

PRIMARY SOCIALIZATION THEORY AND BULLYING:
THE EFFECTS OF PRIMARY SOURCES OF SOCIALIZATION ON BULLYING
BEHAVIORS AMONG ADOLESCENTS

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ABSTRACT

LISA S. DULLI: Primary Socialization Theory and Bullying: The Effects of Primary Sources
Of Socialization on Bullying Behaviors among Adolescents
(Under the direction of Vangie Foshee)

Introduction: Adolescent bullying has become increasingly recognized as a public health concern. Adolescents involved in bullying, as perpetrator or victim, have been shown to experience poorer physical and psychosocial health than those who are not involved. Adolescents who bully others are also more likely than those who do not to engage in more serious delinquent behaviors later. Most research on the topic has focused on the psychosocial characteristics of perpetrators and victims. Few studies have examined factors that contribute to the development of such behavior. With this study, I sought to apply the framework of Primary Socialization Theory (PST) to examine family, peer and school influences on the development of adolescent bullying behavior.

Methods: Panel study data on 3,583 6th and 7th graders from 13 schools in 3 counties in North Carolina were used to examine the relationships between family, peer and school variables and adolescent bullying. Baseline data were collected in the Spring of 2002, and outcome data were collected one year later. Logistic regression models were used to test both mediational and moderation hypotheses regarding the relationships between social factors identified by PST. Additionally, multinomial logistic regression was used to examine the relationship between gender and type of bullying behaviors, as mediated by family bonds and normative environment.

Results: Bullying prevalence was estimated at 58%. Family, peer and school normative environments were statistically significant predictors of bullying initiation; however strength of bonds to each of these three were not, nor did strength of bonds moderate the relationships between any of the three respective normative environments and bullying, as hypothesized. Age, ethnicity, gender and parental education were not significantly associated with onset of bullying. Gender was also not found to be a significant predictor of type of bullying.

Conclusions: This study provided no evidence in support of the relationships proposed by PST. Results suggest that further refinement and testing of this relatively new theory is in order. Additionally, more research into the underlying factors that contribute to the development of bullying behaviors is needed in order to identify potential strategies for the prevention of this behavior and its consequences.

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LIST OF ABBREVIATIONS

DA	Theory of Differential Association
DV	Dependent variable
IV	Independent variable
OR	Odds ratio
PSS	Primary source of socialization
PST	Primary Socialization Theory
SCT	Social Control Theory
SES	Socioeconomic status

CHAPTER ONE: INTRODUCTION

1.1 PURPOSE

My purpose for this dissertation research was to improve our understanding of the public health problem of bullying among adolescents by examining the social factors that potentially contribute to the problem.

1.2 STATEMENT OF THE PROBLEM

Adolescent bullying has emerged as a serious public health problem over the past few decades. Both bullies and their victims demonstrate adverse health-related outcomes to a greater degree than those adolescents who are not involved in bullying. Victims of bullying have been found to experience a wide array of psychological and physical health problems (Bond *et al.*, 2001; Juvonen *et al.*, 2003; Kaltiala-Heino *et al.*, 1999; Kaltiala-Heino *et al.*, 2000; Nansel *et al.*, 2001; Olweus, 1995; Salmon *et al.*, 1998; Sourander *et al.*, 2000).

Bullies themselves often suffer from psychological problems, and are more likely to engage in more serious delinquent behaviors later in adolescence and adulthood (Connolly *et al.*, 2000; Haynie *et al.*, 2001; Kaltiala-Heino *et al.*, 2000; Nansel *et al.*, 2001; Olweus, 1995; van der Wal *et al.*, 2003).

1.3 SPECIFIC AIMS

The intent of this research was to apply the theoretical framework of Primary Socialization Theory (PST) (Oetting & Donnermeyer, 1998) to the study of adolescent bullying in order to explore the relationships between various social contextual factors, including the three sources of primary socialization identified by the theory (family, school and peers), and adolescent bullying behavior. The specific aims of this study were as follows:

Aim 1: To apply PST to the study of adolescent bullying and examine the relationships between bonding and transmission of social norms by primary socialization sources and bullying among adolescents.

Aim 2: To examine the interrelationships between primary sources of socialization and their relative influences on adolescent bullying.

Aim 3: To examine sex differences in bullying behaviors and their predictors.

To accomplish these aims, a secondary data analysis of a panel study on adolescent substance use and aggressive behaviors was conducted. This study is a longitudinal study that examined the influence of the baseline social contextual factors, as defined by PST, and control variables, including baseline bullying behaviors, on the development of adolescent bullying among 6th and 7th grade adolescents in 3 North Carolina counties.

1.4 SIGNIFICANCE

Primary Socialization theory was developed to provide a framework for understanding the development of socially deviant behaviors by examining the influence of social factors, specifically the influences of family, school and peers, on the development of these

behaviors. To date, the theory has only been applied to the study of adolescent substance use/abuse; however, despite the limited application, the theory's authors clearly articulate its intended application to other socially deviant behaviors. This research aimed not only to advance our understanding of adolescent bullying by applying a theoretical framework to examine the relationships between specific social contextual factors and bullying, but also to advance and refine this relatively new theory by extending its application, by operationalizing its theoretical constructs and by empirically testing the proposed relationships.

CHAPTER TWO: LITERATURE REVIEW

Although certainly not a new problem, systematic research into bullying is relatively new. Little research can be found on the topic prior to the work of Dan Olweus in Norway beginning in the 1970's (Olweus, 1996; Rigby, 2003). Interest began to grow more rapidly in the mid to late 1990's as research began to suggest that bullying might be an important cause of physical and psychological problems among adolescents. Although the number of published studies has grown exponentially, particularly in the past few years, the body of literature addressing adolescent bullying remains relatively small compared to research into other deviant adolescent behaviors. There remains much to understand about both the causes and consequences of adolescent bullying.

2.1 BULLYING PREVALENCE

Bullying is a subtype of aggressive behavior that involves a power differential between perpetrator and victim, has a hostile intent, is repeated over time, and can be physical and/or verbal (Kristensen & Smith, 2003; O'Connell *et al.*, 1999a, 1999b; Rigby, 2003). Subtypes of bullying have also been described. Direct bullying includes physical violence or intimidation, name-calling and teasing (Kristensen & Smith, 2003; O'Connell *et al.*, 1999a, 1999b; Rigby, 2003). Indirect or relational bullying includes behaviors such as spreading rumors that result in social exclusion or manipulation of the victim's relationships or

friendships with others (Kristensen & Smith, 2003; O'Connell et al., 1999a, 1999b; Rigby, 2003).

Most of the research examining adolescent bullying has taken place in Scandinavia, Western Europe, and Australia. To date, relatively little research has been conducted in the US. Of the greater than 60 articles on bullying perpetration reviewed, only 15 studies were based in the US. As a result, estimates of the magnitude of the problem in the US are not well established. From the few studies that have been conducted in the US, estimates of the percent of students involved in bullying behaviors, including both perpetrators and victims, range from approximately 20 to 30 percent (Juvonen et al., 2003; Nansel et al., 2001; Seals & Young, 2003). For example, a recent national survey of 15,686 students in grades 6 through 10 in public and private schools throughout the US (Nansel et al., 2001) found that 29.9% of the students surveyed reported moderate or frequent involvement in bullying behaviors, either as a bully (13%), a victim of bullying (10.6%) or as both a bully and a victim (6.3%). In this study students were asked to report how many times over the current school term they had bullied or been bullied by another student.

Early studies focused exclusively on direct, overt aggressive or bullying behaviors, leading researchers to conclude that boys were far more likely to be involved in bullying than girls (Olweus, 1980). More recent studies in the US and elsewhere have found that when other types of bullying-related behaviors are considered, girls are also often involved in bullying. Overall, boys do tend to be involved both as perpetrators and as victims of bullying to a greater degree than are girls (Forero *et al.*, 1999; Kumpulainen *et al.*, 1999; Nansel et al., 2001; Olweus, 1994; Salmon et al., 1998; Seals & Young, 2003; Slee & Rigby, 1993); however, researchers have found that girls are more likely to engage in indirect or relational

bullying than boys, where boys are more likely to engage in direct bullying more than girls (Conway, 2005; Crick, 1997; Crick & Grotpeter, 1995; Wolke *et al.*, 2000).

2.2 SOCIAL INFLUENCES: PEER AND FAMILY

Most research into adolescent bullying has concentrated on the psychosocial characteristics of those adolescents who are involved as either victims or perpetrators. The focus of most of this work has been on the potential psychosocial consequences of bullying among victims, and only a few researchers having looked at psychosocial traits as potential predictors of bullying perpetration. However, in an attempt to better understand the development of such behavior, a handful of researchers has looked beyond individual characteristics and examined peer- and family-level social contextual factors associated with bullying.

Only one study, by Espelage and colleagues (2003), addressed the contextual effects of the adolescent's peer group on bullying perpetration. In this study, which involved 422 middle school students in a mid-Western US town, researchers collected data at two points in 1999-2000. The researchers found that male students affiliated with peers who had similar levels of self-reported bullying behaviors. Additionally, the researchers found that peer-group bullying at wave 1 was associated with individual bullying at wave 2. More specifically, when controlling for wave 1 individual bullying behavior, high levels of peer-group bullying at wave 1 predicted high levels of individual bullying at wave 2. Thus, they assert that their findings provide evidence that deviant peer affiliations predict individual bullying.

A second study of 499 6th through 8th graders in an urban Illinois middle school examined self-reported level and relative importance of perceived global social support from peers, parents, and teachers to bullies (Demaray & Malecki, 2003). Global social support was a composite measure which covered the dimensions of general (not specific to a behavior or situation) informational, instrumental, appraisal and emotional social support provided by peers, parents and teachers. Bullies reported receiving less global social support from family and teachers than students who were not involved in bullying (non-involved), and reported more global social support from their peers than victims of bullying. Bullies also reported that global social support from all sources was less important to them as compared to non-bullies.

A few researchers have examined parental or familial characteristics associated with bullying among adolescents. Olweus (1980) found that a primary caregiver's (most often the mother) emotional attitude characterized by lack of warmth and involvement, the primary caregiver's permissiveness toward the use of violence by the child (lack of clear limit setting), and the use of power-assertive parenting techniques such as physical punishment were associated with the development of an aggressive behavior pattern associated with bullying in Norway. In a study of 238 middle school girls and boys aged 11 to 14 in Rome, Italy, Baldry and Farrington (2000) assessed the differences in parenting styles for children who were bullies and those who were involved in other delinquent behavior. They found that children who were only bullies (did not engage in other delinquent behavior) had authoritarian parents and disagreed in general with their parents, whereas children who were only delinquents had low supportive parents with a high level of interparental conflict, from

which they concluded that bullying and delinquency are not simply different manifestations of the same underlying parental factors.

In a study of 1,012 children ages 11 to 16 years in South Australia, Rigby (1993) found that bullies tended to have poorer relationships with their parents than non-involved children and that their families had lower psychosocial health than the families of children who did not bully. Rigby also found that, although a non-intact family (single-parent or divorced) was associated with poorer family functioning, family structure was not associated with bullying behaviors.

Stevens and colleagues (2002) studied differences in family function and child-rearing practices between children who were classified as bullies, victims, bully/victims, and non-involved among 1,719 5th and 6th grade students in 38 Belgian primary schools. Additionally, they examined the concordance of child reports and their parents' reports of family functioning and child-rearing practices. Findings revealed that parents reported much more positive family relations than did their children. When using the parents' reports, almost no differences were found between the different groups of children. However, when the children's reports of their family relations were used, bullies perceived their families to be less cohesive, less expressive, less organized, less socially oriented, to exert less control, and to have more conflict than other children. The one case in which a significant difference was found based on parents' reports was that parents of bullies reported using more punishment than other parents.

Inter-parental discord, child maltreatment and domestic violence have all been found to be associated to some degree with bullying behaviors (Baldry, 2003; Christie-Mizell, 2003; Shields & Cicchetti, 2001). In a secondary analysis of data from 713 eight to fourteen year-

old youth who participated in the US National Longitudinal Youth Survey, Christie-Mizell (2003) found that inter-parental discord was associated with bullying, and that self-concept, defined as level of self-worth, mediated this relationship. Shields and Cicchetti (2001), in their study of 267 eight to twelve year-old boys and girls attending a summer day camp for inner-city children in Rochester New York, found that both bully perpetrators and victims were more likely to be maltreated by their caregivers than non-involved children.

Baldry (2003) examined the relationship between exposure to inter-parental domestic violence (physical or psychological) and bullying perpetration and victimization among 1,059 elementary and middle school children in Rome, Italy. She found that children who are exposed to inter-parental domestic violence are more likely to be bullies than those who are not exposed, and that this relationship varied by gender such that the relationship was stronger for girls than for boys.

Rigby and Slee (1993) examined family functioning and its association with three dimensions of peer relating at school, including bullying perpetration, bullying victimization and pro-social behavior among 1,012 eleven to sixteen year-olds in and around Adelaide, Australia. Strong family functioning, positive attitudes towards parents and positive relationship with parents were negatively associated with a tendency to bully peers, and positively associated with a tendency to act pro-socially for both girls and boys. Among girls, poor family functioning and a negative attitude towards the mother were associated with bullying victimization. Boys who were victimized also tended to have negative relationships with absent fathers in single-parent homes. Family structure was not independently associated with bullying behaviors.

Lastly, in a sub-sample of the US National Longitudinal Youth Survey respondents, Christie-Mizell (2004) examined the relationship between family income and bullying. Results from this study suggest a strong curvilinear relationship between the two such that children whose families have very low and very high incomes are more likely to bully than those whose family incomes fall in the mid-range. When comparing high-income families to low-income families, children from low-income families were more likely to bully than high-income family children.

2.3 SOCIAL INFLUENCES: SCHOOL

Most studies of adolescent bullying take place in the context of the school environment. Most of the few intervention programs designed to prevent adolescent bullying also take place in the school setting (Boulton *et al.*, 1999; Cunningham & Henggeler, 2001; DeRosier, 2004; Olweus, 1994; Smith *et al.*, 2003; Stevens *et al.*, 2000, 2001). School-related factors, in particular school bonding, have been explored as important influences on the development of a variety of adolescent outcomes, including substance use, delinquency and antisocial behavior (Maddox & Prinz, 2003). Despite this, there is a dearth of knowledge regarding the influence of the school environment and other school-related factors on the development of adolescent bullying.

No studies examining the influence of school-related factors have been reported in the US. According to Wolke and colleagues (2001b) in their review of the existing literature on the subject, only a handful of such studies have been conducted elsewhere, predominantly in Europe. These studies have investigated associations between a limited number of factors such as school and class sizes, SES distribution and ethnic distribution in schools and

bullying with mixed results across countries (Wolke et al., 2001b). In their own study, Wolke and colleagues (2001b) also uncovered mixed findings. They found that school and class sizes were unrelated to bullying in their German sample of students, while the proportion of students victimized by bullying increased with decreasing class size in their English sample of students.

2.4 SUMMARY

Despite a long history of research into the role of social factors in the development of adolescent delinquency and aggression, few researchers have specifically studied the contribution of such factors to adolescent bullying. Of those few who have, the primary focus has been family-related factors, with fewer researchers studying the influences of peers and school.

With regards to family, several studies have shown that intrafamilial violence and conflict are associated with adolescent bullying, as were low levels of family functioning, low levels of parental support for the child and an authoritarian parenting style. The examination of peer-related influences on the development of bullying perpetration was limited to peer-group bullying behaviors, and school-related factors that have been shown to be associated with bullying behaviors include such influences as school and class size, and socioeconomic status.

CHAPTER THREE: THEORY

3.1 PRIMARY SOCIALIZATION THEORY

Theories from the fields of psychology, sociology, public health and criminology, among others, have been developed to explain delinquent adolescent behaviors, such as substance use, aggression/violence and criminal behaviors. These works have focused on the characteristics of the individuals studied, as well as the characteristics of other sources of influences on behavior, such as family, friends and social structures. However, many of these theories do not adequately provide the integrative framework with specific, empirically testable relationships necessary to understand how various factors from multiple contexts interact to result in the development of deviant behaviors (Oetting & Donnermeyer, 1998). Oetting and colleagues (1998) attempted to address what they describe as a short-coming of many of the existing theories in their abilities to adequately explain delinquent social behaviors by developing a theory that encompasses a wide array of influences at various levels of the socio-ecological framework.

