who reported living with two biological parents at Wave 2 in order to estimate a change model between Waves 2 and 3. For the analyses of sibling closeness, the sample is also restricted only to those respondents who reported having siblings. In analyses not shown here, I tested whether having a sibling moderated the relationship between parental separation and young adult outcomes and found no significant results.

The final sample size of the models measuring change between Waves 1 and 3 is around 7,200. Models vary in sample size due to variations in the dependent variables.

Restricting the sample only to those who live with both biological parents at Wave 1 and

² Unfortunately, the majority of respondents were not asked questions regarding closeness to their families and their siblings at Wave 3; therefore, I cannot directly test the impact of the separation on these relationships. Instead, this paper focuses on the impact of pre-separation closeness rather than what occurs after the separation.

who report whether their parents live together at Wave 3 limits the sample size to 7,767. Other deletions are due primarily to missing data on the dependent variables.

The final sample size of the models measuring change between Waves 2 and 3 is around 3,800. Restricting the sample only to those who live with two biological parents at Wave 2 and who have information regarding the living arrangements of their two biological parents at Wave 3 decreases the sample size to 4,093. Other deletions are due primarily to missing data on the dependent variables.

Family Relationship Measures

Family Closeness. To measure family closeness, I use self-report measures of feelings toward the family at Wave 1, similar to those used by Cooper et al. (1983). I create an additive scale of five self-report measures of family closeness. For all questions, responses are in the form of a five-point Likert scale ranging from “Not at all” to “Very much.” First, respondents are asked, “How much do you feel that the people in your family understand you?”. Second, respondents are asked “How much do you feel that you want to leave home?”. This variable is recoded in reverse order with higher scores indicating not wanting to leave home, so that higher values indicate positive feelings toward the family. Respondents then are asked, “How much do you feel that your family have fun together?.” Respondents are also asked “How much do you feel that your family pays attention to you?” Lastly, respondents are asked “How much do you feel that your parents care about you?” These measures are summed to create an additive scale that ranges from 0 to 20.

Close Relations with Siblings. I measure closeness to siblings using self-report measures of the amount of love a respondent feels for his/her siblings. Respondents are asked “How often do you feel love for [your sibling]?” of each individual the respondent reported as living in their household and being between the ages of 12 and 20. Siblings who are older and younger than these age limits are left out of these analyses, and some of the siblings reported may not be full biological siblings; the data regarding siblings is not connected to information regarding whether the individual is a full, biological sibling or not. Therefore, it is important to note that by “siblings” I mean people of the same age group in an adolescent’s household. However, it is likely that individuals in this age group either are siblings, considering that the families in these analyses have not experienced a parental separation, or that they act in the same capacity as siblings. There are five possible responses to the question, ranging from “very often” to “never.” Responses are reverse-coded so that higher values indicate feeling love for their sibling more often. I use the average reported love for all siblings.

Parental Marital Dissolution. Respondents are asked to list the members of their household at all three waves. If a respondent lived with both biological parents at Wave 1, these individuals are included in the sample as living in an intact household at Wave 1. If they lived in an intact household at Waves 1 and 2, they are included in the analyses of siblings as having lived in an intact household. If they experienced a parental relationship dissolution between Waves 1 and 2, they are included in the analysis of family closeness as having experienced a parental separation, but are dropped from the analysis of siblings, which begins in Wave 2. For Wave 3, respondents are again asked to list the members of their household. If they lived with both biological parents in this

wave, they are coded as not having experienced a parental separation. If they lived with one biological parent but not two, I code them as having experienced a parental separation.

Due to the age of respondents at Wave 3, many respondents lived in their own household. Therefore, this household roster measure is inadequate for determining the relationship status of their parents. At this wave, the Add Health survey also asks whether the respondent's prior parents (from Wave 1 if the respondent did not participate in Wave 2 or from Wave 2 if the respondent participated in both surveys) still live together. The survey also includes a question asking whether the respondent's biological parents still live together. If a respondent lived in a two biological parent household at a prior wave and reports that his/her two previous parents are no longer living together, then he/she is coded as having experienced a parental separation. Respondents who lived with two biological parents in the prior wave and who report that their prior parents or two biological parents are still living together in the same household are coded as not having experienced a parental relationship dissolution.

Control Variables

As control variables, I include measures of race/ethnicity, gender, age, socioeconomic status, and parental marital quality. Race/ethnicity is divided into five categories: non-Hispanic White, Black, Asian, Hispanic, and other. Although the "other" race category is difficult to interpret, it is included in the models in order to retain as many cases as possible. Gender is coded as "1" for females and as "0" for males. I also include a measure of age. To determine age, the birth date of the respondent was

subtracted from the date of the interview. For the family analyses, I use age at Wave 1; for the sibling analyses, I use age at Wave 2.

For socioeconomic status, I include measures of family income and parental education at Wave 1. Information on family income is taken from the Wave 1 parents' survey in which parents are asked the average income of their household in thousands. This information is divided into six dummy variables, including less than \$15,000, between \$15,000 and \$25,000, between \$25,000 and \$35,000, between \$35,000 and \$50,000, greater than \$50,000, and missing. Although the missing category is difficult to interpret, there are too many respondents with missing information on income (about 22 percent) to exclude them without large sample bias (Lee et al. 1994). Parental education is coded as six dummy variables indicating the highest level of parental education in the household at Wave 1 taken from adolescent reports of parental education. The variables include less than high school, high school, some college, college, a graduate education or missing. Fewer respondents are missing data on parental education (a little over 2 percent), but I have included these respondents to minimize sample deletions.

At Wave 1, the parent who took the survey is asked to rate their happiness with their relationship with their spouse or partner. Responses range from one (completely unhappy) to 10 (very happy). Parents are ranked as having the least happiness in their marriage if the parent ranked their relationship as less than eight, some happiness if the parent ranked the relationship as eight, more happiness if ranked as nine, and most happiness if ranked as 10. I also include a dummy variable for missing data, which accounts for around 18 percent of respondents. The variable measuring parental

relationship happiness is included in the analyses of family closeness to ensure that family closeness is not just a proxy for parental relationship quality. I have not included this measure in the analyses of sibling closeness presented here; however, in analyses not shown here, I tested the models with the measures of parental relationship happiness included and found no difference in the interaction results.

Dependent Variables.

Delinquency. Delinquency at Waves 1 and 2 is measured as the sum of eight yes/no questions about participation in non-violent activities considered delinquent, such as minor property crime and theft, within the last 12 months. A full list of questions used is included in Appendix 4.A. Each question has four possible responses ranging from “never” to “5 or more times.” Responses are recoded as dummy variables; “0” indicates having never participated in the activity, and “1” indicates having participated in the activity at least once. Responses are then summed and the scale standardized to account for missing data. Questions vary somewhat in the survey between waves for developmental appropriateness. The alpha for the Wave 1 scale for the family analyses is 0.75. The alpha for the Wave 2 scale of the sibling analyses is 0.73. The alpha for the Wave 3 scale of the family analyses is 0.65 and of the sibling analyses is 0.67.

Depression. Depression is measured using an 8-item scale similar to the Center for Epidemiological Studies Depression Scale (CES-D), a 20-item measure of depression (Radloff 1977). In all three waves, respondents are asked how often they felt an array of emotions including feeling easily bothered, depressed, sad, or too tired to do things in the past seven days. A full list of questions is included in Appendix 4.A. Each question has

four possible responses, ranging from “never or rarely” to “most or all of the time.” Responses for the question “How often did you enjoy life?” are recoded so that higher values indicate that the respondent enjoyed life less frequently. These items are summed and the scale standardized to account for missing data, so that the final scale ranges from 0 to 24. Although respondents are asked how often they felt they were just as good as other people in all waves, this variable is not included in the scale because the alpha of the scale improves with its deletion. The alpha for the Wave 1 scale of depression is 0.79. The alpha for the Wave 2 scale of depression is 0.81. The alpha for the Wave 3 depression scale is 0.81 for those in the family closeness analyses and 0.80 for those in the sibling closeness analyses.

Analysis Strategy

In these analyses, I do not try to control for all variables that might be associated with parental separation. I include only basic control variables in order to examine how family characteristics moderate the relationship between parental marital dissolution and outcomes for adolescents *overall*. In future research, it may be worthwhile to consider exploring intervening factors. In analyses not shown here, I controlled for characteristics of the county, including the percent of single parents, the percentage of Black residents, average income, the poverty rate, and average unemployment. I also tested for interactions between parental separation and these variables. None were found to impact the significant findings regarding family or sibling closeness, and so they are not included in these analyses. However, it would be worthwhile to continue looking into community, individual and family characteristics in future analyses.

In order to provide a thorough longitudinal analysis of the data, I present two models for each analysis: the lagged dependent variable model and the fixed effects model. In the lagged dependent variable models, I include a measure of the dependent variable at the previous wave to control for initial level of the dependent variable. This approach is similar to that used by Pearce and Haynie (2004). However, Halaby (2004) suggests that the lagged dependent variable model does not sufficiently account for heterogeneity bias in the sample and that the fixed effects model is better suited for longitudinal analyses. For the fixed effects model, the dependent variable is the difference between the later outcome and the initial outcome. As such, this approach takes into account the magnitude and direction of change. However, some information regarding the type of change is lost, and some of the variation in the dependent variable is masked by this method. A change from zero delinquent acts to one delinquent act is treated as the same as a change from six delinquent acts to seven, for example. It is likely, though, that these two types of change are not equivalent; those who begin to participate in delinquent behavior between waves may have experienced more actual change than those who already participated in delinquent behavior and now participate in more. Therefore, I include both methods as a way to provide a more robust analysis of the data.

For the lagged dependent variable models of delinquency, I use negative binomial regression due to the skewed distribution of the dependent variable (Pearce and Haynie 2004). Many more respondents (approximately 75 percent at Wave 3) have participated in no or very few delinquent activities in the past twelve months than have participated in any activities. Negative binomial regression deals more effectively with dependent

variables that are not normally distributed than does logistic regression and allows for overdispersion (the variance is greater than the mean) more effectively than does Poisson distribution (Allison and Waterman 2002). All models in the analyses of delinquency show evidence of overdispersion, with alphas that are greater than zero. For the fixed effects models of delinquency, I use linear regression. Because the scale is standardized for missing data, some values are not integers, so the difference more closely represents a continuous than a categorical variable. I use linear regression instead of ordered probit, which treats the difference as categorical. In previous analyses, however, I ran the models using ordered probit and found no difference in outcomes.

For the depression models, I log the depression scale at all Waves. The depression scale is highly skewed, with far more individuals reporting low depression scores than high. Logging the dependent variable helps it to achieve a distribution that is closer to normal and helps limit the threat of heteroscedasticity in the model. I add one to the scale so that no values are equal to zero and then log the scale. For the fixed effects models, the difference between the log of depression at the two waves is the outcome variable. I use linear regression both for the lagged dependent variable models and for the analysis of the difference between the logs.

In order to deal with the correlated error structures inherent in the stratified nature of the Add Health sample, I use the *svy: nbreg* command in STATA, which allows for the specification of primary sampling units (in this case, schools) and strata (region) (Chantala and Tabor 1999). In order to test whether the relationship between parental separation and young adult outcomes is moderated by close family relationships, I

include an interaction variable created by multiplying the family variable of interest by the indicator of whether a respondent has experienced a parental separation between waves. Equations representing the models are included in Appendix 4.B.

Results

Family Closeness

Descriptives

Table 4.1 shows survey weighted descriptive statistics of the variables used in the analysis of family closeness. Of the respondents used in this analysis, 11 percent experienced a parental separation between waves. Reports of family closeness are fairly high; respondents score 15.34 out of 20 on the family closeness scale on average. Respondents report very few delinquent behaviors. At Wave 1, the average number of delinquent acts is 0.88, and, at Wave 3, the average number of delinquent acts reported is 0.40. At Wave 1, respondents report a depression level of 4.15 on the depression scale, on average. Depression levels are lower at Wave 3, with the average reported score being 3.54.

Table 4.1: Weighted Descriptive Statistics of Analysis, Family Analysis

	%/Mean	Standard Error	Min	Max
Wave 3 Depression: 8 point scale	3.54	0.06	0	21
Wave 1 Depression: 8 point scale	4.15	0.08	0	21
Wave 3 Delinquency: 8 point scale	0.40	0.02	0	8
Wave 1 Delinquency: 8 point scale	0.88	0.03	0	8
Parental Separation	11	0.01		
Family Closeness	15.34	0.09	0	20
Female	48	0.01		
Age	15.81	0.12	12	21
Race				
White	74	0.03		
Black	8	0.01		
Asian	5	0.01		
Hispanic	12	0.02		
Other	1	0.00		
Income per year				
Less than \$15,000	5	0.01		
Less than \$25,000	7	0.01		
Less than \$35,000	10	0.01		
Less than \$50,000	17	0.01		
More than \$50,000	40	0.02		
Missing Income	20	0.01		
Maternal Education				
Less than High School	8	0.01		
High School	27	0.01		
Some College	21	0.01		
College	26	0.01		
Graduate School	15	0.01		
Education Missing	3	0.00		
Parental relationship variables				
Least happiness	16	0.01		
More happiness	22	0.01		
Most happiness	26	0.01		
Missing	15	0.01		

(N=7167 for delinquency sample; N=7227 for depression sample)

In each table, I first present a model that contains the measure indicating whether the respondent has experienced a parental relationship dissolution, the measure of family closeness, a Time 1 measure of the dependent variable, and the control variables in order to test for main effects. I then present a model that includes the interaction variable.

Delinquency. Analyses of delinquency and family closeness are presented in Tables 4.2 and 4.3. Model 1 of Table 4.2 includes the negative binomial regression model of delinquency on select control variables, including the measure of family closeness, without the interaction. The variables of greatest interest in this analysis are parental separation and the measure of family closeness, so I focus on those here. In this model, parental separation has a significantly positive relationship with delinquency, whereas family closeness has a significantly negative relationship with delinquency.

Table 4.2: Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Family Closeness

	Model 1	Model 2
Parental separation between waves 1 and 3	0.264 ** (0.108)	-1.233 *** (0.395)
Family Closeness	-0.041 *** (0.012)	-0.055 *** (0.012)
Interaction: Separation * Family Closeness		0.098 *** (0.025)
Female	-0.931 *** (0.074)	-0.939 *** (0.074)
Age Wave 1	-0.201 *** (0.022)	-0.203 *** (0.022)
Race ¹		
Black	0.055 (0.126)	0.072 (0.123)
Asian	-0.144 (0.177)	-0.144 (0.177)
Hispanic	-0.135 (0.126)	-0.116 (0.126)
Other	0.208 (0.302)	0.206 (0.305)
Income per year ²		
Less than \$15,000	0.037 (0.278)	0.024 (0.275)
Less than \$25,000	0.111 (0.181)	0.104 (0.180)
Less than \$50,000	0.030 (0.155)	0.022 (0.155)
More than \$50,000	0.341 ** (0.149)	0.327 ** (0.150)
Missing Income	-0.006 (0.168)	-0.007 (0.170)
Highest parental education wave 1 ³		
Less than high school	0.021 (0.164)	0.018 (0.165)
Some college	0.017 (0.113)	0.007 (0.111)
College	0.205 ** (0.091)	0.209 ** (0.092)
Graduate School	0.313 *** (0.104)	0.318 *** (0.104)
Education missing	-0.210 (0.265)	-0.227 (0.259)

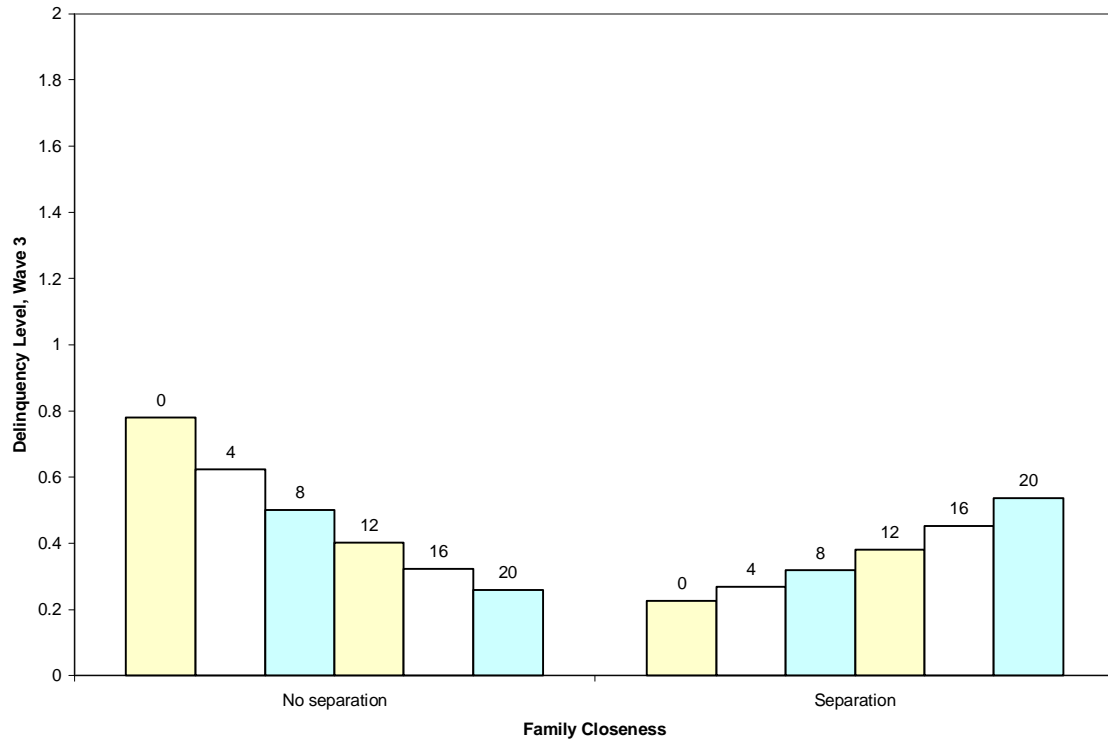
Table 4.2: continued.