Primary Socialization theory (PST) is a relatively new theory developed to explain deviant behaviors among adolescents, in particular, substance use and abuse. The concepts included in PST are neither new nor unique to the theory. In the development of PST, the authors apparently draw heavily on existing social science theories. Consistent with Bronfenbrenner's bio-ecological model and Bandura's Social Learning Theory, PST posits that behavior develops as a function of both individual-level and social contextual influences

(Bandura, 1973; Bronfenbrenner, 1986; Bronfenbrenner & Evans, 2000). Additionally, although there is a long history of social theory and delinquent behavior, two theories in particular appear to have largely influenced the formulation of PST, namely Edwin Sutherland's Theory of Differential Association and Travis Hirschi's Social Control Theory.

The Theory of Differential Association (DA) (Sutherland & Cressey, 1999) posits that deviant behaviors are learned and that the principal part of that learning occurs within the context of intimate personal groups. It goes further to explain that deviant behavior will develop when the individual is exposed to an "excess of definitions" favorable to the deviant behavior, or, in other words, when the majority of norms to which an individual are exposed supports deviant behavior. PST also proposes that deviant behaviors are learned and they are learned primarily from intimate personal groups. However, PST expands upon DA by specifying which groups are the most important in this social learning process and names them the primary sources of socialization. PST also provides an explanation for the potential influences of other groups that are not intimate personal groups, which are termed secondary sources of socialization, thus allowing for the possibility of influences from other social contexts, such as extended family, religious groups and neighborhood influences, for example.

In addition to the Theory of Differential Association, the influence of Travis Hirschi's Social Control Theory is also evident. Although the authors of DA allow that "differential associations may vary in frequency, duration, priority, and intensity" the exact nature of the importance of this variance is not detailed (Sutherland & Cressey, 1999). On the other hand, Hirschi, in discussing his theory of Social Control (SCT), discussed in great detail the

importance of bonding to others and, in fact, bonds are the underlying principle to his theory (Hirschi, 1969).

The underlying premise to SCT is that deviant behavior is more likely to develop when an individual's bonds to society are weak than when those bonds are strong (Hirschi, 1969). Bonding is a main construct in PST and it is evident that definitions of PST bonding are derived from the element of SCT bonding that Hirschi describes as attachment. Also, similar to SCT, PST identifies the three important sources of adolescent socialization to be the family, peers and school. However, there is an important distinction between PST and SCT. An underlying assumption to SCT is that conventional others, family, peers and school, are sources of prosocial norms; therefore, stronger bonds to conventional others are predicted to be associated with less deviant behavior. In other words, in SCT, an adolescent who is strongly bonded to his/her family is presumed to be less likely to engage in deviant behaviors.

One criticism of SCT is that it does not address the possibility that an adolescent could be strongly attached to a conventional other that communicates deviant norms (Foshee & Bauman, 1992). PST addresses this limitation by allowing for this possibility, and viewing the strength of the bond to a group as a moderator of the influence of that group's norms, regardless of the actual norms, deviant or prosocial, that are communicated.

To date, Primary Socialization Theory has been applied exclusively to the study of substance use among adolescents; however, according to the theory's authors, it could be applied to understand other delinquent adolescent behaviors (Oetting & Donnermeyer, 1998). Given the high correlation between bullying and other delinquent behaviors, including substance use (Nansel et al., 2001), and the fact that the theory's authors developed the

theory to explain delinquent social behaviors (Oetting & Donnermeyer, 1998), to which bullying belongs, application of this theory to the study of bullying is appropriate.

Additionally, PST is an appropriate theory to apply to the study of bullying because it allows for the study of the influences of multiple contexts on adolescent behavior, which is consistent with social-ecological models as previously noted (Sallis & Owen, 1996).

The underlying premises to PST are that “normative and deviant behaviors are learned social behaviors, products of the interaction of social, psychological and cultural characteristics, and that norms for social behaviors... are learned predominantly in the context of interactions with the primary socialization sources” (Oetting & Donnermeyer, 1998). Primary socialization sources vary across ages and cultures, but among adolescents in our Western culture, three common primary socialization sources have been identified. These primary socialization sources include the family, peer clusters (referred to in this document simply as peers for simplicity) and the school.

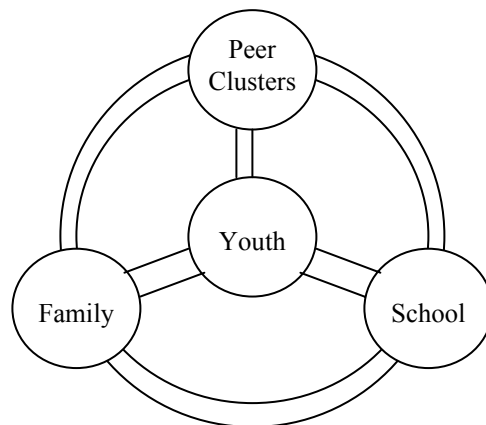
Similar to other social learning theories, PST posits that individuals learn social behaviors from the social norms and behaviors that are communicated, directly or indirectly, to them from their primary socialization sources. According to Oetting and Donnermeyer (1998) both deviant and prosocial behaviors are actively learned. The strength of bonds between the individual and the primary sources of socialization determine how effectively norms are transmitted. When the bonds are strong between the individual and the primary socialization source, s/he is more likely to assimilate or internalize the norms communicated by that source; when those bonds are weak, the individual is more likely to assimilate/internalize the norms communicated by the other primary socialization sources with which s/he has stronger bonds.

Within PST there are three important underlying assumptions that need to be noted. First, PST posits that, although any primary socialization source can transmit either prosocial or deviant norms, healthy families and schools are more likely to transmit prosocial norms. Secondly, along this same premise, PST proposes that the major source of deviant norms is usually peers. Thirdly, the theory proposes that peer influences are likely to dominate in adolescence.

In their description of the theory, Oetting and colleagues do not explicitly specify the paths of the relationships between social bonds, norms and behaviors, but rather speak more generally of the overall influence of bonds and norms on the outcome, as is depicted in their graphic representation of the theory in Figure 3.1.

Figure 3.1.

Oetting's Conceptual Model of Primary Socialization Theory



According to the authors, the model places the youth at the center, supported by the primary sources of socialization, and the connections represent the channels through which norms from these sources are communicated. However, in their first paper on the theory

(Oetting & Donnermeyer, 1998) they do specify a number of postulates which implicitly describe the specific nature of these relationships.

Their first postulate states “the strength of the bonds between the youth and the primary socialization sources is a major factor in determining how effectively norms are transmitted.” In other words, the degree to which an adolescent assimilates the social norms that are communicated by a given primary socialization source (PSS) will vary depending upon how strongly bonded that adolescent is to the PSS. If an adolescent is weakly bonded to a PSS, s/he is less likely to assimilate its norms than if s/he is strongly bonded to that PSS. This implies that the relationships between norms transmitted by the sources of socialization and the deviant behavior are moderated by the strength of the bonds between the youth and the PSS.

A second postulate of the theory is that peers are the dominant primary source of socialization during adolescence. Adolescents who bond to deviant peers are more likely to engage in deviant behaviors than adolescents who do not bond to deviant peers, and this relationship is dominant over the relationship between the influences of the family or the school.

A third set of relationships proposed by the authors involves the influence that the strength of bonds with PSS has on bonding to deviant peers, which in turn can lead to engaging in deviant behavior. The authors state, “weak family-child and/or school-child bonds increase the chances that the youth will bond with deviant peers and will engage in deviant behaviors” (Oetting & Donnermeyer, 1998). This statement suggests a set of mediational relationships in which the relationships between strength of bonding to the family or school and behavior are mediated by bonding to deviant peers. This set of relationships conflicts with the first set

of relationship proposed by the theory. In the first proposition, strength of bond to PSS serves a moderator of the relationship between PSS normative environment and behavior; with this premise the theory proposes that strength of bond to PSS has a direct effect on behavior. This is one area of the theory in need of further clarification and will be explored with this research.

The authors propose one further set of relationships. Specifically they state that, in general, strong bonds between primary sources of socialization are likely to support bonding between the adolescent and those sources, therefore reducing the likelihood of deviant behavior, assuming that those sources are prosocial. For example, strong bonds between family and school are likely to support strong bonds between the adolescent and his/her family, as well as strong bonds between the adolescent and the school. However, according to Oetting and Donnermeyer, the effects of bonding between PSS on the development of deviant behavior are peripheral and thus not essential to primary socialization, and are not addressed in this study.

3.2 CONCEPTUAL MODELS AND HYPOTHESES

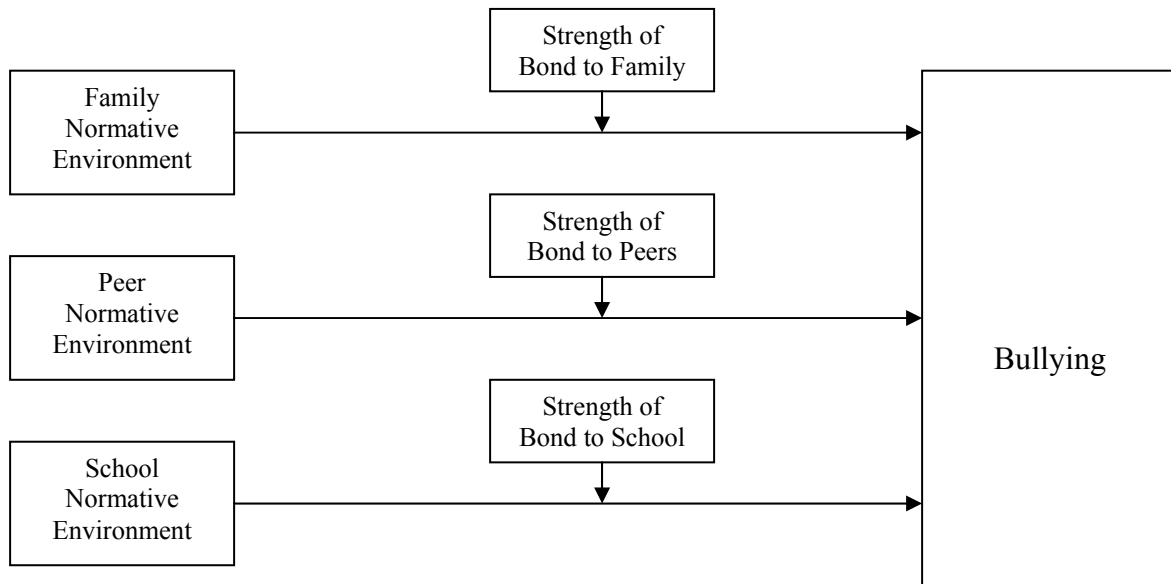
Primary Sources of Socialization and Bullying

For the purpose of this study, Primary Socialization Theory was used to examine the relationships between family, peer and school influences and adolescent bullying. The application of each set of premises discussed above is addressed here.

The first postulate of PST is described by the following statement: “the strength of the bonds between the youth and the primary socialization sources is a major factor in

determining how effectively norms are transmitted” (Oetting & Donnermeyer, 1998). These relationships are depicted in Figure 3.2.

Figure 3.2.
Conceptual Model of Relationships Between
Primary Sources of Socialization and Bullying.



As the above model depicts, the relationships between the norms of each of the three primary sources of socialization and bullying are moderated by the strength of the bond between the adolescent and the respective socialization source. Hypotheses 1 through 3 are based on the relationships depicted in Figure 3.2.

Hypothesis 1: The relationship between family normative environment and bullying varies by the strength of the adolescent-family bond such that adolescents with stronger bonds to families with a more prosocial normative environment will be less likely to bully than adolescents with weaker bonds to families with a more prosocial normative environment.

Hypothesis 2: The relationship between the peer normative environment and bullying varies by the strength of the adolescent-peer bond such that adolescents with stronger bonds to peers with a more prosocial normative environment will be less likely to engage in bullying than adolescents with weaker bonds to peers with a more prosocial normative environment.

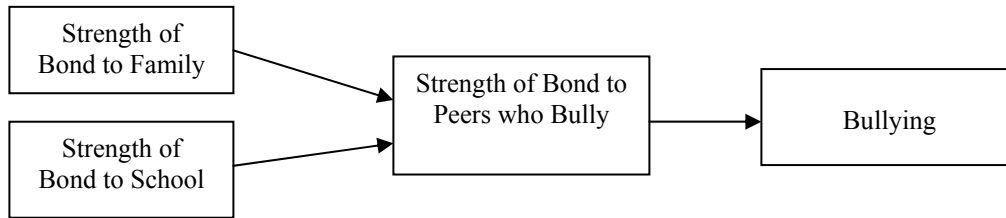
Hypothesis 3: The relationship between the school normative environment and bullying varies by the strength of the adolescent-school bond such that adolescents with stronger bonds to schools with a more prosocial normative environment will be less likely to engage in bullying than adolescents with weaker bonds to schools with a more prosocial normative environment.

The second premise of PST addresses the relative importance of the different sources of primary socialization. Oetting and Donnermeyer (1998) state that peer influences are likely to dominate in adolescence. There is dispute as to the relative importance of peers over the family and school at this stage of development (Biddle *et al.*, 2001). However, Oetting and colleagues are clear that they believe the relative influence of peers strengthens during adolescence as compared to that of either the school or the family in adolescence.

Hypothesis 4: The relative effect of peer influences on development of bullying will be greater than the relative effect of either family influences or school influences.

Figure 3.3.

**Conceptual Model of Mediational Relationships Proposed by
Primary Socialization Theory**



The third premise of PST states that the strength of the bonds to family or school can influence whether an adolescent bonds with deviant peers, which in turn can lead to engaging in deviant behaviors. According to Oetting and Donnermeyer (1998), weak family-adolescent or school-adolescent bonds can lead to bonding with deviant peers, and bonding to deviant peers can lead to engaging in deviant behaviors (Figure 3.3). An underlying assumption here is that families and schools are usually sources of prosocial norms. This third set of premises served as the basis for hypotheses 5 and 6.

Hypothesis 5: The relationship between the strength of the adolescent-family bond and bullying is mediated by bonding to peers who engage in bullying such that adolescents with weaker family bonds are more likely to bond to peers who engage in bullying, and in turn more likely to engage in bullying than adolescents with stronger family bonds.

Hypothesis 6: The relationship between the strength of the adolescent-school bond and bullying is mediated by bonding to peers who engage in bullying such that adolescents with weaker school bonds are more likely to bond to peers who engage in bullying, and in turn more likely to engage in bullying than adolescents with stronger school bonds.

Gender Differences in Bullying Behaviors and Primary Socialization Theory

An interesting relationship that has been observed in existing literature is that, although boys and girls both engage in bullying behaviors, the types of bullying behaviors differ by gender. As previously noted, boys have been shown to be more likely than girls to engage in direct bullying, while girls are more likely than boys to engage in indirect or relational bullying.

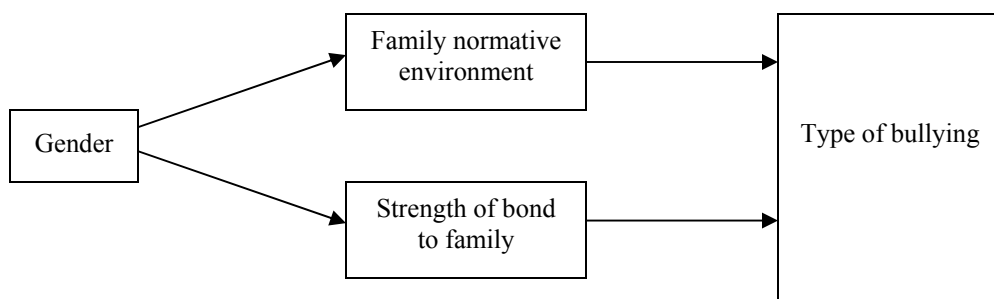
In his explanation of the theory, Oetting also speaks of how PST can provide an explanation for the differences in deviant behavior that are often observed between genders (Oetting & Donnermeyer, 1998). Specifically, Oetting suggests that gender differences in cultural norms and the transmission of those norms lead to the differences in deviant behaviors observed between genders. In other words, the gender of an individual can influence both the strength of the bond to the PSS and/or the norms that are communicated by that PSS.