Parental relationship variables ⁴		
Least happiness	0.042 (0.109)	0.055 (0.109)
More happiness	-0.002 (0.085)	0.001 (0.085)
Most happiness	0.076 (0.125)	0.074 (0.125)
Missing	0.066 (0.157)	0.062 (0.158)
Wave 1 delinquency	0.275 *** (0.022)	0.276 *** (0.022)
N=	7167	7167
Constant=	2.477	2.716
Alpha=	1.934	1.905

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference group is parent reports some happiness in relationship. * p<.05, one-tailed test; ** p<.05; *** p<.01

In order to determine whether family closeness has a moderating effect on the relationship between parental separation and young adult delinquency, it is necessary to include the interaction term. The interaction, included in Model 2, is significant, indicating that family closeness operates differently for individuals who have and have not experienced a parental separation. It is difficult to interpret the interaction without charting it. The chart provided in Figure 4.2 shows models of the regression equation. There are two sets of columns in the chart, one that represents those who have not experienced a parental separation and one for those who have. I calculate predicted values by filling in varying levels of family closeness and whether the parents have separated into the regression equation presented in Appendix 4.B. For all other variables, I use White males who report high school education as the highest level of education for their parents at Wave 1, who live in a household with an income of between \$25,000 and \$35,000 at Wave 1, and whose parents report some marital happiness at Wave 1 as the values for dummy variables and means for all other variables.

Figure 4.2: Predicted values of delinquency for varying values of family closeness by parental separation, lagged dependent variable model



Looking at the chart, for those who do not experience a parental separation, higher levels of family closeness at Wave 1 are associated with lower levels of delinquency at Wave 3. Adolescents from the closest families report around 0.4 delinquent acts less on average than those from the least close families. However, for respondents who experience a parental separation, higher levels of family closeness at Wave 1 tend to be associated with higher levels of delinquency at Wave 3, as hypothesized. Adolescents from the closest families who experience a parental separation report approximately 0.3 delinquent acts more than those from the least close families. These results suggest that, for young adults from closer families, separation is

associated with more negative outcomes than for young adults from less cohesive families.

Table 4.3 includes the results for the fixed effects model of delinquency. In Model 1, which does not include the interaction, family closeness is significantly positively related to the difference in delinquency between Waves 1 and 3, which is different than expected. In previous analyses (shown in Appendix 4.C, Table 4.1c), I analyzed the impact of family closeness on delinquency at both Waves 1 and 3. In these previous models, family closeness is negatively related to delinquency at both waves. The positive relationship between family closeness and change in delinquency, then, does not seem to indicate a positive relationship with delinquency overall. Because delinquency is likely to decrease with age, it is possible that, because those who live in a close family start out at lower levels of delinquency, they experience less negative change because they are already at such low levels.

Table 4.3: Coefficients of Fixed Effects Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Family Closeness

	Model 1	Model 2
Parental separation between waves 1 and 3	0.011 (0.090)	-0.786 * (0.436)
Family Closeness	0.098 *** (0.007)	0.092 *** (0.008)
Interaction: Separation * Family Closeness		0.053 * (0.028)
Female	0.030 (0.050)	0.028 (0.050)
Age Wave 1	-0.020 (0.014)	-0.020 (0.014)
Race ¹		
Black	0.128 (0.079)	0.131 * (0.078)
Asian	-0.133 (0.122)	-0.135 (0.122)
Hispanic	-0.307 *** (0.077)	-0.305 *** (0.077)
Other	-0.070 (0.205)	-0.080 (0.206)
Income per year ²		
Less than \$15,000	0.069 (0.150)	0.067 (0.149)
Less than \$25,000	0.121 (0.111)	0.125 (0.111)
Less than \$50,000	0.053 (0.098)	0.053 (0.097)
More than \$50,000	0.146 (0.097)	0.143 (0.097)
Missing Income	0.109 (0.107)	0.110 (0.108)
Highest parental education wave 1 ³		
Less than high school	0.189 ** (0.090)	0.185 ** (0.090)
Some college	-0.001 (0.069)	-0.006 (0.068)
College	0.060 (0.063)	0.062 (0.064)
Graduate School	0.085 (0.085)	0.084 (0.085)
Education missing	-0.110 (0.161)	-0.102 (0.160)

Table 4.3: continued.

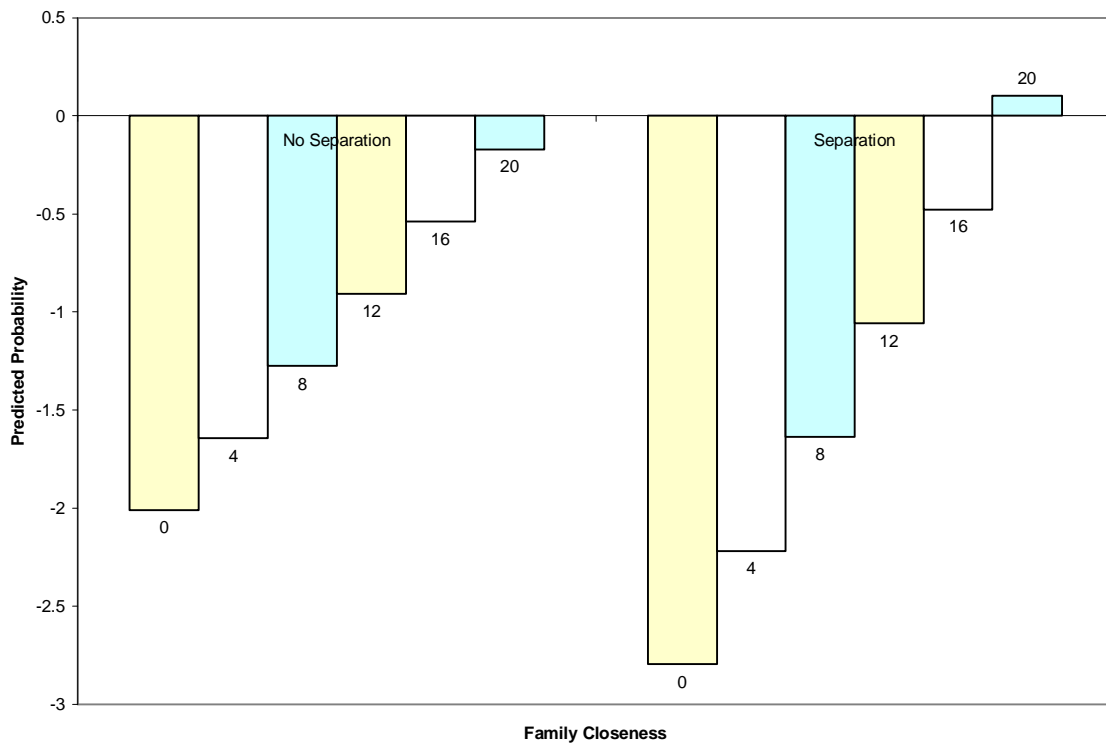
Parental Relationship Variables ⁴		
Least Happiness	0.004 (0.077)	0.003 (0.077)
More Happiness	0.032 (0.063)	0.034 (0.062)
Most Happiness	0.027 (0.070)	0.028 (0.069)
Missing	-0.014 (0.093)	-0.015 (0.093)
N=	7167	7167
Constant=	-1.803	-1.695
Alpha=	0.054	0.055

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference group is parent reports some happiness in relationship. * p<.05, one-tailed test; ** p<.05; *** p<.01

In Model 2, the interaction is significant. The chart representing the model is shown in Figure 4.3. I model the predicted value of change in delinquency between waves for those who do not and who do experience a parental separation across varying levels of family closeness. Change in delinquency is negative for almost all groups. The amount of decrease in delinquency between waves, however, is smaller for those in closer families than for those in families that are less close both for those who do and for those who do not experience a parental separation, perhaps for the reason discussed above. For individuals who do not experience a separation, the difference between the change in delinquency for respondents from the closest families and respondents from the least close families is about 1.8 delinquent acts. For those who experience a separation, the difference between the predicted value of change for those in the closest versus the least close families is much larger, about 2.9 delinquent acts. Further delinquency increases on average between waves for respondents from the closest families who experience a parental separation. The small decrease in delinquency between waves for those from close families who do not experience a parental separation may be the result

of low initial levels of delinquency. However, for respondents who experience a parental separation, higher levels of family closeness are associated with increased negative outcomes, which cannot be explained by low initial levels of delinquency. This finding indicates that respondents who experience a parental separation in a close family environment may be experiencing especially high levels of strain.

Figure 4.3: Predicted values of change in delinquency for varying values of family closeness by parental separation, fixed effects model



Depression. In Model 1 of Table 4.4, family closeness is significantly negatively related to depression at Wave 3. Experiencing a parental separation, however, is not significant, and the interaction results are not significant. For the fixed effects model, shown in Table 4.5, family closeness is positively related to the difference in delinquency

between waves. Because depression generally decreases with increasing age, this finding indicates that individuals from closer families at Wave 1 are significantly less likely to have declining depression over time. In previous analyses (shown in Appendix 4.C, Table 4.2c), I found that family closeness is significantly negatively related to depression at both waves. Because individuals from closer families start out with lower rates of depression initially, it is possible that, as with the delinquency model, even though they have lower depression rates at both waves, they experience less of a decline because they already start out at such low levels. For the fixed effects model, the interaction is not significant, indicating that these models show no evidence of a moderating effect of family closeness on the relationship between parental separation and depression.

Table 4.4: Coefficients of Regression Model of Logged Depression Scale on Select Control Variables, Including Family Closeness

	Model 1	Model 2
Parental separation between waves 1 and 3	0.030 (0.035)	-0.065 (0.168)
Family Closeness	-0.020 *** (0.005)	-0.021 *** (0.005)
Interaction: Separation * Family Closeness		0.006 (0.011)
Female	0.057 ** (0.022)	0.057 ** (0.022)
Age Wave 1	-0.043 *** (0.007)	-0.043 *** (0.007)
Race ¹		
Black	0.007 (0.034)	0.008 (0.035)
Asian	0.102 * (0.058)	0.102 * (0.058)
Hispanic	0.039 (0.034)	0.039 (0.034)
Other	0.031 (0.123)	0.030 (0.123)
Income per year ²		
Less than \$15,000	0.022 (0.074)	0.022 (0.074)
Less than \$25,000	0.094 (0.059)	0.094 (0.060)
Less than \$50,000	0.070 (0.054)	0.070 (0.054)
More than \$50,000	0.072 (0.052)	0.071 (0.052)
Missing Income	0.056 (0.047)	0.056 (0.047)
Highest parental education wave 1 ³		
Less than high school	0.175 *** (0.045)	0.175 *** (0.045)
Some college	-0.001 (0.031)	-0.002 (0.031)
College	0.037 (0.031)	0.037 (0.031)
Graduate School	0.003 (0.034)	0.002 (0.034)
Education missing	0.061 (0.086)	0.062 (0.086)

Table 4.4: continued.

Parental relationship variables ⁴		
Least happiness	-0.006 (0.040)	-0.006 (0.040)
More happiness	-0.048 (0.034)	-0.048 (0.034)
Most happiness	-0.025 (0.031)	-0.025 (0.031)
Missing	-0.030 (0.040)	-0.030 (0.040)
Wave 1 depression	0.280 *** (0.019)	0.280 *** (0.019)
N=	7227	7227
Constant=	1.728	1.742
R-squared=	0.111	0.111

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference group is parent reports some happiness in relationship. * p<.05, one-tailed test; ** p<.05; *** p<.01

Table 4.5: Coefficients of Regression Model of Difference between Waves in Logged Depression Scale on Select Control Variables, Including Family Closeness

	Model 1	Model 2
Parental separation between waves 1 and 3	0.001 (0.040)	0.094 (0.195)
Family Closeness	0.038 *** (0.005)	0.039 *** (0.006)
Interaction: Separation * Family Closeness		-0.006 (0.013)
Female	-0.053 * (0.029)	-0.053 * (0.029)
Age Wave 1	-0.057 *** (0.009)	-0.057 *** (0.009)
Race ¹		
Black	-0.085 ** (0.042)	-0.085 ** (0.042)
Asian	0.022 (0.074)	0.022 (0.074)
Hispanic	-0.024 (0.049)	-0.024 (0.049)
Other	0.003 (0.152)	0.004 (0.152)
Income per year ²		
Less than \$15,000	0.001 (0.085)	0.001 (0.085)
Less than \$25,000	0.109 (0.071)	0.108 (0.071)
Less than \$50,000	0.106 * (0.063)	0.106 * (0.063)
More than \$50,000	0.086 (0.057)	0.086 (0.057)
Missing Income	0.059 (0.054)	0.059 (0.054)
Highest parental education wave 1 ³		
Less than high school	0.065 (0.051)	0.065 (0.052)
Some college	0.050 (0.045)	0.051 (0.045)
College	0.121 *** (0.040)	0.121 *** (0.040)
Graduate School	0.071 (0.047)	0.071 (0.047)
Education missing	-0.002 (0.097)	-0.003 (0.097)

Table 4.5: continued.

Parental relationship variables ⁴		
Least happiness	-0.033 (0.049)	-0.033 (0.049)
More happiness	-0.034 (0.042)	-0.034 (0.042)
Most happiness	-0.033 (0.036)	-0.033 (0.036)
Missing	-0.031 (0.047)	-0.031 (0.047)
N=	7227	7227
Constant=	0.089	0.076
R-squared=	0.049	0.049

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference group is parent reports some happiness in relationship. * p<.05, one-tailed test; ** p<.05; *** p<.01

Closeness to Siblings

Descriptives

Table 4.6 shows survey weighted descriptive statistics of the variables used in the analysis of love for siblings. Between Waves 2 and 3, nine percent of the respondents experienced a parental separation. Average love for siblings is very high, with respondents reporting they feel love for their siblings between often and very often on average. Delinquency levels decrease between waves. At Wave 2, respondents report 0.79 delinquent acts on average, and, at Wave 3, respondents report 0.41 delinquent acts on average. Depression levels also fall between Waves. Respondents score 4.22 on the depression scale at Wave 2 and score 3.66 on the depression scale at Wave 3.

Table 4.6: Weighted Descriptive Statistics of Analysis, Sibling Analysis

	%/Mean	Standard Error	Min	Max
Wave 3 Depression: 8 point scale	3.66	0.09	0	21
Wave 2 Depression: 8 point scale	4.22	0.09	0	21
Wave 3 Delinquency: 8 point scale	0.41	0.03	0	8
Wave 2 Delinquency: 8 point scale	0.79	0.03	0	8
Parental Separation	9	0.01		
Love for Siblings	3.94	0.03	0	4
Female	48	0.01		
Age	16.44	0.13	13	22
Race				
White	74	0.03		
Black	7	0.01		
Asian	5	0.01		
Hispanic	13	0.02		
Other	1	0.00		
Income per year				
Less than \$15,000	5	0.01		
Less than \$25,000	8	0.01		
Less than \$35,000	10	0.01		
Less than \$50,000	17	0.01		
More than \$50,000	41	0.02		
Missing Income	20	0.01		
Highest Parental Education				
Less than High School	9	0.01		
High School	26	0.01		
Some College	21	0.01		
College	27	0.01		
Graduate School	15	0.01		
Education Missing	2	0.00		

(N=3807 for delinquency sample; N=3830 for depression sample)

Delinquency. Table 4.7 shows the results for the negative binomial regression of delinquency on select control variables including the measure of closeness to siblings. Model 1 shows the model without the interaction. In this model, parental separation is positively related to delinquency, and love for siblings is negatively associated with delinquency.

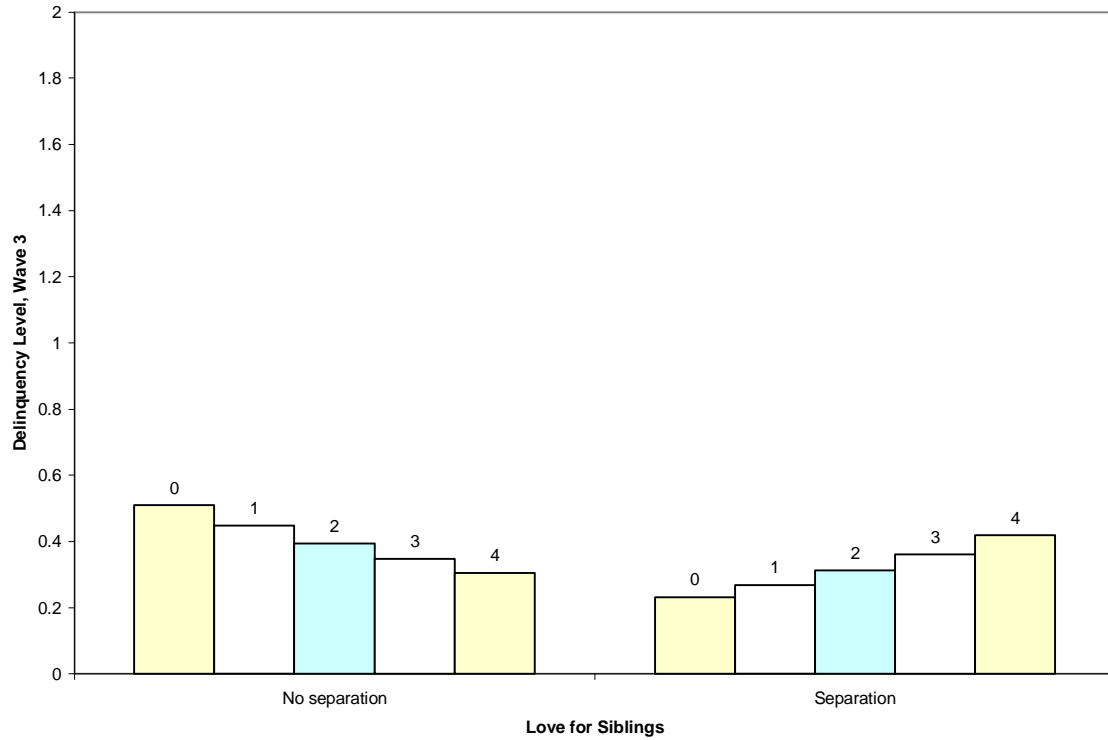
Table 4.7: Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Love for Siblings

	Model 1	Model 2
Parental separation between waves 2 and 3	0.321 ** (0.145)	-0.787 (0.511)
Love for Siblings	-0.101 * (0.051)	-0.128 ** (0.052)
Interaction: Separation * Love for Siblings		0.276 ** (0.126)
Female	-0.985 *** (0.117)	-0.988 *** (0.117)
Age Wave 2	-0.161 *** (0.034)	-0.161 *** (0.034)
Race ¹		
Black	0.391 (0.271)	0.380 (0.271)
Asian	0.071 (0.236)	0.079 (0.241)
Hispanic	-0.102 (0.159)	-0.109 (0.159)
Other	0.529 * (0.311)	0.534 * (0.314)
Income per year ²		
Less than \$15,000	0.233 (0.388)	0.248 (0.390)
Less than \$25,000	0.376 (0.256)	0.364 (0.257)
Less than \$50,000	-0.014 (0.214)	-0.016 (0.216)
More than \$50,000	0.489 ** (0.199)	0.491 ** (0.201)
Missing Income	0.247 (0.212)	0.236 (0.211)
Highest parental education wave 1 ³		
Less than high school	0.078 (0.233)	0.084 (0.235)
Some college	0.050 (0.161)	0.042 (0.160)
College	0.168 (0.128)	0.157 (0.129)
Graduate School	0.352 ** (0.148)	0.339 ** (0.149)
Education missing	-0.729 ** (0.331)	-0.721 ** (0.333)
Wave 2 delinquency	0.278 *** (0.031)	0.275 *** (0.032)
N=	3807	3807
Constant=	1.644	1.756
Alpha=	2.035	2.017