In the case of bullying, it has been suggested and demonstrated in some studies that, when taking into consideration both direct and indirect forms of bullying, girls and boys are equally likely to engage in bullying behaviors (Conway, 2005; Crick, 1997; Crick & Grotpeter, 1995; Wolke et al., 2000). Thus, PST may not be applicable to understanding gender differences in overall engagement in bullying, when both direct and indirect types of bullying are examined together. However, given that the type of bullying in which an adolescent engages is hypothesized to differ by gender, it is possible that PST can be used to explain this relationship. Therefore, PST will be used to examine the relationship between gender and type of bullying, which includes direct, indirect and mixed-type (direct and indirect) bullying.

While Oetting acknowledges that there are likely to be gender differences in primary socialization at both the peer and school levels, his focus in the description of this relationship rests within the family, as demonstrated in Figure 3.4.

Figure 3.4.

Conceptual Model of the Relationship Between Gender and Type of Bullying, as Mediated by Family Normative Environment and by Strength of Bond to Family.



Hypothesis 7: The relationship between gender and type of bully behavior is mediated by the family normative environment, such that gender will influence the family normative environment which in turn will influence the type of bullying behavior in which the adolescent engages.

Hypothesis 8: The relationship between gender and type of bully behavior is mediated by the strength of bond to the family, such that gender will influence the strength of family bonding, which in turn will influence the type of bullying behavior in which the adolescent engages.

3.3 DISSERTATION CONSTRUCTS

One of the limitations of PST is that this relatively new theory is quite broad and described in very general terms. Many of the constructs to which Oetting refers are not specifically defined; however, he includes in this theory constructs that have been used and described elsewhere. Because of this limitation, a description of the conceptualization of each of the constructs examined follows. Complete operationalization of the constructs is described in the measures section in Chapter 4.

Dependent Variables

Bullying

As stated earlier, bullying is a subtype of aggressive behavior that involves a power differential between perpetrator and victim, has a hostile intent, is repeated over time, and can be physical and/or verbal (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2003). Subtypes of bullying have also been described. Direct bullying, includes physical violence or intimidation, name-calling and teasing (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2003). Indirect or relational bullying includes behaviors such as spreading rumors that result in social exclusion or manipulation of the victim's relationships or friendships with others (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2003).

Measures of bullying in previous studies have varied considerably. Measures of adolescent bullying have included self-report, peer nominations and teacher or parent nominations (Solberg & Olweus, 2003). Measures have also ranged from single item measures such as "How often have you taken part in bullying in the past couple of months" (Solberg & Olweus, 2003), to multi-item scales that specify bullying-type activities. The

most commonly cited measure of bullying in the literature reviewed is Olweus' Bully/Victim Questionnaire in which a definition of bullying is provided and then subjects are asked to report the frequency with which they have engaged in bullying activities over a specified period of time (weeks to months) (Solberg & Olweus, 2003).

Those themes common to most measures of bullying include the types of activities in which a subject engages and a measure of frequency with which s/he engages in such behaviors. As an example, Olweus' definition of bullying that is presented to students includes the following activities (Solberg & Olweus, 2003):

- say mean and hurtful things or make fun of him or her or call him or her mean hurtful names
- completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose
- hit, kick, push, shove around or threaten him or her
- tell lies or spread false rumors about him or her or send mean notes and try to make other students dislike him or her
- and do hurtful things like that.

The second theme or dimension to the construct includes the frequency with which these activities are perpetrated. Olweus defines bullying to be when one or more of the above activities are perpetrated at least "2 to 3 time a month," but not "only once or twice" reflecting the repetitive nature of bullying activities that differentiates it from other forms of aggression.

Consistent with previous measures of bullying, the dependent variable for this research was measured using an act scale that included 6 different types of acts covering both indirect

and direct bullying activities, very similar to the acts listed in Olweus' definition.

Additionally, each act was measured by the frequency with which an adolescent engaged in the act, categorizing those adolescents who engaged in one or more acts several times over the time period as bullies, and categorizing those who did not engage in such acts at all or only once or twice as non-bullies.

Type of Bullying

The dependent variable, "type of bullying," categorizes bullying behaviors based on the dimensions of direct versus indirect bullying activities. As noted previously, direct bullying includes physical violence or intimidation, name-calling and teasing (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2003) and indirect bullying includes behaviors such as spreading rumors that result in social exclusion or manipulation of the victim's relationships or friendships with others (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2003). This variable includes the categories of direct-only bullies, indirect-only bullies, both direct and indirect bullies or non-bullies based on the types of bullying acts in which the subjects reported engaging.

Independent Variables

With regards to the independent variables addressed in this dissertation, Primary Socialization Theory specifies two distinct elements of the primary socialization process: norms and bonding. The first element is transmission or communication of norms related to the behavior in question. PST specifies that communication or transmission can be overt, through actions on the part of the PSS such as rule setting or rewards for/sanctions against

specific behaviors. Transmission can also be indirect and occur through modeling on the part of the PSS of the prosocial or deviant behaviors demonstrated by the PSS. The environment in which this transmission of norms takes place will be considered the normative environment. Thus, for the purposes of this study three normative environments, including family, school and peers, will be described.

Normative Environments

Family Normative Environment

Family normative environment pertains to the environment within the family setting including the implicit and explicit actions on the part of the family members that reflect prosocial and deviant or aggressive interpersonal behaviors, such as level of conflict within the family. In addition to norms that relate to a specific type of behavior, such as aggressive behaviors or substance use, Oetting and Donnermeyer (1998) also state that parenting style, as described by Darling and Steinberg (1993), is considered as a context for socialization within the family. Parenting style is essential to the direct and indirect communication of norms. Also, in their description of the theory, the influence of the family is restricted to the influences of the parents within the family.

The emphasis on the role of the parent, including parenting style and conflict is supported by previous research on the topic of bullying as well. As previously discussed in an earlier section, multiple researchers have found significant associations between parenting styles/practices and adolescent bullying behaviors (Baldry & Farrington, 1999; Olweus, 1980; Rigby & Slee, 1993). Others have found familial conflict to be associated with adolescent bullying as well (Christie-Mizell, 2003; Stevens et al., 2002). Thus, in this study,

family normative environment is conceptualized to include of the level of family conflict and parenting style, which include the dimensions of parental demandingness and parental responsiveness of the adolescent (Darling & Steinberg, 1993).

Perceived School Normative Environment

The school normative environment, according to Oetting (1998), refers to the school's ability to control deviant behaviors and the transmission of prosocial norms for behavior. For the purposes of this study, because of limitations in the ability to objectively measure the normative environment of the schools involved in the study, the adolescent's perceived school normative environment was measured. Perceived school normative environment is reflected by the adolescent's perception of the school's prosocial environment, which includes concepts such as treating each other with respect, going out of one's way to help someone else and a sense of the school being like family.

Peer Normative Environment

Oetting and Donnermeyer (1998) define peer clusters as "best friend dyads, small groups of close friends or couples." The "cluster," as Oetting defines it, does not necessarily reflect the formal use of the term often found in social network analysis, but rather is better understood generally as the influence of an individual peer or set of friends (Hanneman, 2005).

The design of the parent study from which the data for this current research are derived, allowed study subjects to nominate up to five other adolescents who they considered to be close friends and to record the identification number associated with their peer(s). Each

study participant was assigned an identification number for the purpose of social network analysis, which was separate from their study participation identification number. Because of this design, the self-reported behaviors of the friend(s) identified by each study subject could be assessed. Thus, for the purposes of this study peer norms were conceptualized to be reflected by peer self-reported behaviors regarding use of bullying behaviors towards others.

Bonding

The second element of the primary socialization process is the strength of the bond between the adolescent and the PSS. Operationalization of bonding to each of the primary socialization sources is more of a challenge because Oetting and Donnermeyer are less clear in their definitions. However, bonding to family, peers and school are concepts that have been widely used in the literature on adolescent substance use and delinquency (Bell *et al.*, 2000; Guo *et al.*, 2002; O'Donnell *et al.*, 1995), and are rooted in Social Control Theory (Hirschi, 1999). Despite their frequent use, there is some variability within the literature as to the conceptualization of these constructs, therefore selected works from the existing literature served as a general guide for conceptualizing the constructs for the purposes of this study.

Strength of Bond to Family

Hirschi describes four elements to what he terms the bond: attachment, commitment, involvement and belief (Hirschi, 1999). The use of the term bond by Oetting and colleagues in their description of PST appears to be most consistent with the attachment element of Hirschi's construct. For strength of family bonding, this concept has been previously

operationalized as closeness or attachment to parent(s) (Foshee & Bauman, 1992; O'Donnell et al., 1995). Thus, for the purposes of this study, strength of family bonding was defined as the adolescent's attachment to his/her parent(s). Hirschi, in his test of SCT, found that what was important was that an adolescent was attached to at least one of his/her parents, regardless of the relationship with the other parent (be it a strong or weak attachment) (Hirschi, 1969). Thus, when two parents are present the higher level of attachment was used. When only one parent is present, the score for attachment to that parent was used.

Strength of Bond to School

Strength of bond to school is another variable that is somewhat difficult to define. Although the construct is not new, there has been a great deal of variability in its conceptualization, operationalization and measurement across studies. In their respective reviews of the literature on school bonding, Maddox and Prinz (2003), and Libbey (2004) found that a variety of concepts and indicators of those concepts have been described to measure the relationship between the student and the school. For example, Battin-Person and colleagues (2000) examined the relationship between school bonding and whether or not an adolescent dropped out of high school. In their study, the constructs of attachment and commitment to school represented their conceptualization of school bonding. In a study of the association between school delinquency and school social bond, Jenkins (1997) described school bonding as a construct with four distinct dimensions, which included attachment, commitment, involvement and belief in school rules.

Oetting and Donnermeyer describe a number of potential indicators of school bonding for adolescents, including academic achievement, feelings toward school (like or dislike), and

participation in school activities (Oetting & Donnermeyer, 1998). These indicators are consistent with the concepts of commitment (academic achievement), attachment (like or dislike toward school) and involvement (participation in school activities) that have been described as indicators of school bonding by others (Jenkins, 1997; Libbey, 2004; Maddox & Prinz, 2003).

For this study, strength of school bonding was conceptualized to include the concepts of school involvement and school commitment. School involvement is represented by participation in school-related activities. School commitment is represented as the self-reported importance of completing high school, and self-reported grade average.

Strength of Bond to Peers

Although a great deal of research has examined the relationship between peer influences and adolescent deviance, much of this research has looked only at the presence of an association with deviant peers (for example: Dekovic *et al.*, 2004; Dishion & Owen, 2002; Henry *et al.*, 2001; Wills & Cleary, 1999). Fewer researchers have examined the quality of the relationship between the adolescent and his/her peer(s), thus providing little guidance on the measure of the strength of the bond between the adolescent and his/her peer(s).

A related construct, peer attachment, has been examined in a number of studies on adolescence, but not frequently in association with deviance. A commonly used measure of peer attachment, the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987), covers the dimensions of trust, communication and alienation between peers (Laible *et al.*, 2004; Wilkinson, 2004).

Of those who have examined peer bonding specifically, Cho and colleagues (2005), in their evaluation of a school-based intervention program for at-risk youth, measured bonding to conventional peers as the self-reported degree of closeness to friends who engaged in conventional activities. Consistent with the conceptualization of the construct by Cho and colleagues, for the purposes of this research, strength of bond to peers was conceptualized as the self-reported level of closeness to each of the peers nominated.

CHAPTER FOUR: METHODS

4.1 STUDY DESIGN

This research is a secondary analysis of data derived from the Context of Adolescent Substance Use Study (Context Study) (NIDA Grant No. R01 DA16669, UNC IRB # 99-830). The study sample is from a panel study in which baseline data on independent and control variables were derived from data collected at wave 1 of the Context Study and data for the dependent variable were derived from data collected for wave 3 of the Context Study. Approval to conduct this research was obtained from the University of North Carolina – Chapel Hill, Office of Research Ethics, Institutional Review Board (UNC IRB # 05-2633).

4.2 STUDY SETTING/ OVERVIEW OF CONTEXT STUDY

The Context Study is a school-based panel study designed to “examine how interrelationships of peer network factors with individual, family and neighborhood characteristics explain trajectories of adolescent substance use as youth progress from middle to high school” (Ennett, 2001). Using Bronfenbrenner’s ecology of human development theory as a guiding framework, the researchers intend to examine how factors from multiple social contexts influence the use of alcohol, tobacco and other drugs among adolescents.

The Context Study spans three, primarily rural counties in North Carolina and incorporates three cohorts of adolescents beginning in the 6th, 7th and 8th grades from 8 middle schools, 3 alternative schools and 2 kindergarten through 8th grade schools, following

them every 6 months over the course of 2 years until they are in grades 8, 9 and 10. Data collection for the Context Study commenced in the Spring of 2002 and was completed in the Spring of 2004 (Table 4.1).

Table 4.1.				
Context Study Questionnaire Administration				
2002	2002-03		2003-04	
Spring	Fall	Spring	Fall	Spring
Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
n=5220	n=5060	n=5059	n=5017	n=4676
88.4%	81.3%	80.9%	79.1%	76.0%

The study location included three predominantly rural counties in North Carolina: Person, Vance and Moore Counties. In addition to being primarily rural, these three counties are also more disadvantaged, in general, than North Carolina or the US. The three counties have a higher percentage of African Americans than North Carolina or the US. Selected demographic characteristics of the three counties, as compared to North Carolina and the US, are shown in Table 4.2.

Table 4.2.

**Selected Demographic Characteristics of Moore, Person and Vance Counties,
North Carolina, and the United States**

Characteristic	Moore County	Person County	Vance County	North Carolina	United States
Population	74,769	35,623	42,954	8,049,313	281,421,906
% Rural	59.0	72.7	50.5	39.8	21.0
Median family income	\$41,176	\$36,809	\$30,856	\$46,335	\$50,046
% families with income below poverty level	8.0	9.4	16.3	9.0	9.1
% without a high school diploma age ≥ 25 years	17.4	25.1	32.0	21.9	19.6
% single parent families with children ≤ 18	10.3	13.0	19.3	13.1	13.2
% African-American	15.5	28.4	48.4	21.5	12.2
% Hispanic	3.9	1.7	4.3	4.6	12.5

Source: US Census Bureau; Census 2000 Summary File 3; generated by Lisa Dulli; using American FactFinder; <<http://factfinder.census.gov>>; (7 June 2005).

4.3 DATA COLLECTION

Data collection for wave 1 of the Context study took place in the Spring of 2002, from students in grades 6th through 8th in thirteen middle, alternative and K-8 schools in Moore, Person and Vance Counties during the 2001-2002 school year. A waiver of written parental consent was obtained from the University of North Carolina School of Public Health Institutional Review Board. Two letters were sent to the parents in the Spring of 2002 then at

the beginning of each academic year, one by mail and one sent home with the student, which described the study and notified the parents that they could opt to not have their child participate in the study if they wished. Data collectors specifically trained for the study described the study to prospective students whose parents had not declined permission to participate, after which the student's written assent was obtained. Students completed the questionnaires during a single class period. The data collectors then handled distribution and collection of questionnaires. Data collectors returned on subsequent visits to obtain questionnaires from students who were absent on the primary data collection day. This same procedure was followed for each subsequent wave of data collection. Students who newly enrolled in the participating schools each year were recruited into the study using the same procedures as described above.

4.4 STUDY SAMPLE

For the purposes of this research, the study sample included students who were in the 6th or 7th grade at wave1 of data collection. Wave 1 served as the sources for baseline measures, and wave 3 of data collection served as the source of the outcome measure. The choice of waves of data for this study was based on a number of factors. First, sufficient time between collection of baseline data and outcome data (12 months) to allow for variation in the outcome measure was necessary. It seemed unlikely that significant change in bullying status would occur over the course of a period as short as 6 months, which is the approximate period of time between each collection of data for the cohorts. On the other hand, the period of time between the two waves of data should not be so great that the baseline measures are no longer relevant. Students who were in 8th grade at wave 1 were excluded because at wave

3 they had moved on to high school, making the measure of school normative environment at baseline no longer relevant. Thus, this study sample is limited to 6th and 7th grade students.

Eligible students included all students enrolled in the 6th and 7th grades at baseline (N=4066) of the thirteen middle, alternative and K-8 schools in Moore, Person and Vance Counties during the 2001-2002 school year. Of the 4066 eligible students, 3583 (88.1%) completed the student questionnaire. The remaining students were classified as follows: 2 questionnaires were not used due to an administrative error (0.1%), 55 students were absent (0.8%), 399 students had parents who refused to allow them to participate (9.8%) and 49 students declined to participate (1.2%).