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school. * p<.05, one-tailed test; ** p<.05; *** p<.01

The interaction term, included in Model 2, is significantly positive. The chart representing the equation of the negative binomial regression model, provided in Figure 4.4, uses the same reference categories as in the other charts in this paper. For those who have not experienced a parental separation, increasing levels of sibling closeness at Wave 2 are associated with slightly lower levels of delinquency at Wave 3. The difference between those who feel love for their siblings most often at Wave 2 and those who feel love for their siblings least often is about 0.2 delinquent acts. For respondents who have experienced a parental separation, the relationship is reversed, as hypothesized. Increasing levels of sibling closeness at Wave 2 are associated with higher delinquency at Wave 3 for those who have experienced a separation, suggesting that parental separation is more problematic for respondents who have closer sibling relationships at Wave 2. Those who feel love for their siblings most frequently report on average almost 0.2 delinquent acts more than those who never feel love for their siblings. These effects suggest that those who have higher levels of love for their siblings pre-separation have a harder time adjusting to the separation than those who do not feel as positively toward their siblings at Wave 2.

Figure 4.4: Predicted values of delinquency for varying values of love for siblings by parental separation, lagged dependent variable model



In the fixed effects model, shown in Table 4.8, neither having experienced a parental separation nor love for siblings is significantly related to changes in delinquency between waves. In Model 2, the interaction is not significant.

Table 4.8: Coefficients of Fixed Effects Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Love for Siblings

	Model 1	Model 2
Parental separation between waves 1 and 3	-0.007 (0.115)	-0.076 (0.350)
Love for Siblings	0.060 (0.038)	0.059 (0.039)
Interaction: Separation *Love for Siblings		0.017 (0.086)
Female	-0.156 ** (0.074)	-0.156 ** (0.074)
Age Wave 1	0.009 (0.024)	0.009 (0.024)
Race ¹		
Black	0.282 * (0.168)	0.282 * (0.168)
Asian	-0.023 (0.161)	-0.022 (0.162)
Hispanic	-0.153 (0.095)	-0.153 (0.095)
Other	0.003 (0.203)	0.003 (0.203)
Income per year ²		
Less than \$15,000	-0.062 (0.259)	-0.062 (0.259)
Less than \$25,000	0.286 * (0.159)	0.286 * (0.159)
Less than \$50,000	0.042 (0.161)	0.042 (0.161)
More than \$50,000	0.251 * (0.142)	0.251 * (0.142)
Missing Income	0.150 (0.151)	0.150 (0.151)
Highest parental education wave 1 ³		
Less than high school	0.002 (0.134)	0.002 (0.134)
Some college	-0.038 (0.101)	-0.039 (0.101)
College	-0.020 (0.095)	-0.020 (0.095)
Graduate School	0.152 (0.098)	0.152 (0.098)
Education missing	-0.369 ** (0.179)	-0.369 ** (0.180)
N=	3807	3807
Constant=	-0.855	-0.849
Alpha=	0.018	0.018

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school. * p<.05, one-tailed test; ** p<.05; *** p<.01

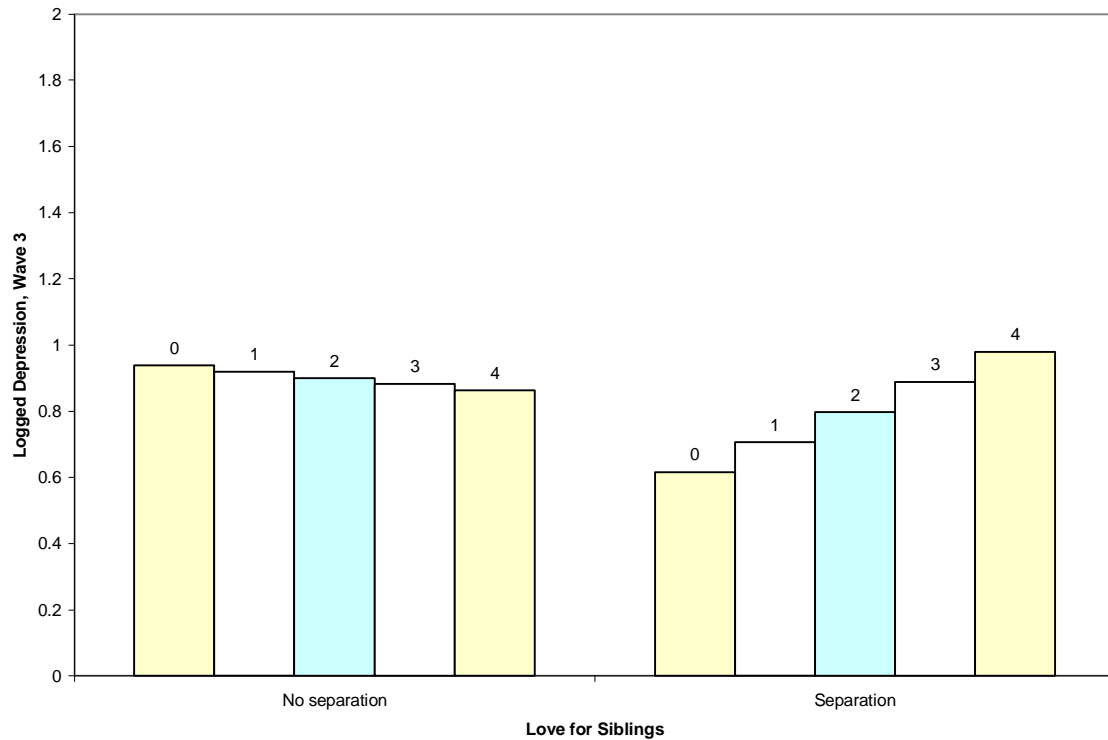
Depression. Tables 4.9 and 4.10 show the results for the analyses of depression. In the lagged dependent variable analysis, shown in Table 4.9, parental separation is significantly positively related to the logged depression value at Wave 3. The interaction is significant in Model 2, and the model is charted in Figure 4.5. Those who do not experience a parental separation show slightly lower levels of depression at Wave 3 with increasing love felt for siblings at Wave 1; the difference between those who experience high levels of love for their siblings and those who report low levels is less than 0.1. For those who experience a parental separation, however, the relationship is reversed and is much stronger: those who report higher levels of love for their siblings at Wave 1 have logged depression levels that are nearly 0.4 points higher than those who report low levels of love for their siblings.

Table 4.9: Coefficients of Regression Model of Logged Depression Scale on Select Control Variables, Including Love for Siblings

	Model 1	Model 2
Parental separation between waves 1 and 3	0.116 ** (0.051)	-0.323 (0.213)
Love for Siblings	-0.010 (0.018)	-0.019 (0.018)
Interaction: Separation * Love for Siblings		0.110 ** (0.052)
Female	0.040 (0.032)	0.040 (0.032)
Age Wave 1	-0.026 *** (0.009)	-0.026 *** (0.009)
Race ¹		
Black	0.080 (0.056)	0.077 (0.055)
Asian	0.107 (0.078)	0.111 (0.078)
Hispanic	0.027 (0.049)	0.026 (0.049)
Other	-0.041 (0.154)	-0.044 (0.155)
Income per year ²		
Less than \$15,000	-0.006 (0.078)	-0.005 (0.078)
Less than \$25,000	0.067 (0.076)	0.065 (0.075)
Less than \$50,000	0.065 (0.070)	0.065 (0.070)
More than \$50,000	0.023 (0.060)	0.023 (0.060)
Missing Income	-0.003 (0.066)	-0.004 (0.065)
Highest parental education wave 1 ³		
Less than high school	0.219 *** (0.074)	0.218 *** (0.074)
Some college	0.012 (0.044)	0.010 (0.045)
College	0.063 (0.043)	0.060 (0.043)
Graduate School	0.043 (0.048)	0.040 (0.048)
Education missing	-0.027 (0.109)	-0.029 (0.109)
Wave 1 depression	0.366 *** (0.020)	0.366 *** (0.020)
N=	3830	3830
Constant=	1.099	1.137
R-squared=	0.142	0.144

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school. * p<.05, one-tailed test; ** p<.05; *** p<.01

Figure 4.5: Predicted values of logged depression for varying values of love for siblings by parental separation, lagged dependent variable model



In Table 4.10, which shows the fixed effects model, love for siblings at Wave 2 has a significantly positive relationship with the difference in logged depression between waves. As with delinquency, previous analyses showed that depression is negatively associated with age, indicating that depression generally decreases over time, and sibling closeness was found to be negatively associated with depression at both waves (Appendix 4.C, Table 4.3c). It is likely, then, that this positive relationship indicates that individuals with higher levels of family closeness experience less of a decline in depression over time rather than an increase, which could be due simply to their starting at lower levels of initial depression.

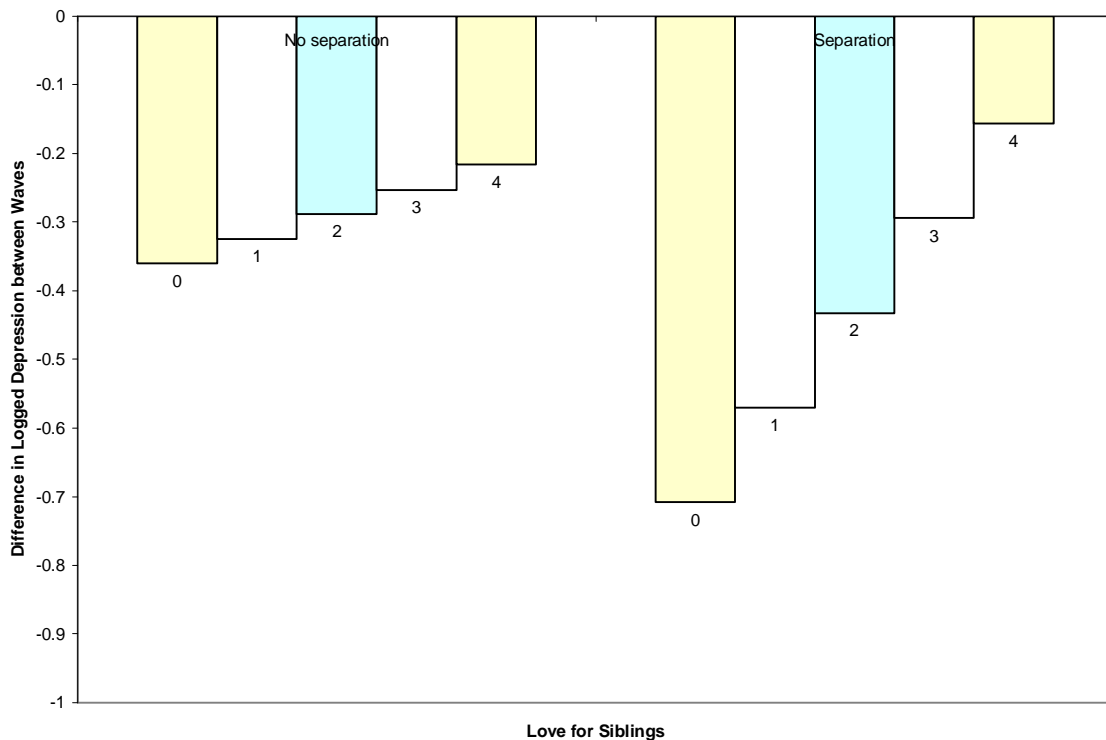
Table 4.10: Coefficients of Regression Model of Difference in Logged Depression Scale Between Waves on Select Control Variables, Including Love for Siblings

	Model 1	Model 2
Parental separation between waves 1 and 3	0.060 (0.060)	-0.348 (0.246)
Love for Siblings	0.044 ** (0.020)	0.036 * (0.020)
Interaction: Separation * Love for Siblings		0.102 * (0.061)
Female	-0.104 *** (0.037)	-0.105 *** (0.037)
Age Wave 1	-0.056 *** (0.012)	-0.056 *** (0.012)
Race ¹		
Black	0.019 (0.073)	0.016 (0.072)
Asian	-0.023 (0.096)	-0.020 (0.097)
Hispanic	-0.048 (0.062)	-0.049 (0.062)
Other	-0.154 (0.175)	-0.156 (0.175)
Income per year ²		
Less than \$15,000	-0.065 (0.087)	-0.065 (0.086)
Less than \$25,000	0.099 (0.085)	0.097 (0.085)
Less than \$50,000	0.089 (0.083)	0.089 (0.083)
More than \$50,000	0.052 (0.069)	0.052 (0.069)
Missing Income	-0.037 (0.077)	-0.038 (0.077)
Highest parental education wave 1 ³		
Less than high school	0.203 ** (0.090)	0.202 ** (0.090)
Some college	0.086 (0.057)	0.084 (0.058)
College	0.150 *** (0.050)	0.148 *** (0.051)
Graduate School	0.107 * (0.056)	0.105 * (0.056)
Education missing	-0.090 (0.116)	-0.092 (0.117)
N=	3830	3830
Constant=	0.525	0.560
R-squared=	0.024	0.028

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school. * p<.05, one-tailed test; ** p<.05; *** p<.01

The interaction, included in Model 2, is significant. In the chart representing the model (Figure 4.6), the difference in the predicted value of change in logged depression between waves is negative for all respondents except for those who both report high levels of love for siblings and experience a parental separation. For those who do not experience a parental separation, increasing levels of love for siblings at Wave 1 is associated with decreasingly negative differences in logged depression between waves. The difference is minimal, however (about 0.1). For those who experience a parental separation, the difference in logged depression rates between waves is also decreasingly negative, but the difference between those who report no love for siblings and those who report high levels of love for siblings is much larger, almost 0.6.

Figure 4.6: Predicted values of change in logged depression for varying values of love for siblings by parental separation, fixed effects model



Conclusions

The findings described here largely support my hypothesis regarding delinquency and family closeness, that higher levels of family closeness in adolescence lessen the experience of negative outcomes following a parental separation. The results are not significant for depression, indicating that internalizing responses to stress may not respond in the same way as externalizing responses. It is possible that individuals are more prone to act out against their parents if they feel surprised and upset by their separation than they are to feel depressed, or it could be that depression is a more persistent negative outcome that does not respond to external factors as readily as delinquency.

Research has shown that, when there is a high degree of inter-parental conflict in a family pre-separation, the separation is associated with fewer negative effects and can in fact be beneficial to those who experience it, as it removes them from a stressful situation (Forehand et al. 1994; Hanson 1999; Amato, Loomis and Booth 1995). For individuals who report low levels of inter-parental conflict, however, separation is generally much more harmful (Hanson 1999). The findings presented in this paper suggest similar implications for the moderating effect of overall family closeness on the relationship between parental separation and delinquency: those who report more cohesiveness within their family overall pre-separation have higher rates of delinquency post-separation, and those who report feeling less close to their families show fewer negative effects. These findings hold even after controlling for parental marital quality.

There are a few mechanisms through which family closeness might moderate the relationship between parental separation and delinquency. First, individuals who have routinely experienced lower levels of family cohesiveness may be less surprised by any negativity surrounding a separation and may be better prepared to deal with stress that arises. Second, separation may be experienced as a greater loss for those who feel closer to their family if the separation disrupts interactions and routines. Third, parental separation may be less expected and may come as more of a shock to someone who feels their family is close and gets along well.

The analyses of sibling closeness similarly show that higher reports of love for siblings in adolescence are associated with more negative outcomes post parental separation, both for depression and delinquency, although the results are more robust for depression. The lagged dependent variable model of delinquency has significant interaction results, but the fixed effects model does not. The fixed effects method treats all changes of the same magnitude as equal. It is possible that changes in delinquency for those at higher ends of the delinquency scale are meaningfully different than those for respondents at lower ends of the scale. Because respondents who experience parental separation start at higher levels of delinquency on average than those who do not, it is possible that the fixed effects method masks some of the variation in the dependent variable and, so, yields null findings.

As mechanisms, these findings point to the second set of hypotheses presented regarding sibling closeness: that parental separation puts a strain on the sibling relationship, which increases individual stress and negative outcomes. Although there

may be some siblings who draw closer during a separation, the general trend suggests that, among close siblings, strain is more likely. As presented in the literature, there are many possible explanations for increased strain. First, when parents split up, parental resources decline. In response, siblings often feel a need to compete for these resources, which can strain the sibling relationship (Hetherington 1989). This strain would be particularly intense and experienced as more of a loss if the siblings were closer pre-separation. Second, older siblings are often asked to adopt care-taking roles when parental resources are low (Bank and Kahn 1982). Because parental resources decline post-separation, it is likely that older siblings will be asked to take on some responsibilities for younger siblings. If these relationships become too intense, they can cause added stress (Hetherington 1989). I expect that siblings who have a closer bond are more likely to take on a care-taking role, which could lead to added stress or dependence. Third, siblings could experience a strained relationship if they felt their loyalties toward their parents were different or if they disagreed on aspects of the separation. Last, if siblings end up spending less time together because of the custody arrangement, they may find themselves less able to maintain a close connection. These last two elements of strain would be experienced as a particular loss in relationships that were close pre-separation (Kaplan et al. 1991).

The structure of the Add Health data limits these findings, in that I am unable to measure family and sibling closeness at Wave 3 to determine the current family context of the individual. However, family context during adolescence is likely to have a strong impact on respondents, as a great deal of socialization occurs during adolescence between family members and siblings (Raffaelli 1992). Further, these estimates are likely to be

conservative; if I were able to measure the family context at Wave 3, the power of these findings would likely be stronger, incorporating current family context rather than a lagged effect.

These findings support the “linked lives” and social-ecological approaches in suggesting that, although separation itself is an important event in the life course, it is important to examine, not only the event itself, but also the familial relationships surrounding the event. In this case, family context is shown to be of particular importance in adaptation to parental separation. In situations where families are very close before a separation, young adults tend to have a harder time adjusting to the change. I suggest that this finding is the result of the disruptive effect separation has on familial relationships. In future analyses with data that permit, it would be interesting to determine whether results are different for families who maintain a close connection after a separation than for those who do not in order to more directly specify the mechanism of this effect.