Demographic Characteristics

Table 4.3 lists demographic characteristics of the study sample. Study participants included 3,583 students, of whom 1,801 were girls (50.6%) and 1,758 were boys (49.4%) (24 missing). At wave 1, the sample ranged in age from 10.0 to 19.0 years with a mean age of 12.6 years. Slightly more than half of the students were in 6th grade at enrollment (51.7%). Approximately half of participants self-identified as white (50.3%), with the rest being classified as “other” race/ethnicity (49.7%).

Table 4.3.

Characteristics of Study Sample at Baseline (n=3583)

Characteristic	Value
Age	
Mean (Std. Dev.)	12.6 (0.8166)
Gender	
% Male (n)	49.1 (1758)
% Female (n)	50.2 (1801)
% missing (n)	0.7 (24)
Ethnicity	
% White (n)	50.1 (1796)
% Other (n)	49.5 (1774)
% missing (n)	0.4(13)
Grade	
% 6 TH Grade (n)	51.7 (1854)
% 7 TH Grade (n)	49.3 (1729)
% missing (n)	0% (0)
Parental Education	
Mean (Std. Dev.)	2.6 (1.5963)

4.5 MEASURES

For the purposes of this research, the constructs included in the conceptual model and hypotheses were operationalized using items from the adolescent questionnaires.

Dependent Variables

Bullying

As previously stated, bullying is a subtype of aggressive behavior that involves a power differential between perpetrator and victim, has a hostile intent, is repeated over time, can be physical and/or verbal, and be direct or indirect (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2000). Items from the Context study questionnaire capture both the type of bullying behavior and how frequently the individual engaged in such activities over a period of the past three months.

Bullying was measured by a six-item scale, which included the following: “During the past 3 months, about how many times did you: a) threaten someone with a weapon (gun, knife, club, etc.), b) spread a false rumor about someone, c) pick on someone, d) start a fight between other people, e) exclude another student from your group of friends and f) hit or slapped another kid?” Responses for these items were: 0= none, 1= 1-2 times, 2= 3-5 times, 3= 6-9 times, 4= 10 or more times. A total score was calculated by summing the scores for the 6 items, resulting in a variable with scores ranging from 0 to 24. For hypotheses 1 through 6, bullying was conceptualized as a dichotomous variable, with values of non-bully and bully. A distinguishing characteristic of bullying is the repetitive nature of the acts; thus, a score of 2 or more was classified as a bully (someone who engages in one act at least 3 to 5 times or who engages in at least 2 or more acts at least 1-2 times), and a score of 1 or less was classified as a non-bully (which includes those who report no bullying-related acts or engaging in only one act 1-2 times over the prior 3 month period). Cronbach’s alpha for the test of internal reliability for this measure was high, $\alpha = 0.83$.

Type of Bullying

For hypotheses 7 – 9, type of bullying, was examined. Type of bullying was conceptualized as a nominal categorical variable, which included the values of non-bully, direct-bully only, indirect-bully only, and both direct and indirect bully (mixed type bully). The variable was measured by the same question used for the dichotomous bullying variable.

Items “a,” “c,” and “f” represented direct bullying, and items “b,” “d,” “e” represented indirect bullying. Responses for these items were: 0= none, 1= 1-2 times, 2= 3-5 times, 3= 6-9 times, 4= 10 or more times. A subject who scored 2 or greater on the direct bully items only was classified as a direct bully only. A subject who scored a sum of 2 or greater on the indirect bully items only was classified as an indirect bully only. Individuals who scored 2 or greater on both direct bully items and indirect bully items were classified as both “indirect and direct bully.” Those with a total score of 0 – 1 for all 6 items were classified as a non-bully.

Independent Variables

Family Normative Environment

Parenting was measured by items from the Authoritative Parenting Index (Jackson *et al.*, 1998). Mother parenting was measured by the question: “How well does each of the following statements describe her (mother or mother figure)? a) She tells me when I do a good job on things, b) She makes me feel better when I am upset, c) She wants to hear about my problems, d) She has rules that I must follow, e) She tells me times when I must come home, and f) She makes sure that I don’t stay up too late.” The same questions were asked in relation to the father or father figure. Responses for these questions included: 0= not like her

(him), 1= sort of like her (him), 2= a lot like her (him), and 3= just like her (him). Cronbach alpha for these items was high, $\alpha = 0.82$. The items for each scale were summed. If an adolescent reports two parents the scores will be averaged, if s/he reports one parent the score for that parent was used.

Family conflict was measured with the following question: “Think about your family life in the past 3 months. How strongly do you agree or disagree with each of the following? a) We fight a lot in our family, b) Family members sometimes get so angry they throw things, and c) Family members sometimes hit each other.” Responses for these three items included: 0= strongly disagree, 1= disagree somewhat, 2= neither, 3= agree somewhat, 4= strongly agree. Cronbach alpha for these items was 0.82. Responses for the items were reverse coded and summed resulting in a family conflict score ranged from 0 to 12, the higher the score the more prosocial the family environment.

The items for each of these three scales, parental responsiveness, parental demandingness and family conflict, were summed and converted to z-scores. The z-scores for the two constructs were then summed to create a value for the family normative environment variable, such that the higher the score the more prosocial the family normative environment.

Strength of Bond to Family

Attachment to each parent was measured by the following 3 items for each parent. For the mother or mother-figure, the question included: “How often does she hug or kiss you?”, “How close do you feel toward her?” and “How close do you think she feels toward you?” The same three questions were asked in relation to the father or father-figure. Responses to the first question were: 0 = never, 1 = not very much, 2 = some, and 3 = a lot. Responses to

the second two questions were: 0 = not close at all, 1 = not very close, 2 = somewhat close, and 3 = very close.

Responses for the three questions were summed and a score of 0 to 9 was assigned for each parent. The higher score for the two parents was retained. In the case of responses for only one parent the total score for the one parent was used. Cronbach's alpha for the variable "attachment to mother" was 0.80 and the Cronbach's alpha for the variable "attachment to father" was 0.81.

School Normative Environment

The respondent's perception of the school normative environment was measured by the question Roberts and colleagues (Roberts, 1995) derived from: "How strongly do you agree or disagree with each of the following statements? a) students in this school treat each other with respect, b) students at this school are willing to go out of their way to help someone, and c) my school is like a family." Responses to this question include: 5= strongly agree, 4= agree somewhat, 3= neither, 2= Disagree somewhat, and 1= strongly disagree. Responses for the three items were summed, the higher the score, the more prosocial the environment. Cronbach alpha for this scale is 0.80.

Strength of Bond to School

Strength of bond to school was a composite measure which included the dimensions of school involvement and school commitment.

School involvement was measured by the following question: "Which of the following school activities have you participated in (or do you plan to participate in) during this school

year? a) Sports teams, b) Service clubs (like Key Club) or interest clubs (like Art Club or Spanish Club), c) Performance groups (like pep band or jazz band), d) School newspaper or yearbook, e) Honor societies, or f) Anti-drug use groups (like SADD).” Responses for these items included 1= Yes and 0= No. The responses for these items were summed with scores ranging from 0 to 6.

School commitment was measured by the question: “How important or unimportant are the following to you? a) finishing high school.” Responses for this question included: 0= not at all important, 1= not very important, 2= somewhat important, and 3= very important. Scores for this item ranged from 0-3.

Grade point average is the average of the self-reported grades for four subjects, including English/language arts, mathematics, history/social studies and science, for the most recent grading period. Response values were 3= “A,” 2= “B,” 1= “C,” and 0= “D or lower.”

Scores for each of the three items were converted to z-scores. The z-scores were then summed to create the school bonding variable, such that the higher the score the greater the school bonding.

Peer Normative Environment

As previously described, each adolescent had the opportunity to nominate up to five friends on the study questionnaire. Provided the friends who are nominated also participated in the study, each of the nominated friends should have available self-reported data on their own bullying behaviors. Using the dichotomous bullying variable, each friend who is nominated by the subject was assigned a value of bully or non-bully, based on their self-

reported responses to the items listed under the bully variable above. The scores for each of the nominated friends were summed, resulting in values ranging from 0 to 5.

Strength of Bond to Peers

In the study questionnaire, adolescents could nominate up to five of his/her closest friends. Each participant was given a list of all of the students in his/her respective grade and school. Associated with each student on the list was an identification number, which was not the same as the study participant identification number. Participants were asked to identify up to 5 of their closest friends, beginning with their best friend, using the identification numbers found on the student list. Then for each of the friends who were listed, the participant was asked a number of questions about each friend. This strategy allows researchers to link the responses given by the friends listed on the questionnaire to those of the participant.

For the purposes of this research, peer bonding was measured by the question: “How close do you feel towards each of your friends?” Participants responded to this question for each of the friends that they identified on the questionnaire. Response options for this question included: 3 = very close, 2 = somewhat close, 1 = not very close, and 0 = not close at all. The score for each friend listed was summed then divided by the number of friends nominated to create a peer bonding variable with values ranging from 0 to 5.

Bonding to Deviant Peers

For each peer nominated as a close friend by the respondent, the level of closeness response was multiplied by a 0 for non-bully and by a 1 for bully, as self-reported by the

nominated peer. These scores were then summed, resulting in a measure of the strength of bond to bullying peers, with values ranging from 0 to 15.

Control Variables

Because previous research has identified the following four individual characteristics as potentially important to the development of bullying, these four variables were included as control variables. Gender, age, ethnicity, and parental education, as well as baseline bullying behavior were included as control variables for all analyses. Gender is a dichotomous variable with values of 1=male and 0=female. Age is a continuous variable measure in months and year with values ranging from 10.0 to 19.0. Because of small numbers of several racial categories, ethnicity is operationalized as a categorical variable with values of 0=white, 1=other.

Parental education was measured as the highest level of reported parental academic achievement for the adolescent. For adolescents who reported two parents, the greater of the two scores was used. Scores for this variable ranged from 0 to 5. Parental education was selected as a proxy measure for socioeconomic status (SES). While single-item measures of socioeconomic status are less than optimal, a study by Goodman (1999), using data from a large national study on adolescent health, examined relationships between various indicators of adolescent SES, including parental income, parental education and parental occupation, and 5 adolescent health outcomes which had been demonstrated to be correlated with SES among adults. Results from this study indicated that both parental income and parental education were independently predictors for two of the five health outcomes, when adjusting for the other indicators, while parental occupation was not a significant predictor of any of

the outcomes. This implies that parental education, in the absence of a more complex measure of SES, could be considered an adequate proxy for adolescent SES.

Baseline bullying behaviors were measured using the same measurements as described in the dependent variable section for wave 1 data.

Table 4.4 below describes the distribution of the covariates of interest among the study sample.

Table 4.4.
Distribution of Study Variables from Non-Imputed Data

VARIABLE	MEAN	RANGE	STANDARD DEVIATION
FAMBOND	7.68	0 - 9	2.1473
FAMNORM*	0.03	(-)3.06 – 1.93	1.6379
PEERNORM	1.89	0 - 5	1.2537
PEERBOND	1.87	0 - 3	0.7752
SCHBOND*	0	(-)2.81 – 4.30	1.9176
SCHNORM	4.67	0 – 12	3.5478
BONDEVPEER	4.52	0 - 15	3.2678
WAVE 1 BULLY			
% BULLY	51.86		
% NON-BULLY	49.84		
WAVE 3 BULLY			
% BULLY	57.75		
% NON-BULLY	42.25		

* Note: Both the FAMNORM and SCHBOND variables were created by summing standardized scores of the components of each respective variable, therefore the ranges of the possible scores include negative numbers.

4.6 STATISTICAL ANALYSIS

All analyses for this research were conducted using SAS system software, version 9.1.3 (SAS, 2005).

Statistical Power Analysis

When the sample size is 3,583, the logistic regression test of $\beta=0$ ($\alpha = 0.050$, two-sided) will have 91% power to detect a small effect size of 3% (an odds ratio of 1.209). In other words, the study has 91% power to detect odds ratio of 1.209 for a one unit change in an independent variable.

Missing Data

Multiple Imputation for Missing Data

Missing data often pose an important problem for researchers. Missing data arise for a number of reasons; however, in longitudinal research, attrition is frequently one source of missing data (Patrician, 2002). Statistical procedures often require complete data for all variables being analyzed, which results in the exclusion of all observations with missing values for any variable, so that all data from these observations are lost (SAS, 2003a). This approach is problematic in the case where there are systematic differences between those observations for which complete data are available and those observations that are eliminated from analyses, resulting in inferences which might not be correct for the study sample (SAS, 2003a).

In addition to listwise deletion of incomplete cases, as noted above, numerous approaches to handle missing data have been described, including mean (median, mode) substitution,

simple imputation and multiple imputation techniques (Patrician, 2002; Schafer, 1999; Yuan, 2000). Mean substitution replaces missing values for a variable with the mean value for that variable which is calculated based on non-missing values. Simple imputation substitutes a single value for each missing value. Both of these approaches complete the data set so that statistical procedures for complete case analysis can be performed (Yuan, 2000). However, each approach also has its limitations. Simple imputation, according to Yuan (2000) “does not reflect the uncertainty about predictions of missing values, and the resulting estimated variances of the parameter estimates will be biased towards zero.” Substitution of the mean value for a given variable also results in standard error estimates that are biased towards zero.

For these reasons many have found multiple imputation for missing data to be an attractive strategy. Multiple imputation creates multiple sets of plausible values for missing data that reflect the uncertainty about the missing data, resulting in statistically valid inferences (Rubin, 1996). The multiple imputation procedure involves 3 phases (Rubin, 1996; Yuan, 2000):

1. The missing data are filled in m times to generate m complete data sets.
2. The m complete data sets are analyzed by using standard procedures.
3. The results from the m complete data sets are combined for inference.

Two main assumptions underlie the multiple imputation procedure. First, the data are assumed to be missing at random (MAR). According the SAS User Guide (2003a), for a variable to be MAR, “the probability that an observation is missing can depend on the observed variable values of the individual, but not on the missing variable values of the individual.” Although the MAR assumption cannot be verified, since independence from the missing values cannot be estimated, Schafer states that the assumption becomes more

plausible as the number of variables included in the imputation model increases (Schafer, 1997).

The second assumption is that of multivariate normality. However, according to Schafer (1997), inferences based on multiple imputation can be robust to departures from the assumption if the amount of missing data is not large.

Missingness Assessment

Prior to conducting multiple imputation for missing data, the missingness of each variable was assessed. The proportion of missing data for each variable is listed in Table 4.5.

Table 4.5.

Missingness of Study Variables (n=3583)		
VARIABLE	MISSING	
	#	%
WAVE 1 BULLY	60	1.7
WAVE 3 BULLY	783	21.9
FAMBOND	110	3.1
FAMNORM	230	6.4
PEERNORM	0	0
PEERBOND	15	0.4
SCHBOND	33	0.9
SCHNORM	98	2.7
GENDER	24	0.7
AGE	1	0.03
ETHNICITY	13	0.4
PARENT_ED	824	23.0

Multiple Imputation Procedure

All variables were created using the strategies outlined in the measurement section. Bullying items from each wave of four waves of data collection were included because it has been suggested that it is “worthwhile to include additional variables that are highly correlated to the variables that have missing data” in order to improve the imputation for those variables (Chantala & Suchindran). A subset of the data was created which included the bullying items for waves 1 through 4 of the study, the independent and controls variables and interactions of interest.

The final missingness equation included: all bullying items for waves 1 through 4 of data; the 7 independent variables (strength of bond to family/school/peers, family/school/peers normative environments, and bonding to deviant peers); the 3 interactions of interest (interaction of normative environment by strength of bond to each of family, school and peers); and the control variables (baseline bullying, age, gender, ethnicity and parental education).

The dichotomous bullying variable and polynomial type of bullying variable were created after imputation. Two categorical variables were imputed: gender and ethnicity. Although there is some controversy as to whether to round categorical variables after imputation (Allison, 2005), given the very small proportion of missing data for each of the two variables (less than 1% for each) and thus the relatively tiny impact on the overall variance for each variable that the missing data would have, I decided to round the values for each variable in order to facilitate interpretation of results.

Using PROC MI in SAS (SAS, 2003a), 7 complete data sets were generated. The relative efficiency of the estimates based on seven imputations was 98 percent or more for all but the

wave three and wave four bullying items, for which it was 95 percent or more, suggesting that seven imputations were adequate. All subsequent data analyses were conducted on these 7 data sets, after which the results of each analysis were combined using the PROC MIANALYZE procedure (SAS, 2003b).

Analytical Strategies

Hypotheses 1 through 3

For the hypotheses 1 through 6, for which the outcome variable is dichotomous, the data were analyzed using PROC SURVEYLOGISTIC (SAS, 2005). Like logistic regression, the SURVEYLOGISTIC procedure in SAS is appropriate for the analysis of a dichotomous dependent variable and several independent, or predictor, variables (SAS, 2003c). The procedure also allows the researcher to incorporate complex sampling designs into the analysis including designs with stratification, clustering and unequal weighting (SAS, 2003c). Because these data are derived from a sampling design in which individual students are nested within schools, an important consideration when analyzing clustered data is how to account for within cluster (school) correlations. Use of the SURVEYLOGISTIC procedure permits the analysis of the student-level data, while adjusting for the effects of clustering at the school level.

The first three hypotheses aimed to determine if the relationships between normative environments of the three primary socialization sources (PSS) and bullying behaviors are moderated by the strength of the bonds between the adolescent and each of the respective PSS. According to Frazier, Tix and Barron (2004), “a moderator is a variable that alters the direction or strength of the relation between a predictor and an outcome...thus, a moderator

effect is nothing more than an interaction whereby the effect of one variable depends on the level of another.”

A two-step backwards elimination logistic regression analysis was performed. In step one, each of the main effects variables including strengths of bond to the three PSS (FAMBOND = strength of bond to family, PEERBOND = strength of bond to peers, SCHBOND = strength of bond to school) and the three PSS normative environment were entered (FAMNORM = family normative environment, PEERNORM = peer normative environment, SCHNORM = school normative environment), in addition to the respective interactions (FAMNORM*FAMBOND, PEERNORM*PEERBOND, SCHNORM*SCHBOND) were included. This model also included the demographic variables of age (AGE), ethnicity (ETHNIC), parental education (PARENT_ED) and baseline bullying (W1BULLY), as demonstrated in the logistic regression model below.

$$\begin{aligned} \text{logit} [\text{pr}(\text{bully}=1)] = & \beta_0 + \beta_1(\text{FAMNORM}) + \beta_2 (\text{FAMBOND}) + \beta_3(\text{PEERNORM}) + \\ & \beta_4(\text{PEERBOND}) + \beta_5 (\text{SCHNORM}) + \beta_6(\text{SCHBOND}) + \beta_7 (\text{AGE}) \\ & + \beta_8 (\text{ETHNIC}) + \beta_9(\text{GENDER}) + \beta_{10}(\text{PARENT_ED}) + \\ & \beta_{11}(\text{W1BULLY}) + \beta_{12} (\text{FAMNORM*FAMBOND}) + \\ & \beta_{13}(\text{PEERNORM*PEERBOND}) + \beta_{14}(\text{SCHNORM*SCHBOND}) \end{aligned}$$

Step two tested the main effects model only, as demonstrated below.

$$\begin{aligned} \text{logit} [\text{pr}(\text{bully}=1)] = & \beta_0 + \beta_1(\text{FAMNORM}) + \beta_2 (\text{FAMBOND}) + \beta_3(\text{PEERNORM}) + \\ & \beta_4(\text{PEERBOND}) + \beta_5 (\text{SCHNORM}) + \beta_6(\text{SCHBOND}) + \beta_7 (\text{AGE}) \\ & + \beta_8 (\text{ETHNIC}) + \beta_9(\text{GENDER}) + \beta_{10}(\text{PARENT_ED}) + \\ & \beta_{11}(\text{W1BULLY}) \end{aligned}$$

A likelihood ratio test was used to compare the full and main effects models to assess model fit and to determine whether the addition of the interaction terms contributed significantly to model fit. For hypotheses 1 through 3 to be supported, the log likelihood ratio test should be significant, as should each of the three interaction terms. Additionally, the influence of the interaction terms should be in the hypothesized direction.

Hypothesis 4

Hypothesis 4 proposes that the relative influence of peers is greater than the relative influence of family or school in the prediction of adolescent bullying. Hypothesis 4 was tested using hierarchical logistic regression with a forward-step procedure in which first the set of peer variables were entered into the model, as shown below.

Model 1

$$\text{logit} [\text{pr}(\text{bully}=1)] = \beta_0 + \beta_1(\text{PEERNORM}) + \beta_2(\text{PEERBOND}) + \beta_3(\text{PEERBOND}*\text{PEERNORM}) + \beta_4(\text{AGE}) + \beta_5(\text{ETHNIC}) + \beta_6(\text{GENDER}) + \beta_7(\text{PARENT_ED}) + \beta_8(\text{W1BULLY})$$

Next, the family variables were added.

Model 2

$$\text{logit} [\text{pr}(\text{bully}=1)] = \beta_0 + \beta_1(\text{PEERNORM}) + \beta_2(\text{PEERBOND}) + \beta_3(\text{PEERBOND}*\text{PEERNORM}) + \beta_4(\text{FAMNORM}) + \beta_5(\text{FAMBOND}) + \beta_6(\text{FAMNORM}*\text{FAMBOND}) + \beta_7(\text{AGE}) + \beta_8(\text{ETHNIC}) + \beta_9(\text{GENDER}) + \beta_{10}(\text{PARENT_ED}) + \beta_{11}(\text{W1BULLY})$$

A likelihood ratio test was used to compare the first and second models and determine if the addition of the family variables significantly improved model fit.

Thirdly, the influence of school was compared to that of peers by adding the school variables to the first model, as seen in model 3.

Model 3

$$\text{logit} [\text{pr}(\text{bully}=1)] = \beta_0 + \beta_1(\text{PEERNORM}) + \beta_2(\text{PEERBOND}) + \beta_3(\text{PEERBOND}*\text{PEERNORM}) + \beta_4(\text{SCHNORM}) + \beta_5(\text{SCHBOND}) + \beta_6(\text{SCHNORM}*\text{SCHBOND}) + \beta_7(\text{AGE}) + \beta_8(\text{ETHNIC}) + \beta_9(\text{GENDER}) + \beta_{10}(\text{PARENT_ED}) + \beta_{11}(\text{W1BULLY})$$

Again, a likelihood ratio test was used to compare the third and first models to determine if the addition of the school variables significantly improved model fit. If all likelihood ratio tests are non-significant then the addition of the second and third sets of variables does not improve the fit of the model, and the assertion that peer influences are those which are most important in the development of behavior is supported. If however, any of the likelihood ratio tests were significant, suggesting the addition of one or both of the sets of variables representing family influences and/or school influences improved the fit of the model above the model with only peer influences, it can be concluded that one or both of the family and/or school influences are also significant in the prediction of bullying behavior.

Once the significance of the contribution of the family and school variables was determined, the relative effect size of the respective variables was compared. Knowledge gained from testing hypotheses 1 through 3 provided the basis for testing the relative significance of the influences of the three PSS. In order to compare the relative effect sizes, the standardized odds ratios of the significant variables were compared.

Hypotheses 5 & 6

Hypotheses 5 and 6 examine the relationships between strength of bonds to family and school and bullying, as mediated by bonding to peers who engage in bullying. Oetting proposes that adolescents with weaker bonds to family and school are more likely to bond with deviant peers, and in turn more likely to engage in deviant behaviors (Oetting & Donnermeyer, 1998). In this set of relationships, bonding to peers who engage in bullying is conceptualized as a mediator of the relationship between strength of bonds to family and school, and bullying. A mediator is defined as a variable that explains why one variable

predicts an outcome; it is the mechanism through which the predictor variable affects the outcome variable (Frazier et al., 2004). Kenney and colleagues developed a strategy for testing mediation that involves four steps (Baron & Kenney, 1986). The first step is to establish a significant relationship between the predictor variable and the dependent variable. The second step is to show that the mediator is associated with the dependent variable, then thirdly to show the predictor variable is associated with the mediator when the independent variable is controlled for. The last step is to show that the relationship between the predictor variable and the dependent variable is significantly reduced when the mediator is added to the model (Baron & Kenney, 1986; Frazier et al., 2004).

Since Kenney and colleagues first described this testing strategy for mediation, Kenney and others have acknowledged that there are situations when mediation might occur even in the absence of a significant association between the predictor and the outcome variable, in particular when the predictor is temporally distal to the outcome because studies will often lack power to detect this relationship (Frazier et al., 2004). In fact, Shrout and Bolger (2002) recommend suspending the first step suggested by Kenney and colleagues unless the predictor is proximal to the outcome or theory suggests at least a medium effect size for the relationship. Thus, in this dissertation, step 1 will be conducted, however if the relationship between the independent and dependent variables is not significant, the remaining steps will still be conducted.

A separate model was tested for each of the two hypotheses. For hypothesis 5 the following model was tested in these steps:

$$\text{Step 1: } \text{logit} [\text{pr}(\text{BULLY}=1)] = \beta_0 + \beta_1(\text{FAMBOND}) + \beta_2(\text{AGE}) + \beta_3(\text{ETHNIC}) + \beta_4(\text{GENDER}) + \beta_5(\text{PARENT_ED}) + \beta_6(\text{W1BULLY})$$

$$\text{Step 2: DEVPEER} = \beta_0 + \beta_1(\text{FAMBOND}) + \beta_2(\text{AGE}) + \beta_3(\text{ETHNIC}) + \beta_4(\text{GENDER}) + \beta_5(\text{PARENT_ED}) + \beta_6(\text{W1BULLY})$$

$$\text{Step 3: logit } [\text{pr}(\text{BULLY}=1)] = \beta_0 + \beta_1(\text{FAMBOND}) + \beta_2(\text{DEVPEER}) + \beta_3(\text{AGE}) + \beta_4(\text{ETHNIC}) + \beta_5(\text{GENDER}) + \beta_6(\text{PARENT_ED}) + \beta_7(\text{W1BULLY})$$

The same procedure was followed for hypothesis 6 substituting the strength of bond to school variable for the strength of bond to family variable in hypothesis 5.

$$\text{Step 1: logit } [\text{pr}(\text{BULLY}=1)] = \beta_0 + \beta_1(\text{SCHBOND}) + \beta_2(\text{AGE}) + \beta_3(\text{ETHNIC}) + \beta_4(\text{GENDER}) + \beta_5(\text{PARENT_ED}) + \beta_6(\text{W1BULLY})$$

$$\text{Step 2: DEVPEER} = \beta_0 + \beta_1(\text{SCHBOND}) + \beta_2(\text{AGE}) + \beta_3(\text{ETHNIC}) + \beta_4(\text{GENDER}) + \beta_5(\text{PARENT_ED}) + \beta_6(\text{W1BULLY})$$

$$\text{Step 3: logit } [\text{pr}(\text{BULLY}=1)] = \beta_0 + \beta_1(\text{SCHBOND}) + \beta_2(\text{DEVPEER}) + \beta_3(\text{AGE}) + \beta_4(\text{ETHNIC}) + \beta_5(\text{GENDER}) + \beta_6(\text{PARENT_ED}) + \beta_7(\text{W1BULLY})$$

To complete step 4 in the test of mediation, one must estimate the magnitude by which the effect of the independent variable on the dependent variables is reduced when the mediating variable is controlled for in the model, then conduct a test of significance of this effect.

Several different tests have been described to test the significance of the mediated effect in multiple regression, including, for example, the Sobel test (Frazier et al., 2004; Shrout & Bolger, 2002). According to MacKinnon (2005; MacKinnon & Dwyer, 1993), when testing mediation using logistic regression, the significance of the mediated effect can be tested using the product of coefficients method and the Sobel standard error.

The coefficients necessary to conduct the product of coefficients test and the Sobel test of are noted in Figure 4.1 and descriptions of these are found in Table 4.6 below.

Figure 4.1.

Coefficients for Product of Coefficients Test of Mediation

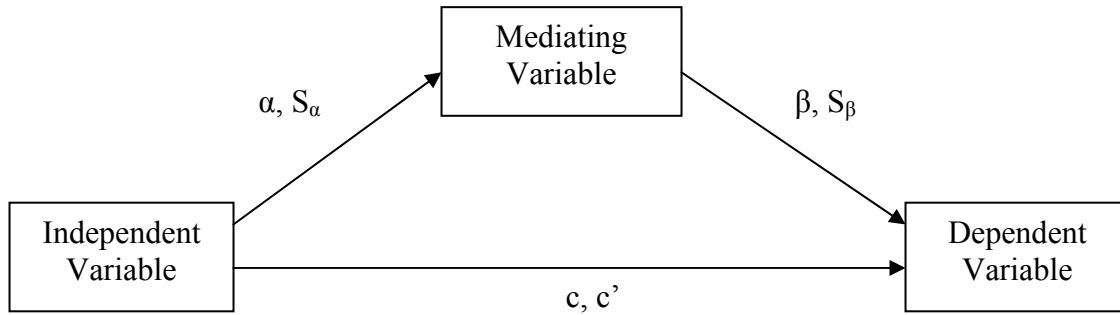


Table 4.6.

Description of Notation Used in Test of Mediation.

Coefficient	Corresponding Parameter Estimate
α	Parameter estimate for the IV from Step 2.
S_{α}	Standard error for the IV parameter estimate from Step 2.
β	Parameter estimate for the mediating variable from Step 3, controlling for the IV
S_{β}	Standard error of the parameter estimate for the mediator from Step 3, controlling for the IV
c	Parameter estimate of the direct effects of the IV on the DV, from Step 1.
c'	Parameter estimate of the IV for Step 3.

When testing mediation using linear regression, the parameter estimates necessary to conduct the product of coefficients test are taken directly from the regression models.

However, when the dependent variable is binary, the coefficients β , c and c' are logged

coefficients, and should be standardized (MacKinnon & Dwyer, 1993). When the mediating variable is measured on a continuous scale, the α value is derived from a linear regression equation and does not need to be standardized. According to MacKinnon and Dwyer (1993), the parameters are standardized by dividing them by the standard deviation of the dependent variable in the model. Thus, the necessary coefficients were standardized before conducting the product of coefficients test.

Once standardized, the estimated mediated effect was calculated by multiplying α and β . The magnitude of the mediated effect was calculated as: $\alpha\beta / (\alpha\beta + c')$. The significance of this mediated effect was then calculated using the Sobel test with SAS/STAT software (SAS, 2005).

Hypotheses 7 and 8

Because the outcome variable for hypotheses 7 and 8 is a nominal categorical variable with 4 response categories, multinomial logistic regression using a generalized logits model was necessary to test these hypotheses. Multinomial logistic regression is appropriate for examining the relationship between a categorical outcome variable with more than 2 response categories with no inherent ordering, and multiple independent or predictor variables (Stokes *et al.*, 2000). In the case of both hypotheses, the outcome variable is a nominal categorical variable with 4, non-ordered response categories. The predictor variables of interest were gender and family normative environment, and the control variables were ethnicity, age, parental education, and baseline type of bullying.

The generalized logit is defined as:

$$\text{logit}_{hj} = \log \left[\frac{\pi_{ij}}{\pi_{hr}} \right]$$

Where h represents the explanatory variables, j represents the response categories and r is the number of response categories. Thus both hypotheses, the generalized logits for a 4-level response variable is as follows:

$$\text{logit}_{h1} = \log \left[\frac{\pi_{h1}}{\pi_{h4}} \right], \quad \text{logit}_{h2} = \log \left[\frac{\pi_{h2}}{\pi_{h4}} \right], \quad \text{logit}_{h3} = \log \left[\frac{\pi_{h3}}{\pi_{h4}} \right]$$

where π_{h1} is the Pr { Direct bully only }, π_{h2} is the Pr { Indirect bully only }, π_{h3} is the Pr { mixed-type bully }, π_{h4} is the Pr { Non-bully }.

Generalized logits estimate multiple parameters for both the intercept and the explanatory variables. Therefore, the model fit for generalized logits would then be:

$$\text{logit}_{h1} = \alpha_1 + x'_h \beta_1, \quad \text{logit}_{h2} = \alpha_2 + x'_h \beta_2, \quad \text{logit}_{h3} = \alpha_3 + x'_h \beta_3$$

Model parameters and their interpretations for hypothesis 7 are demonstrated in Table 4.7 below.