Appendix 2A: Questions used in creation of scales

Questions included in the delinquency scale.

Wave 1:

In the past 12 months, how often did you paint graffiti or signs on someone else's property or in a public place? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you deliberately damage property that didn't belong to you? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you take something from a store without paying for it? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you drive a car without its owner's permission? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you steal something worth more than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you go into a house or building to steal something? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you sell marijuana or other drugs? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you steal something worth less than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

Wave 3:

In the past 12 months, how often did you deliberately damage property that didn't belong to you? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you steal something worth more than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you go into a house or building to steal something? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you sell marijuana or other drugs? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you steal something worth less than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you buy, sell, or hold stolen property? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you deliberately write a bad check? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

Questions used in depression scale

How often was each of the following things true during the past week? (Answers range from 0-3)

You were bothered by things that usually don't bother you: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt like you could not shake off the blues, even with help from your family and your friends: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You had trouble keeping your mind on what you were doing: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt depressed: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt that you were too tired to do things: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You enjoyed life: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt sad: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt that people disliked you: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

Appendix 2B: Equations representing models

Model 1: Negative Binomial Regression

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

Model 2: Ordinal Probit Regression

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

Model 3: Regression of Log-transformed Dependent Variable

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_1(\text{Log(Wave 1 Outcome)})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

Model 4: Fixed Effects Regression of Log-transformed Dependent Variable

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

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How often did you take something from a store without paying for it? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

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How often did you go into a house or building to steal something? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you sell marijuana or other drugs? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you steal something worth less than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

Wave 3:

In the past 12 months, how often did you deliberately damage property that didn't belong to you? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you steal something worth more than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you go into a house or building to steal something? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you sell marijuana or other drugs? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you steal something worth less than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you buy, sell, or hold stolen property? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you deliberately write a bad check? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

Questions used in depression scale

How often was each of the following things true during the past week? (Answers range from 0-3)

You were bothered by things that usually don't bother you: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt like you could not shake off the blues, even with help from your family and your friends: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You had trouble keeping your mind on what you were doing: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt depressed: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt that you were too tired to do things: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You enjoyed life: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt sad: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt that people disliked you: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

Appendix 3B: Equations representing models

Equations

Model 1: Negative Binomial Regression

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

Model 2: Ordinal Probit Regression

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

Model 3: Regression of Log-transformed Dependent Variable

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_1(\text{Log(Wave 1 Outcome)})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class Size at School})_{ij} + \epsilon_{ij}$$

Model 4: Fixed Effects Regression of Log-transformed Dependent Variable

$$Y_{ij} = x\beta$$

$$\begin{aligned} \text{Log}(x\beta) = & \beta_0 + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Percentage Alternative Families in School})_{ij} + \beta_4(\text{Interaction} \\ & \text{Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Mother has} \\ & \text{Less than High School Education})_{ij} + \beta_{12}(\text{Mother has Some College})_{ij} + \beta_{13}(\text{Mother has College})_{ij} + \\ & \beta_{14}(\text{Mother has Some Graduate School})_{ij} + \beta_{15}(\text{Percentage of School who is Black})_{ij} + \beta_{16}(\text{Percentage of} \\ & \text{School who is Asian})_{ij} + \beta_{17}(\text{Percentage of School who is Hispanic})_{ij} + \beta_{18}(\text{Percentage of School who is} \\ & \text{Other Race})_{ij} + \beta_{19}(\text{Percentage of Teachers in School who have their Masters Degree})_{ij} + \beta_{20}(\text{Average Class} \\ & \text{Size at School})_{ij} + \epsilon_{ij} \end{aligned}$$

Appendix 3C: Supplemental analyses

Table 3.1c: Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale on Select Control Variables, Including Percentage of Conservative Protestant Students in School

	Wave 1	Wave 3
Parental separation between waves 1 and 3	0.117 (0.078)	0.245 ** (0.108)
Percentage of students in school who are conservative Protestants	-0.754 *** (0.289)	-0.300 (0.341)
Female	-0.447 *** (0.053)	-1.023 *** (0.076)
Age Wave 1	-0.013 (0.018)	-0.170 *** (0.021)
Race ¹		
Black	-0.052 (0.098)	0.069 (0.183)
Asian	-0.032 (0.126)	-0.138 (0.214)
Hispanic	0.210 ** (0.105)	-0.205 (0.146)
Other	0.213 (0.181)	0.155 (0.256)
Income per year ²		
Less than \$15,000	-0.061 (0.194)	-0.079 (0.288)
Less than \$25,000	-0.235 ** (0.115)	-0.111 (0.197)
Less than \$50,000	-0.136 (0.097)	-0.145 (0.180)
More than \$50,000	-0.163 * (0.092)	0.152 (0.167)
Missing Income	-0.212 ** (0.104)	-0.154 (0.168)
Highest parental education wave 1 ³		
Less than high school	-0.219 * (0.119)	-0.022 (0.166)
Some college	0.058 (0.077)	0.089 (0.118)
College	0.056 (0.072)	0.224 ** (0.091)
Graduate School	0.051 (0.094)	0.325 *** (0.115)
Education missing	0.131 (0.165)	-0.175 (0.322)

Table 3.1c: continued.

Religious service attendance ⁴		
Never	0.092 (0.076)	0.144 (0.139)
Less than once a month	0.117 (0.077)	0.091 (0.122)
Once a week or more	-0.103 (0.071)	-0.013 (0.107)
Individual is conservatively religious	-0.189 * (0.110)	-0.172 (0.133)
School variables		
Percentage of parents with college or more education	0.471 ** (0.199)	0.259 (0.246)
Percentage of parents in PTA	0.008 (0.142)	0.048 (0.158)
Classsize	0.010 (0.008)	-0.001 (0.010)
Percentage of teachers with Masters degree	0.035 (0.127)	0.320 * (0.184)
Percent by race		
Black	0.157 (0.192)	0.023 (0.250)
Asian	0.423 (0.468)	0.154 (0.338)
Hispanic	0.034 (0.207)	0.302 (0.340)
N=	6916	6916
Constant=	0.032	1.706
Alpha=	1.984	2.533

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference is attends once a month.
 * p<.05, one-tailed test; ** p<.05; *** p<.01

Appendix 4A: Questions used in creation of scales

Questions included in the delinquency scale.

Wave 1:

In the past 12 months, how often did you paint graffiti or signs on someone else's property or in a public place? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you deliberately damage property that didn't belong to you? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you take something from a store without paying for it? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you drive a car without its owner's permission? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you steal something worth more than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you go into a house or building to steal something? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you sell marijuana or other drugs? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you steal something worth less than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

Wave 3:

In the past 12 months, how often did you deliberately damage property that didn't belong to you? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you steal something worth more than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you go into a house or building to steal something? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you sell marijuana or other drugs? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

How often did you steal something worth less than \$50? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you buy, sell, or hold stolen property? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

In the past 12 months, how often did you deliberately write a bad check? Never, 1 or 2 times, 3 or 4 times, 5 or more times.

Questions used in depression scale

How often was each of the following things true during the past week? (Answers range from 0-3)

You were bothered by things that usually don't bother you: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt like you could not shake off the blues, even with help from your family and your friends: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You had trouble keeping your mind on what you were doing: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt depressed: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt that you were too tired to do things: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You enjoyed life: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt sad: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

You felt that people disliked you: never or rarely, sometimes, a lot of the time, most of the time or all of the time.

Appendix 4B: Equations representing models

Equations for Family Closeness Analyses

Model 1: Negative Binomial Regression

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Closeness to Family})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \beta_{22}(\text{Least Parental Marital Happiness})_{ij} + \beta_{23}(\text{More Parental Marital Happiness})_{ij} + \beta_{24}(\text{Most Parental Marital Happiness})_{ij} + \epsilon_{ij}$$

Model 2: Ordered Probit Regression

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Closeness to Family})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \beta_{22}(\text{Least Parental Marital Happiness})_{ij} + \beta_{23}(\text{More Parental Marital Happiness})_{ij} + \beta_{24}(\text{Most Parental Marital Happiness})_{ij} + \epsilon_{ij}$$

Model 3: Regression of Log-transformed Dependent Variable

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_1(\text{Log(Wave 1 Outcome)})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Closeness to Family})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \beta_{22}(\text{Least Parental Marital Happiness})_{ij} + \beta_{23}(\text{More Parental Marital Happiness})_{ij} + \beta_{24}(\text{Most Parental Marital Happiness})_{ij} + \epsilon_{ij}$$

Model 4: Fixed Effects Regression of Logged Dependent Variable

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Closeness to Family})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \beta_{22}(\text{Least Parental Marital Happiness})_{ij} + \beta_{23}(\text{More Parental Marital Happiness})_{ij} + \beta_{24}(\text{Most Parental Marital Happiness})_{ij} + \epsilon_{ij}$$

Equations for Sibling Closeness Analyses

Model 1: Negative Binomial Regression for Sibling Closeness Analyses

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Love for Siblings})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \epsilon_{ij}$$

Model 2: Ordered Probit Regression for Sibling Closeness Analyses

$$Y_{ij} = \text{Exp}(x\beta)$$

$$x\beta = \beta_0 + \beta_1(\text{Wave 1 Outcome})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Love for Siblings})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \epsilon_{ij}$$

Model 3: Regression of Log-transformed Dependent Variable for Sibling Closeness Analyses

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_1(\text{Log(Wave 1 Outcome)})_{ij} + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Love for Siblings})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \epsilon_{ij}$$