Table 4.7.

Parameter Interpretations for Hypothesis 7.

Parameter	Model	Interpretation
	Parameter	
1	α_1	Intercept for logit $_{h1}$
2	α_2	Intercept for logit $_{h2}$
3	α_3	Intercept for logit $_{h3}$
4	β_1	Differential effect for GENDER for logit $_{h1}$
5	β_2	Differential effect for GENDER for logit $_{h2}$
6	β_3	Differential effect for GENDER for logit $_{h3}$
7	β_4	Differential effect for AGE for logit $_{h1}$
8	β_5	Differential effect for AGE for logit $_{h2}$
9	β_6	Differential effect for AGE for logit $_{h3}$
10	β_7	Differential effect for ETHNICITY for logit $_{h1}$
11	β_8	Differential effect for ETHNICITY for logit $_{h2}$
12	β_9	Differential effect for ETHNICITY for logit $_{h3}$
13	β_{10}	Differential effect for PARENT_ED for logit $_{h1}$
14	β_{11}	Differential effect for PARENT_ED for logit $_{h2}$
15	β_{12}	Differential effect for PARENT_ED for logit $_{h3}$
16	β_{13}	Differential effect for W1BULLY4 (1 vs. 0) for logit $_{h1}$
17	β_{14}	Differential effect for W1BULLY4 (1 vs. 0) for logit $_{h2}$
18	β_{15}	Differential effect for W1BULLY4 (1 vs. 0) for logit $_{h3}$
19	β_{16}	Differential effect for W1BULLY4 (2 vs. 0) for logit $_{h1}$
20	β_{17}	Differential effect for W1BULLY4 (2 vs. 0) for logit $_{h2}$
21	β_{18}	Differential effect for W1BULLY4 (2 vs. 0) for logit $_{h3}$
22	β_{19}	Differential effect for W1BULLY4 (3 vs. 0) for logit $_{h1}$
23	β_{20}	Differential effect for W1BULLY4 (3 vs. 0) for logit $_{h2}$
24	β_{21}	Differential effect for W1BULLY4 (3 vs. 0) for logit $_{h3}$
25	β_{22}	Differential effect for FAMNORM for logit $_{h1}$
26	β_{23}	Differential effect for FAMNORM for logit $_{h2}$
27	β_{24}	Differential effect for FAMNORM for logit $_{h3}$

For hypothesis 8, where again π_{hi1} is the Pr{mixed-type bully}, π_{hi2} is the Pr{Direct bully only}, π_{hi3} is the Pr {Indirect bully only}, and π_{hi4} is the Pr {Non-bully}, h represents the predictor variables including gender, strength of bond to family and the set of control variables. The specific parameters and their interpretations for hypothesis 7 are demonstrated below in Table 4.8.

The same 4 step procedure for testing mediation applies to multinomial logistic regression as to logistic regression. According to MacKinnon (MacKinnon, 2005), when testing mediation using multinomial logistic regression, the significance of the mediated effect can also be tested using the product of coefficients method and the Sobel standard error. The same procedures for standardizing the logistic regression coefficients apply as well.

Table 4.8.

Parameter Interpretations for Hypothesis 8.

Parameter	Model	Interpretation
	Parameter	
1	α_1	Intercept for logit $_{h1}$
2	α_2	Intercept for logit $_{h2}$
3	α_3	Intercept for logit $_{h3}$
4	β_1	Differential effect for GENDER for logit $_{h1}$
5	β_2	Differential effect for GENDER for logit $_{h2}$
6	β_3	Differential effect for GENDER for logit $_{h3}$
7	β_4	Differential effect for AGE for logit $_{h1}$
8	β_5	Differential effect for AGE for logit $_{h2}$
9	β_6	Differential effect for AGE for logit $_{h3}$
10	β_7	Differential effect for ETHNICITY for logit $_{h1}$
11	β_8	Differential effect for ETHNICITY for logit $_{h2}$
12	β_9	Differential effect for ETHNICITY for logit $_{h3}$
13	β_{10}	Differential effect for PARENT_ED for logit $_{h1}$
14	β_{11}	Differential effect for PARENT_ED for logit $_{h2}$
15	β_{12}	Differential effect for PARENT_ED for logit $_{h3}$
16	β_{13}	Differential effect for W1BULLY4 (1 vs. 0) for logit $_{h1}$
17	β_{14}	Differential effect for W1BULLY4 (1 vs. 0) for logit $_{h2}$
18	β_{15}	Differential effect for W1BULLY4 (1 vs. 0) for logit $_{h3}$
19	β_{16}	Differential effect for W1BULLY4 (2 vs. 0) for logit $_{h1}$
20	β_{17}	Differential effect for W1BULLY4 (2 vs. 0) for logit $_{h2}$
21	β_{18}	Differential effect for W1BULLY4 (2 vs. 0) for logit $_{h3}$
22	β_{19}	Differential effect for W1BULLY4 (3 vs. 0) for logit $_{h1}$
23	β_{20}	Differential effect for W1BULLY4 (3 vs. 0) for logit $_{h2}$
24	β_{21}	Differential effect for W1BULLY4 (3 vs. 0) for logit $_{h3}$
25	β_{22}	Differential effect for FAMBOND for logit $_{h1}$
26	β_{23}	Differential effect for FAMBOND for logit $_{h2}$
27	β_{24}	Differential effect for FAMBOND for logit $_{h3}$

CHAPTER FIVE: RESULTS

This chapter summarizes the results of my dissertation research. In section 5.1, I summarize the bivariate analyses of study variables included in hypotheses 1 through 6. Sections 5.2 and 5.3 describe the results of hypothesis testing for hypotheses 1 through 6. Sections 5.4 and 5.5 describe the results of analyses for the variables included in hypotheses 7 and 8, for the multinomial dependent variable.

5.1 BIVARIATE ANALYSES: STUDY VARIABLES FOR HYPOTHESES 1 - 6

Bivariate Analyses

Binary Dependent Variable

Table 5.1 below shows the correlation matrix for study variables. As can be noted, family ($r = -0.12$, $p < 0.0001$), peer ($r = 0.0898$, $p < 0.0001$) and school ($r = -0.15$, $p < 0.0001$) normative environments are significantly correlated with wave 3 bullying, such that the more prosocial the normative environments, the less likely the student is to be a bully. Note here that for the family and school normative environments, the greater the value, the more prosocial the normative environment, but for the peer normative environment, the greater the values, the less prosocial the normative environment. Strength of bond to school is also significantly and negatively associated with wave 3 bullying ($r = -0.8$, $p < 0.001$), however neither strength of bond to family ($r = -0.03$, $p = 0.09$) nor strength of bond to peers ($r = 0.02$, $p = 0.26$) is significantly correlated to wave 3 bullying. None of the control variables

including gender, ethnicity, parental education and age is significantly correlated with the outcome; however, baseline bullying, as expected, is positively and significantly associated with wave 3 bullying ($r = 0.34$, $p < 0.0001$). Bonding to deviant peers is also positively and significantly correlated to bullying at wave 3 ($r = 0.08$, $p < 0.0001$).

Table 5.1. Correlation Matrix

	Wave 1 Bully	Wave 3 Bully	Age	Ethnicity	Gender	PARENT_ ED	Family Norms	Family Bonds	Peer Norms	Peer Bonds	School Norms	School Bonds	Bond to Bullies
Wave 1 Bully	1.0000												
Wave 3 Bully	0.3404***	1.0000											
Age	0.0892***	0.0283	1.0000										
Ethnicity	0.0178	-0.0236	0.0327	1.0000									
Gender	-0.0097	0.0305	0.0071	-0.0090	1.0000								
PARENT_ED	-0.0282	-0.0149	-0.1392***	-0.0315	0.0076	1.0000							
Family Norms	-0.2152***	-0.1171***	-0.1757***	0.0025	0.0100	0.1810*	1.0000						
Family Bonds	-0.0757***	-0.0337	-0.1773***	-0.0160	-0.0080	0.1772*	0.6567***	1.0000					
Peer Norms ^a	0.1102***	0.0898***	-0.0067	-0.0223	0.0238	0.0046	0.0023	0.0420*	1.0000				
Peer Bonds	0.0134	0.0185	-0.0996***	-0.0107	-0.0006	0.0862***	0.1045***	0.1209***	0.4660***	1.0000			
School Norms	-0.2210***	-0.1460***	-0.0893***	-0.0003	0.0396*	0.0677**	0.1687***	0.0847***	-0.0196	0.1129***	1.0000		
School Bonds	-0.1030***	-0.0798**	-0.1777***	-0.0223	0.0271	0.2944***	0.2533***	0.1964***	0.0109	0.1624***	0.1950***	1.0000	
Bond to Bully Peers	0.1047***	0.0852***	-0.0106	-0.0187	0.0185	0.0163	0.0136	0.0617**	0.9311***	0.5895***	-0.0022	0.0398*	1.0000

Note: * r is significant at $p < 0.05$, ** r is significant at $p < 0.01$, *** r is significant at $p < 0.001$ a. Note that for peer norms the greater the value, the less prosocial the normative environment, which is the opposite of family and school normative environments.

5.2 TESTS OF HYPOTHESES 1 THROUGH 4

Hypotheses 1 through 3

For hypotheses 1 through 3, I hypothesized that that the strengths of bonds to each of the primary sources of socialization (PSS) (family, peers and school) would moderate the relationships between of each of the respective normative environments and wave 3 bullying, such that an adolescent who is strongly bonded to a PSS would be more likely to assimilate that PSS' norms than an adolescent weakly bonded to a PSS.

A likelihood ratio test comparing the main effects model to the full model showed that inclusion of the interaction terms did not significantly improve model fit (likelihood ratio = 7.4806, $p = 0.06$). Additionally, none of the individual interaction terms was statistically significant thus the hypotheses were not supported, and it was concluded that strength of bond to PSS did not moderate the relationships between each of the PSS normative environments and wave 3 bullying. Therefore, I dropped these interactions from the model and tested the main effects model only.

In the main effects model, logistic regression analysis provided evidence of a statistically significant relationship between each of the normative environments and adolescent bullying, but none of the strength of bonds to the PSS variables were significantly associated with the outcome (see Table 5.2 below). The relationships between normative environments and bullying were in the expected direction.

From this analysis, it was concluded that family, peer and school norms each predicted the onset of bullying at wave 3; however, strength of bonds to family, peers and school were not statistically significant predictors of the behavior.

Table 5.2.**Final Model for Hypotheses 1 through 3.**

Variable	β	s.e.	p	95% CI
Family Norms	-0.0922	0.0306	0.0027	-0.1524, -0.0321
Family Bonds	0.532	0.0330	0.1078	-0.0117, 0.1181
Peer Norms	0.0823	0.0380	0.0324	0.0070, 0.1575
Peer Bonds	0.0165	0.0772	0.8312	-0.1355, 0.1684
School Norms	-0.0373	0.0108	0.0006	-0.0586, -0.0160
School Bonds	-0.0266	0.0256	0.3004	-0.0771, 0.0239
Wave 1 Bully	0.6714	0.0445	<0.0001	0.5835, 0.7593
Age	-0.0089	0.0742	0.9046	-0.1576, 0.1398
Ethnicity	0.0131	0.0389	0.7363	-0.0636, 0.0898
Gender	0.0141	0.0436	0.7466	-0.0720, 0.1002
PARENT_ED	-0.0213	0.0350	0.5478	-0.0932, 0.0506

Hypothesis 4

For hypothesis 4, in order to compare the relative effect sizes of the variables implemented in the hypothesis, because each of the variables are measured on different scales, I began by standardizing each of the variables so that the respective parameter coefficients would represent a change in one standard deviation for the respective variables. Next, I compared the set of peer variables (PEERNORM, PEERBOND, PEERNPRM*PEERBOND) to the set of family variables (FAMNORM, FAMBOND,

FAMNORM*FAMBOND), by first testing a model that included only the peer variables and the control variables. Then I added the family variables to the model and assessed whether the family influences contributed significantly to the fit of the model by conducting a -2 Log likelihood ratio test. The likelihood ratio test was significant (likelihood ratio=19.13, $p<0.001$), and therefore I concluded that the addition of the family variables significantly improved the fit of the model for the prediction of the dependent variable.

Next, I compared the set of school variables to the set of peer variables, again controlling for baseline bullying and demographics. The results of the -2 log likelihood ratio test comparing these two model was also statistically significant (likelihood ratio=23.54, $p<0.001$), allowing me to conclude that the addition of the school variables significantly improved model fit over peer influences only.

Lastly I tested the full model, in which all three family, peer and school variables were included, controlling for baseline bullying and demographic characteristics. From this model, it was determined that the 3 interaction variables were not statistically significant predictors of the dependent variable, and thus were dropped from the model, resulting in the main effects model from hypotheses 1-3. Parameters estimates for the standardized norm and bond variables are listed below in Table 5.3.

Table 5.3.**Final Model Hypothesis 4.**

Variable	β	OR (95% CI)	p
PEERNORM*	-0.1032	0.90 (0.82, 0.99)	0.03
FAMNORM	-0.1548	0.86 (0.77, 0.95)	0.003
SCHOOLNORM	-0.1322	0.87 (0.81, 0.94)	0.0006
PEERBOND	0.0128	1.01 (0.90, 1.14)	0.83
FAMBOND	0.1146	1.12 (0.98, 1.29)	0.11
SCHBOND	-0.0510	0.95 (0.86, 1.05)	0.30
BASELINE	0.06714	1.07 (1.79, 2.14)	<0.0001
BULLY			
AGE	-0.0089	0.99 (0.85, 1.15)	0.90
ETHNICITY	0.0131	1.01 (0.94, 1.09)	0.74
GENDER	0.0141	1.01 (0.93, 1.11)	0.75
PARENT_ED	-0.0213	0.98 (0.91, 1.05)	0.55

*Note: To facilitate interpretation of the odds ratios, the inverse of the PEERNORM variable is reported here because the PEERNORM variable is scored inversely from the SCHNORM and FAMNORM variables.

Consistent with the tests for hypotheses 1 through 3, each of the normative environment variables for the 3 PSS were significant predictors of bullying, as was baseline bullying. However, none of the three bonding variables were significant predictors. Therefore, in order to assess the relative effect of the three normative influences, the odds ratios for each were compared. As can be noted in Table 5.3, the odds ratios for a one standard deviation

change in the peer normative environment, controlling for all other variables in the model, was 0.90 (95% CI: 0.82, 0.99), the odds ratio for a one standard deviation change in family normative environment, controlling for all other variables in the model, was 0.86 (95% CI: 0.77, 0.95), and the odds ratio for a one standard deviation change in school normative environment, controlling for all other variables in the model, was 0.87 (95% CI: 0.81, 0.94). Given the overlapping 95% confidence intervals for each of the three odds ratio estimates, it cannot be concluded that they differ significantly. Therefore, Oetting's proposition that peer influences dominate with regards to the development of behavior among adolescents is not supported by these data.

5.3 TESTS OF HYPOTHESES 5 AND 6

Both hypotheses 5 and 6 propose mediational models in which the effect of the strength of bonds to family (hypothesis 5) and to school (hypothesis 6) on bullying behavior is mediated by the strength of bonds to peers who bully. In hypothesis 5, I postulate that the relationship between strength of bond to family and bullying is mediated by strength of bonds to peers who bully, such that adolescents with weaker bonds to family will form stronger bonds to deviant (bullying) peers, and in turn be more likely to engage in bullying. To test this hypothesis, I followed the strategy as described by Baron and Kenney (Baron & Kenney, 1986), in which first the dependent variable (DV) is regressed on the independent variable (IV), then the mediating variable is regressed on the IV, and lastly the DV is regressed on both the IV and the mediator.

For model one, the dichotomous bullying variable was regressed on strength of bond to family. The control variables gender, age, ethnicity, parental education and baseline bullying

were included in each model. The relationship between the IV and the DV in this model was non-significant ($\beta=0.005$, $p=0.83$), and thus in this first model strength of bond to family did not predict wave 3 bullying. However, because of Shrout and Bolger's (Shrout & Bolger, 2002) proposition, as discussed previously, the second step in the mediation analysis was conducted.

In the second model, in which the mediating variable, strength of bonds to bullying peers, was regressed on the IV, strength of bonds to family, the relationship did achieve statistical significance ($\beta=0.1025$, $p=0.02$), thus strength of bonds to family did predict strength of bonds to bullying peers. However, it should be noted that the relationship is not in the anticipated direction. The theory hypothesizes that the weaker the bonds to family the stronger the bonds to peers who bully. The results here demonstrate that the stronger the bonds to family the stronger the bonds to peers who bully.