Model 4: Fixed Effects Regression of Log-transformed Dependent Variable for Sibling Closeness Analyses

$$Y_{ij} = x\beta$$

$$\text{Log}(x\beta) = \beta_0 + \beta_2(\text{Parental Separation})_{ij} + \beta_3(\text{Love for Siblings})_{ij} + \beta_4(\text{Interaction Effect})_{ij} + \beta_5(\text{Female})_{ij} + \beta_6(\text{Age})_{ij} + \beta_7(\text{Black})_{ij} + \beta_8(\text{Asian})_{ij} + \beta_9(\text{Hispanic})_{ij} + \beta_{10}(\text{Other})_{ij} + \beta_{11}(\text{Highest Parental Education is Less than High School Education})_{ij} + \beta_{12}(\text{Highest Parental Education is Some College})_{ij} + \beta_{13}(\text{Highest Parental Education is College})_{ij} + \beta_{14}(\text{Highest Parental Education is Graduate School})_{ij} + \beta_{15}(\text{Parental Education is Missing})_{ij} + \beta_{16}(\text{Income is Less than \$15,000})_{ij} + \beta_{17}(\text{Income is \$15,000-\$25,000})_{ij} + \beta_{18}(\text{Income is \$25,000-\$35,000})_{ij} + \beta_{19}(\text{Income is \$35,000-\$50,000})_{ij} + \beta_{20}(\text{Income is more than \$50,000})_{ij} + \beta_{21}(\text{Income is Missing})_{ij} + \epsilon_{ij}$$

Appendix 4C: Supplemental analyses

Table 4.1c: Coefficients of Negative Regression Model of 8-Point Delinquency Scale at Waves 1 and 3 on Select Control Variables, Including Family Closeness

	Model 1 Wave 1	Model 2 Wave 3
Parental separation between waves 1 and 3	0.094 (0.076)	0.290 *** (0.107)
Family Closeness	-0.145 *** (0.007)	-0.093 *** (0.013)
Female	-0.534 *** (0.049)	-1.071 *** (0.073)
Age Wave 1	-0.069 *** (0.017)	-0.211 *** (0.022)
Race ¹		
Black	-0.151 (0.103)	0.042 (0.140)
Asian	0.092 (0.122)	-0.092 (0.183)
Hispanic	0.353 *** (0.083)	-0.056 (0.136)
Other	0.068 (0.214)	0.139 (0.274)
Income per year ²		
Less than \$15,000	-0.091 (0.167)	-0.117 (0.304)
Less than \$25,000	-0.233 * (0.127)	-0.029 (0.199)
Less than \$50,000	-0.077 (0.096)	-0.012 (0.177)
More than \$50,000	-0.027 (0.091)	0.295 * (0.167)
Missing Income	-0.202 * (0.115)	-0.121 (0.203)
Highest parental education wave 1 ³		
Less than high school	-0.243 ** (0.123)	0.003 (0.169)
Some college	0.015 (0.074)	0.077 (0.108)
College	0.037 (0.073)	0.236 *** (0.089)
Graduate School	0.067 (0.099)	0.371 *** (0.105)
Education missing	0.073 (0.181)	-0.109 (0.315)

Table 4.1c: continued.

Parental relationship variables ⁴		
Least happiness	0.050 (0.077)	0.051 (0.106)
More happiness	-0.050 (0.081)	0.006 (0.095)
Most happiness	-0.014 (0.068)	0.064 (0.124)
Missing	0.069 (0.097)	0.105 (0.171)
N=	7167	7167
Constant=	3.327	3.842
Alpha=	1.655	2.357

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference group is parent reports some happiness in relationship. * p<.05, one-tailed test; ** p<.05; *** p<.01

Table 4.2c: Coefficients of Model of Logged Depression Scale at Waves 1 and 3 on Select Control Variables, Including Family Closeness

	Model 1 Wave 1	Model 2 Wave 3
Parental separation between waves 1 and 3	0.040 (0.030)	0.041 (0.036)
Family Closeness	-0.081 *** (0.004)	-0.043 *** (0.005)
Female	0.154 *** (0.022)	0.100 *** (0.022)
Age Wave 1	0.020 *** (0.007)	-0.037 *** (0.007)
Race ¹		
Black	0.128 *** (0.040)	0.043 (0.038)
Asian	0.111 * (0.066)	0.133 ** (0.061)
Hispanic	0.087 ** (0.044)	0.064 * (0.034)
Other	0.039 (0.072)	0.042 (0.116)
Income per year ²		
Less than \$15,000	0.030 (0.058)	0.031 (0.076)
Less than \$25,000	-0.021 (0.053)	0.088 (0.061)
Less than \$50,000	-0.050 (0.040)	0.056 (0.054)
More than \$50,000	-0.020 (0.037)	0.066 (0.054)
Missing Income	-0.004 (0.043)	0.055 (0.050)
Highest parental education wave 1 ³		
Less than high school	0.154 *** (0.048)	0.218 *** (0.049)
Some college	-0.071 ** (0.036)	-0.021 (0.030)
College	-0.117 *** (0.033)	0.004 (0.033)
Graduate School	-0.095 ** (0.038)	-0.024 (0.035)
Education missing	0.088 (0.059)	0.086 (0.087)

Table 4.2c: continued.

Parental relationship variables ⁴		
Least happiness	0.037 (0.035)	0.004 (0.041)
More happiness	-0.019 (0.029)	-0.053 (0.035)
Most happiness	0.012 (0.029)	-0.021 (0.033)
Missing	0.001 (0.037)	-0.030 (0.041)
N=	7227	7227
Constant=	2.278	2.367
R-squared=	0.181	0.052

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school; ⁴Reference group is parent reports some happiness in relationship. * p<.05, one-tailed test; ** p<.05; *** p<.01

Table 4.3c: Coefficients of Negative Binomial Regression Model of 8-Point Delinquency Scale at Waves 2 and 3 on Select Control Variables, Including Love for Siblings

	Model 1 Wave 1	Model 2 Wave 3
Parental separation between waves 2 and 3	0.279 ** (0.109)	0.392 ** (0.155)
Love for Siblings	-0.131 *** (0.040)	-0.139 ** (0.055)
Female	-0.313 *** (0.081)	-1.031 *** (0.113)
Age Wave 2	-0.129 *** (0.027)	-0.172 *** (0.032)
Race ¹		0.319
Black	-0.319 * (0.167)	(0.277) 0.071
Asian	0.037 (0.159)	(0.215) -0.082
Hispanic	0.169 (0.118)	(0.166) 0.680 **
Other	0.262 (0.212)	(0.323) 0.207
Income per year ²		(0.390)
Less than \$15,000	0.122 (0.264)	0.252 (0.263)
Less than \$25,000	-0.314 * (0.162)	-0.007 (0.226)
Less than \$50,000	-0.064 (0.172)	0.445 ** (0.205)
More than \$50,000	-0.095 (0.136)	0.175 (0.218)
Missing Income	-0.134 (0.143)	0.081 (0.233)
Highest parental education wave 1 ³		0.029
Less than high school	0.022 (0.165)	(0.163) 0.204
Some college	0.095 (0.112)	(0.136) 0.363 **
College	0.154 (0.121)	(0.155) -0.663 **
Graduate School	0.024 (0.117)	(0.331) (0.170)
Education missing	0.189 (0.183)	0.103 (0.171)
N=	3807	3807
Constant=	2.484	2.340
Alpha=	2.221	2.427

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school. * p<.05, one-tailed test; ** p<.05; *** p<.01

Table 4.4c: Coefficients of Model of Logged Depression Scale at Waves 2 and 3 on Select Control Variables, Including Love for Siblings

	Model 1 Wave 2	Model 2 Wave 3
Parental separation between waves 1 and 3	0.089 *	0.149 ***
	(0.052)	(0.055)
Love for Siblings	-0.086 ***	-0.042 **
	(0.016)	(0.018)
Female	0.228 ***	0.123 ***
	(0.029)	(0.033)
Age Wave 1	0.048 ***	-0.008
	(0.010)	(0.010)
Race ¹		
Black	0.096 *	0.115 **
	(0.055)	(0.054)
Asian	0.206 ***	0.183 **
	(0.076)	(0.080)
Hispanic	0.118 **	0.070
	(0.055)	(0.052)
Other	0.177	0.023
	(0.124)	(0.160)
Income per year ²		
Less than \$15,000	0.093	0.028
	(0.081)	(0.088)
Less than \$25,000	-0.051	0.049
	(0.070)	(0.081)
Less than \$50,000	-0.039	0.051
	(0.059)	(0.071)
More than \$50,000	-0.046	0.006
	(0.058)	(0.064)
Missing Income	0.055	0.017
	(0.059)	(0.069)
Highest parental education wave 1 ³		
Less than high school	0.025	0.229 ***
	(0.069)	(0.076)
Some college	-0.116 **	-0.030
	(0.050)	(0.045)
College	-0.138 ***	0.013
	(0.042)	(0.045)
Graduate School	-0.102 **	0.005
	(0.044)	(0.051)
Education missing	0.100	0.010
	(0.079)	(0.114)
N=	3830	3830
Constant=	0.905	1.430
R-squared=	0.067	0.026

Standard errors in parentheses under coefficients. ¹Reference group is Non-Hispanic White; ²Reference group is income less than \$35,000; ³Reference group is high school. * p<.05, one-tailed test; ** p<.05; *** p<.01

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