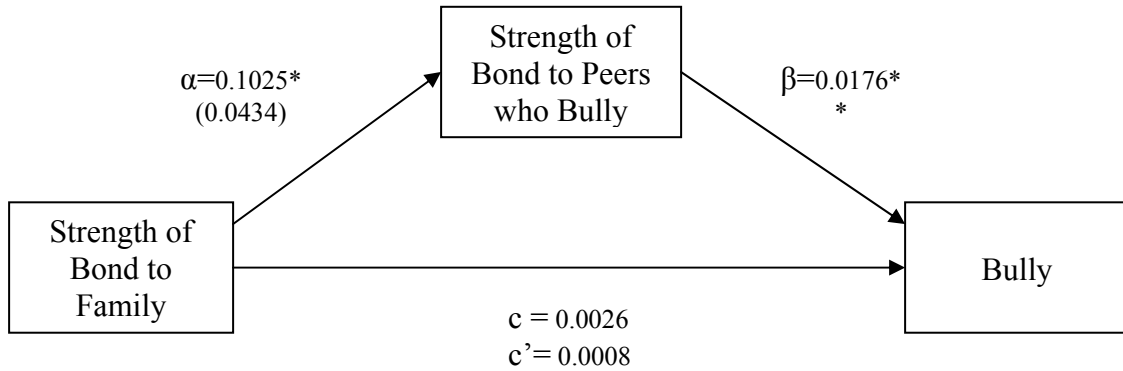
Thirdly, the DV (Bullying) was regressed on both the IV (Strength of Bond to Family) and the mediator (Strength of Bond to Deviant Peers). In this model, the relationship between the IV and the DV remained non-significant, but appeared to be attenuated as compared to the first model ($\beta=0.0015$, $p=0.95$), and strength of bond to bullying peers was a significant predictor of wave 3 bullying ($\beta=0.0344$, $p=0.01$).

Estimating the magnitude and testing the significance of the mediated effect in logistic regression requires standardization of the logged coefficients, which was accomplished by dividing each of the coefficients by the standard deviation of the dependent variable. Figure 5.1 below demonstrates the conceptual model for hypothesis 5 in addition to the parameter estimates and their associated standard errors. The notation associated with the parameter estimates is for the purposes of testing the mediated effect and its significance. In the figure,

α represents the unstandardized regression coefficient for the IV from the second model, when the mediator was regressed on the IV. Both β and c' are derived from the third model; β represents the standardized logistic regression coefficient for the mediating variable when controlling for the IV, and c' represents the standardized logistic regression coefficient for the independent variable when controlling for the mediator.

Figure 5.1

Test of Mediational Effects of Strength of Bond to Peers Who Bully on the Relationship Between Strength of Bond to Family and Bullying.



The mediated effect and the significance of that effect were calculated using the product of coefficients method (MacKinnon, 2005; MacKinnon & Dwyer, 1993). The mediated effect, $\alpha\beta$, was calculated to be 0.0018, and the magnitude of the mediated effect ($\alpha\beta / (\alpha\beta + c') * 100$) was 70%.

Sobel's variance of the mediated effect is calculated by the formula $\sigma_{\alpha\beta}^2 = \sigma_{\alpha}^2\beta + \sigma_{\beta}^2\alpha$ (MacKinnon & Dwyer, 1993). The equation for the Sobel test of significance for the mediated effect is: $z = \alpha\beta / \sigma_{\alpha\beta}$. Although the magnitude of effect was relatively large, it was non-significant (Sobel test = 1.77, $p = 0.077$). Therefore, it was concluded that hypothesis 5 was not supported. Not only was strength of bond to bullying peers not a mediator of the

relationship between strength of bond to family and bullying, but strength of bond to family was not a significant predictor of the development of bullying behaviors.

Hypothesis 6

The same procedure was used to test hypothesis 6, in which I hypothesized that the relationship between strength of bond to school and bullying is mediated by strength of bonds to peers who bully such that adolescents with weaker bonds to school will form stronger bonds to deviant (bullying) peers, and in turn be more likely to engage in bullying.

In model one for hypothesis 6, the dichotomous bullying variable was regressed on the independent variable, strength of bond to school. The relationship between the IV and the DV in this model was non-significant ($\beta = -0.0426$, $p = 0.08$), thus strength of bond to school did not predict development of bullying behavior at wave 3. Again however, due to Shrout and Bolger's (Shrout & Bolger, 2002) proposition that a non-significant relationship in this first step of mediational analysis does not preclude the existence of a mediated effect in cases where the effect of the IV on the DV is distal or in cases of suppression, the second step in the mediation analysis was conducted.

In the second model, in which the mediating variable (strength of bond to peers who bully) was regressed on the IV (strength of bond to school), the relationship did not achieve statistical significance ($\beta = 0.0803$, $p=0.11$), and therefore it was concluded that strength of bond to school did not predict the strength of bonds to bullying peers. According to Baron and Kenney (Baron & Kenney, 1986), evidence of mediation necessitates a statistically significant relationship between the independent variable and the mediator. Because the relationship between independent variable and mediator was not statistically significant, it

was concluded that there was no statistical evidence that strength of bond to peers who bully mediates the relationship between strength of bond to school and bullying. Thus hypothesis 6 was not supported.

Because the effects of the mediating variable on the dependent variable had already been explored in the analyses for hypothesis 5, no further testing was conducted for hypothesis 6.

5.4 DESCRIPTIVE AND BIVARIATE ANALYSES FOR THE MULTINOMIAL DEPENDENT VARIABLE

For hypotheses 7 and 8, the dependent variable is type of bullying. Type of bullying is a 4-level, multinomial, categorical variable with response categories that included: non-bully, direct-bully only, indirect-bully only, and mixed-type bully (both indirect and direct bullying).

Distribution of the percentage of adolescents who engaged in each type of bullying behavior at baseline and wave 3 are below in Table 5.5.

Table 5.5**Type of Bullying: Based on Imputed Data**

Characteristic	% (n)
Baseline Type of Bullying	
None	70.6 (2529)
Direct Bully only	19.0 (680)
Indirect Bully only	2.0 (72)
Mixed-Type Bully	8.4 (302)
Wave 3 Type of Bullying	
None	60.8 (2179)
Direct Bully only	22.8 (817)
Indirect Bully only	3.0 (107)
Mixed-Type Bully	13.4 (480)

When examining type of bullying behavior, 70.6 percent of students did not engage in any form of bullying behavior at baseline. Of those adolescents who did engage in bullying at baseline (29% of total), the majority perpetrated direct bullying type behaviors only (64.5%), less than a third (28.7%) were involved in mixed-type bullying, and only a small proportion (6.8%) engaged in indirect bullying activities only. More students reported engaging in all types of bullying at wave 3, though the largest increase was observed in the mixed-type bullying category (from 8.4% to 13.4%).

Bivariate analyses for the multinomial categorical dependent variable, type of bullying (W3BULLY4) were conducted by testing a multinomial logistic regression equation for each individual variable. The non-bully category served as the referent category for the analyses. As can be noted in Table 5.6 below, statistically significant bivariate associations between the first logit (direct-bully only/non-bully) were found for family normative environment ($\beta = -0.16, p < 0.0001$), peer normative environment ($\beta = 0.14, p = 0.0001$), school normative environment ($\beta = -0.08, p < 0.0001$) and strength of bond to school ($\beta = -0.10, p < 0.0001$), as was parental education ($\beta = -0.08, p = 0.03$). For the second logit (indirect-bully only/non-bully), no statistically significant associations were observed for any variable, with the exception of baseline type of bullying. Family normative environment ($\beta = -0.19, p < 0.0001$), strength of bond to family ($\beta = -0.07, p = 0.02$), peer normative environment ($\beta = 0.18, p = 0.0001$), school normative environment ($\beta = -0.11, p < 0.0001$), and strength of bond to school ($\beta = -0.13, p < 0.0001$) were also statistically significantly associated with the third logit (mixed-type bully / non-bully).

On bivariate analysis, baseline type of bullying was also statistically significantly associated with the outcome variable (see Table 5.6). Baseline direct bully versus non-bully was significantly associated with both the first and second logits of the outcome variable. Mixed-type bullying at baseline was significantly associated with all three logits. Interestingly, indirect-bullying only did not significantly predict any of the three logits for the dependent variable.

Table 5.6
Bivariate Analyses for Type of Bullying.

Variable	Wave 3 Type of Bully								
	Logit			Logit			Logit		
	(direct-bully only/non-bully)			(indirect-bully only/non-bully)			(mixed-type bully/ non-bully)		
	Estimate	s.e.	p-value	Estimate	s.e.	p-value	Estimate	s.e.	p-value
FAMNORM	-0.1604	0.0201	<0.0001	-0.0962	0.0684	0.17	-0.1895	0.0367	<0.0001
FAMBOND	-0.0299	0.0261	0.25	0.0191	0.0631	0.76	-0.0664	0.0288	0.02
PEERNORM	.1370	0.0340	0.0001	-0.0476	0.0801	0.55	0.1823	0.0522	0.001
PEERBOND	0.0065	0.0489	0.89	0.0387	0.1475	0.79	0.0421	0.0827	0.61
SCHNORM	-0.0753	0.0120	<0.0001	-0.0446	0.0292	0.13	-0.1146	0.0200	<0.0001
SCHBOND	-0.1085	0.0264	<0.0001	-0.0242	0.0669	0.72	-0.1274	0.0281	<0.0001
W1TYPEBULLY									
direct/non	0.5753	0.1154	<0.0001	-0.5706	0.2335	0.02	0.1388	0.1399	0.33
indirect/non	-0.1345	0.2995	0.66	0.7741	0.4184	0.07	-0.1017	0.3473	0.77
mixed/non	0.4926	0.1664	0.004	0.6780	0.2523	0.01	1.2147	0.1692	<0.0001
GENDER	0.0101	0.0458	0.83	0.0701	0.1428	0.62	0.0710	0.0475	0.14
AGE	0.1319	0.0710	0.07	-0.0527	0.1293	0.68	0.1203	0.0875	0.17
ETHNICITY	-0.0200	0.0663	0.76	0.0404	0.1254	0.75	0.0300	0.0443	0.50
PARENT_ED	-0.0811	0.0362	0.03	0.0398	0.0897	0.66	-0.0498	0.0406	0.22

5.5 TESTS FOR HYPOTHESES 7 AND 8

Previous research has indicated a possible relationship between gender and type of bullying, such that girls are more likely than boys to engage in indirect bullying, boys are more likely than girls to engage in direct bullying, and boys and girls are equally likely to engage in mixed-type bullying behaviors. This proposed relationship served as the basis for hypotheses 7 and 8.

Hypothesis 7 proposes that the relationship between gender and type of bullying is mediated by family normative environment such that gender leads to the normative environment to which the adolescent is exposed, which in turn leads to type of bullying. To test this hypothesis, the procedure specified by Barron and Kenney was again followed. First, a multinomial logistic regression model was analyzed in which the multinomial dependent variable, type of bullying, was regressed on the independent variable, gender, and the control variables, parental education, age, and baseline type of bullying. Control variables were included in all models. In this initial model, gender was not statistically significantly associated with any of the three logits for the dependent variable. Parameter estimates, standard errors and p-values are shown below in Table 5.7.

Table 5.7.**Model 1 for Hypotheses 7 and 8: Direct Effects of Gender on Type of Bullying**

Variable	Wave 3 Type of Bully								
	Logit			Logit			Logit		
	(direct-bully only/non-bully)			(indirect-bully only/non-bully)			(mixed-type bully/ non-bully)		
	Estimate	s.e.	p-value	Estimate	s.e.	p-value	Estimate	s.e.	p-value
GENDER	0.0340	0.0534	0.52	0.0862	0.1459	0.56	0.0994	0.0562	0.08
W1TYPEBULLY									
direct/non	0.5650	0.1171	<0.0001	-0.5597	0.2269	0.01	0.1347	0.1406	0.34
indirect/non	-0.1246	0.2982	0.68	0.7741	0.4230	0.07	-0.0937	0.3413	0.78
mixed/non	0.4887	0.1657	0.004	0.6861	0.2525	0.01	1.2154	0.1972	<0.0001
AGE	0.0400	0.0848	0.63	-0.0900	0.1330	0.50	0.0091	0.0969	0.92
ETHNICITY	-0.0122	0.0533	0.82	0.0326	0.1333	0.81	0.0379	0.0460	0.41
PARENT_ED	-0.0613	0.0396	0.13	0.0344	0.0868	0.69	-0.0366	0.0417	0.39

Despite the lack of a statistically significant relationship between the independent variable, gender, and the dependent variable, type of bullying, step two of the mediation analysis was carried out based on Shrout and Bolger's assertion that a statistically significant association between the IV and DV is not an essential first step in mediation analysis, if the effects of the IV on the DV are distal or in the case of suppression. For step two, the proposed mediator, family normative environment, was regressed on the independent variable, gender. Results of this regression analysis showed that gender was not significantly associated with family normative environment ($\beta = 0.025$, $p = 0.69$), thus it was concluded

that family normative environment did not mediate the relationship between gender and type of bullying.

Although there was no evidence to support the hypothesis that family normative environment mediated the relationship between gender and type of bully, the third model, in which the dependent variable was regressed on the IV, the mediator and the control variables, was still tested in order to explore the relationship between the proposed mediator, family normative environment, and wave 3 type of bully. The multinomial logistic regression analysis showed that family normative environment was a significant predictor of type of bullying at wave three for the first (direct bully/non-bully) ($\beta = -0.0817$, $p = 0.0004$) and third logits (mixed-type bully/non-bully), ($\beta = -0.0867$, $p = 0.03$) but not for the second logit (indirect bully/non-bully) ($\beta = -0.060$, $p = 0.40$).

Hypothesis 8 similarly proposes that the relationship between gender and type of bullying is mediated by strength of bond to family such that gender leads to the strength of bonding to family, which in turn leads to type of bullying. To test this hypothesis, the same procedures specified above were followed. The first step in this analysis was the same as for the test of hypothesis 7, which, as noted above demonstrated that gender was not a statistically significant predictor of type of bullying at wave 3 (see Table 5.4, above).

For step two, the proposed mediator, strength of bond to family, was regressed on the IV, gender. Results of this regression analysis also showed that gender was not significantly associated with the proposed mediating variable, strength of bond to family ($\beta = -0.037$, $p = 0.66$), thus it was concluded that strength of bond to family did not mediate the relationship between gender and type of bullying.

As with hypothesis 7, although no evidence of a mediated effect was demonstrated, the third model in which the DV was regressed on the IV and proposed mediator, as well as control variables, was tested in order to examine the relationship between strength of bond to family and type of bullying. Results of this analysis showed that strength of bond to family was not a statistically significant predictor of any of the three logits: first logit (direct bully/non-bully) ($\beta = 0.0033$, $p = 0.91$), second logit (indirect bully/non-bully) ($\beta = 0.0310$, $p = 0.67$) and third logit (mixed-type bully/non-bully) ($\beta = -0.0297$, $p = 0.36$).

A final model was tested in which both of the family variables (FAMBOND and FAMNORM) were entered as independent variables and parental education, age, gender, ethnicity and baseline type of bullying were entered as control variables in order to examine the relationship between both family variables and the outcome, type of bullying. Parameter estimates and p-values are shown in Table 5.8 below.

Table 5.8.**Parameter Estimates for Full Model for Hypotheses 7 & 8.**

Variable	Logit			Logit			Logit		
	(direct-bully only/non-bully)			(indirect-bully only/non-bully)			(mixed-type bully/ non-bully)		
	Estimate	s.e.	p-value	Estimate	s.e.	p-value	Estimate	s.e.	p-value
FAMNORM	-0.1429	0.0286	<0.0001	-0.1355	0.0893	0.14	-0.1044	0.0516	0.04
FAMBOND	0.0728	0.0347	0.04	0.0976	0.0865	0.27	0.0216	0.0412	0.60
W1TYPEBULLY									
direct/non	0.5532	0.1161	<0.0001	-0.0573	0.2245	0.01	0.1296	0.1425	0.37
indirect/non	-0.1178	0.2959	0.69	0.7856	0.4317	0.07	-0.0952	0.3488	0.79
mixed/non	0.4425	0.1657	0.009	0.6463	0.2431	0.01	1.1765	0.1936	<0.0001
GENDER	0.0377	0.0517	0.47	0.0883	0.1465	0.55	0.1011	0.0563	0.08
AGE	0.0287	0.0825	0.73	-0.0900	0.1377	0.51	-0.0130	0.0993	0.90
ETHNICITY	-0.0148	0.0535	0.78	0.0311	0.1325	0.81	0.0373	0.0463	0.42
PARENT_ED	-0.0533	0.0389	0.18	0.0368	0.0894	0.68	-0.0253	0.0413	0.55

From this third model it was concluded that family normative environment is a significant predictor of the first and third logits ($\beta = -0.1429$, $p < 0.0001$, and $\beta = -0.1044$ $p = 0.04$ respectively) in the hypothesized direction. Additionally, strength of bond to family was a significant predictor of the first logit ($\beta = 0.0728$, $p = 0.04$), albeit in the opposite direction as hypothesized.

CHAPTER 6: DISCUSSION

With this dissertation research I sought to apply the theoretical framework of Primary Socialization Theory to the study of adolescent bullying in order to examine the social factors that might contribute to the development of adolescent bullying. In this chapter, I discuss the study findings within the context of existing research and Primary Socialization Theory, as well as study strengths and limitations, practical implications and areas for future research.

6.1 SUMMARY OF FINDINGS

Summary of Findings for Hypotheses 1-3

Primary Socialization Theory (PST) posits that deviant behavior is learned from the norms communicated to the adolescent by the three primary sources of socialization, which are the family, peers and the school. According to PST, the more prosocial the normative environment, the less likely the adolescent is to engage in deviant behavior. Findings from this research did support this proposed set of relationships in that the normative environments of the family, peers and school were found to be significant predictors of the development of bullying behavior, such that, for each PSS, adolescents who reported more prosocial normative environments were less likely to become bullies than those adolescents who reported less prosocial normative environments, which would also be consistent with other theories of deviant behavior such as Social Learning Theory (SLT) (Bandura, 1973), and the theory of Differential Association (DA) (Sutherland & Cressey, 1999).

However, a main premise to PST is that the degree to which an adolescent assimilates the norms of a primary source of socialization depends on the strength of the bond between the adolescent and that PSS. In this respect PST is very similar to the Social Development Model proposed by Catalano and Kosterman (Catalano & Kosterman, 1996), which also draws from the theory of DA and Social Control theory (Hirschi, 1969), and proposes that the influence of the norms of a source of socialization is dependent upon the strength of the bond between the individual and the socialization source.

This proposition served as the basis for hypotheses 1 through 3 which stated “the relationship between the PSS normative environment and bullying varies by the strength of the adolescent-PSS bond such that adolescents with strong bonds to a PSS with more prosocial normative environment will be less likely to bully than adolescents with weak bonds to a PSS with more prosocial normative environment.” Hypotheses 1 through 3 were not support by study findings, as none of the interactions between normative environments and strength of bonds was statistically significant. In addition, none of the three bond variables (strength of bond to family, peers and school), were found to be statistically significant predictors of the development of bullying behavior. These findings contradict not only PST, but also postulates of other related theories such as Social Control Theory and the Social Development Model.

The fact that none of the bonding variables moderated the relationship between PSS normative environments and bullying is surprising. Oetting’s proposition that the degree to which an adolescent assimilates the norms of a PSS depends upon the degree to which the adolescent is bonded to that PSS is intuitively attractive. The fact that PSS normative environments influence behavior equally for those who are strongly bonded to the PSS and

for those who are weakly bonded not only contradicts Primary Socialization Theory, but also one of the theories upon which PST is based, Social Control Theory. Given these findings, one must consider that different characteristics of the relationship between the adolescent and the PSS determine whether or not the adolescent assimilates the norms of that PSS. Looking to the theory of Differential Association (Sutherland & Cressey, 1999), another theory that served as a guide to the development of PST, perhaps it is in fact the frequency, intensity and duration of exposure to the influential groups that, in this case the PSS, determine transmission of norms rather than level of emotional attachment experienced by the individual. Because the authors of PST were not specific when describing what they meant by “bond” it could very well be that the construct was incorrectly operationalized. Future development of the theory requires further clarification on the conceptual and operational definitions of its constructs.

Summary of Findings for Hypothesis 4

Hypothesis 4 was based on the proposition by Oetting and colleagues that, although all three PSS are important in the development of deviant behavior, peers can serve as the dominant source of influence during adolescence, as compared to families and school, particularly when bonds to family or to school are weak. Findings from this study did not support this proposition, as the normative environments of all three PSS showed to be significant predictors of wave 3 bullying behavior, and when the odds ratios and confidence intervals of the three variables were compared, there was no evidence that the effect size differed between the three. Additionally, the strengths of bonds to all three PSS were neither

significant predictors of the outcome nor did they modify the effects of their respective PSS normative environments.

Oetting's assertion regarding the relative importance of peers compared to family or school appears to be rooted in previous research in the field of adolescent substance use which repeatedly has found a significant relationship between peer substance use and self-reported substances use. In fact, an earlier theory that Oetting and Fred Beauvais (Oetting & Beauvais, 1987) elaborated in the 1980's, Peer Cluster Theory, had as its basic premise that peer clusters were the dominant influence in the development of deviant behavior and that all other social influences were mediated through the peer influence. By proposing that there are three primary sources of socialization, family, school and peers, PST contradicts the underlying premise of Peer Cluster Theory; however Peer Cluster Theory provides additional insight into the importance placed on peers in PST.

The literature Oetting cites in support of his assertion that peer influences can dominate during adolescents, as compared to the other two primary socialization sources, consists predominantly of cross-sectional research studies (see for example: Brook *et al.*, 1992; Cousineau *et al.*, 1993; see for example: Dinges & Oetting, 1993; Khavari, 1993; Oetting *et al.*, 1989) that have found significant associations between peer factors and adolescent substance use/abuse. Unfortunately, these cross-sectional studies do not permit the researchers to distinguish between cause and effect of the association. In other words, with cross-sectional studies, one cannot determine if associations with deviant peers leads to involvement in deviant behavior, or if engaging in deviant behavior leads to affiliations with deviant peers.

Although many researchers have found peer influences to be strongly associated with drug use (Bauman & Ennett, 1994, 1996) and other deviant behaviors, limitations to the many studies of peer influences have been identified which call in to question the potential causal nature of peer influences. In particular, the issues of selection and projection have been discussed as limitations to the study of peer influence as a causal factor in drug use (Bauman & Ennett, 1994, 1996).

The term selection refers to the possibility that adolescents choose their friends based on similar drug use (or other deviant) behaviors. That is to say, instead of peers influencing adolescents to use drugs, adolescents will choose friends with similar substance use behaviors. Oetting does briefly broach the topic of peer selection in his first paper on Primary Socialization Theory (Oetting & Donnermeyer, 1998); however, he doesn't specify the roles of peer selection versus peer influence in the determination of behavior. A second issue, projection, can also lead to inflated estimates of the association between peer influences and deviant behavior (Bauman & Ennett, 1994, 1996). According to Bauman and Ennett, most studies have evaluated peer behavior by asking the study subjects to describe their friends' behaviors. Projection occurs when the study subject projects his/her own deviant behavior on their friends. Both selection and projection could lead to an incorrect interpretation that peer influences cause individual behavior.

With this current study I was able to address both the issues of peer selection and projection. First, I was able to determine that peer normative environment at baseline was a significant predictor of the initiation of bullying behaviors at wave 3, controlling for baseline bullying behaviors, which does support to the notion of a causal effect of peer influences. This finding lends support to PST's premise that the peer normative environment can

influence or predict development of deviant behavior. Secondly, projection of bullying behavior by the study subject for his/her peers was not an issue in this current study. Because of the study design, the measure of peer normative environment with regards to bullying was based on the self-reported bullying behaviors of the peers nominated by the subject. This design strengthens the interpretation that the peer normative environment predicted individual initiation of bullying behaviors at outcome. That said, findings from this study do support Oetting's proposition that peer influences lead to the development of deviant behavior; however, given the findings from the test of hypothesis 4, there is no evidence supporting the proposition that peers play a more influential role than either the family or the school in the development of bullying behaviors, regardless of strength of bonds to the PSS.

Summary of Findings for Hypotheses 5 & 6

Hypotheses 5 and 6 were based on a second premise of Primary Socialization Theory; the strength of the bonds to family or school can influence whether an adolescent bonds with deviant peers, which in turn can lead to engaging in deviant behaviors. This proposition points out one of the problems to the theory as described, in that this set of relationships is in conflict with the first premise of the theory. The first premise proposed that strength of bond to PSS moderates the relationship between PSS normative environment and the development of deviant behavior, whereas this second premise suggests that strength of bond to a PSS is an independent predictor of behavior, the effect of which is mediated by a third variable.

Results from this research do not support this second premise. The statistical tests for hypotheses 5 and 6 did not provide evidence of a mediated effect as hypothesized. For both

hypotheses, the mediator, strength of bond to peers who bully, was a significant predictor of bullying initiation at outcome; however, neither of the independent variables was significantly associated with the dependent variable. Additionally, further testing of the mediation models, despite the lack of a significant effect of the independent variable on the dependent variable, provided no evidence of a suppression effect (Shrout & Bolger, 2002).

An interesting finding that emerged from these tests was that, although strength of bond to school was not significantly associated with strength of bond to bullying peers (hypothesis 6), strength of bond to family was significantly and positively associated with strength of bond to bullying peers. One potential explanation for this unanticipated finding is that strength of bond to family was positively and significantly correlated with strength of bond to peers, a component of the strength of bond to bullying peers variable, which would provide a statistical basis for the association. One interpretation of this relationship could be that those adolescents who bond strongly to one PSS are more likely to bond to other PSSs, regardless of the norms transmitted by those PSS. This relationship warrants further investigation.

Summary of Findings for Hypotheses 7 & 8

Hypotheses 7 and 8 explored the PST proposition that influences other than the primary sources of socialization (PSS), including individual characteristics, are indirect and operate through (or are mediated by) their influence on the PSS. To test this aspect of the theory, the relationship between gender and type of bullying was chosen because previous research had indicated a possible relationship between the two variables (Conway, 2005; Crick, 1997; Crick & Grotpeter, 1995; Wolke et al., 2000). Following Oetting's proposed line of reasoning, because of differences in social norms for the two genders with regards to

relationships with family, I hypothesized that gender would predict the family normative environment to which the adolescent is exposed, which in turn would predict the development of bullying behavior.

First, the relationship between gender and type of bullying was not supported by these data. When controlling for baseline type of bullying, age, parental education and ethnicity, gender did not significantly predict the type of bullying in which the adolescents engaged. Even in bivariate analysis, when the other variables were not controlled, gender was not associated with any of the three types of bullying behavior (direct, indirect or mixed-type bullying versus non-bullying). Given previous research on gender and type of bullying, this finding is intriguing. Results from this study demonstrate that girls and boys are equally involved in both direct and mixed-type bullying, while few students engaged only in indirect bullying acts. Indeed, it appears that girls could be more involved in these direct bullying behaviors than previously thought. Given also, that many of the studies that have examined bullying have relied on a single item measure of the behavior, further exploration into types of bullying behaviors and their predictors, including gender, should be considered. In any case, despite the lack of a significant relationship between gender and type of bullying the remaining relationships in the hypotheses were explored.

For hypothesis 7, gender was not found to be a significant predictor of family normative environment. There are a number of possible reasons for this. In this study, the family normative environment variable was a measure of parenting, including both responsiveness and demandingness of the parent to the child, and the level of conflict within the family. After further exploring the relationships between gender and family normative environment in this study, it was found that gender was not significantly associated with any of the

components of the variable, including parental demandingness, responsiveness or family conflict.

Hypothesis 8 is similar to hypothesis 7, except that the family bond variable was examined as the potential mediator for the relationship between gender and type of bullying. As noted already above, gender was not a predictor of type of bullying at wave 3. Gender was also not a significant predictor of strength of bond to family. Given the lack of a significant relationship between gender and the proposed mediators the results, of these analyses do not support the postulate that the influence of gender as an individual characteristic on type of bullying is mediated by the primary socialization process.

Bullying Prevalence

Although estimates of bullying prevalence vary considerably across studies, bullying prevalence was found to be higher in this study sample (47.1%) as compared to most reports in previous research. This could be, at least in part, due to the measure of bullying used in this study. Of the previous studies reviewed, most relied on a single item measure to which the individual responded whether s/he had engaged in bullying over a specific time period (weeks to months). For most of these studies, a definition of bullying preceded the question, but not in all cases. One study (van der Wal et al., 2003) reported using a 20-item scale to measure bullying-related acts, but the researchers did not report the prevalence of bullying in the paper. In this current study, the term “bully” is never mentioned to the respondents, and only self-reported frequencies of 6 bullying-related acts are recorded. It is possible that adolescents, who are involved in bullying behaviors, do not see themselves or label

themselves as bullies even in face of the definition provided in some questionnaires, yet are willing to respond to questions about their specific actions.

Another measurement-related issue that resulted in an increase in bullying prevalence could be the choice of cut-off point used to differentiate between bullies and non-bullies. For this study a cut-off of 2 was used, such that those subjects who scored greater than or equal to 2 were classified as bullies, and those who scored less than 2 were classified as non-bullies. This value for categorization was selected *a priori*, based on the conceptual definition of the construct used in this study, and on previous similar measures of bullying. According to the conceptual definition, one characteristic of bullying is that the behavior is repeated over time. Thus a cut-off point of two, which represented a response that an adolescent reported engaging in one behavior at least 3 to 5 times over the prior 3 months, or engaging in more than one act at least 1 to 2 times over the prior three months, was selected. This is consistent with other measures of bullying, such as the most commonly used Olweus' Bully/Victim Questionnaire (Solberg & Olweus, 2003).

In order to examine the appropriateness of this cut-off point, both the correlation matrix and the logistic regression models from the first three hypotheses were run using a bullying variable for which the cut-off point had been increased to 3. A cut-off of 3 to distinguish between bullies and non-bullies would mean that someone classified as a bully would have reported engaging in at least one of the bullying acts 6 to 9 times over the prior three months or 3 acts at least 1 to 2 times each over the same time period. Comparisons of the correlations for the two variables with other study variables, as well as the distribution of the continuous bullying variable are included in Appendix III and Appendix IV. It should be noted that no substantial changes in bivariate correlations were observed. Also, the results of

the logistic regression analyses of both the main effects model and the full model which included the interaction terms of interest for hypotheses 1 through 3 did not differ for the bullying variable with a cut point of 2 and the variable with a cut point of 3. These findings allowed me to conclude that the choice of a cut point of 2, based on conceptual definition and other existing measures, was appropriate.

Other factors that contribute to disparities in prevalence estimates across studies are source of information (self-report, peer-nominations, teacher/parent report), different reference periods (e.g. previous 3 months, current school semester, past year), and the differing response categories, all of which measure frequency, but vary from increasing number of times per referent period to responses such as never, rarely sometimes, and frequently (Solberg & Olweus, 2003).

Lastly, an important factor in prevalence estimates for bullying is age of study sample. Bullying appears to peak in early adolescence, approximately between 6th and 8th grades (Nansel et al., 2001), which is the age range of this study sample, and could contribute to the higher prevalence found in this sample. Interestingly, Farrell and colleagues (Farrell *et al.*, 2000), whose Problem Behavior Frequency Scale served as the source of the items for this study's bullying measure, also found similarly high prevalences of the behaviors measured for the bullying variable among their sample of 6th and 7th graders in the southeast. Age ranges for other studies are quite varied and include elementary school students (see, for example, Wolke et al., 2000), to studies of older adolescents (for example, Kaltiala-Heino et al., 1999).

Demographic Variables and Bullying

As expected from previous research, bullying did not vary by ethnicity. Additionally, neither socioeconomic status nor age was found to be significant predictors of bullying. There is limited evidence from previous studies on the relationship between parental education and bullying, but these findings are consistent with previous research. Both Sourander (2000) and Kumpulainen (1999) found that SES was not associated with bullying, but Kumpulainen did find that low SES adolescents were more likely than high SES adolescents to remain involved in bullying over time.

The relationship between age and bullying is better established. The absence of a statistically significant relationship between age and wave 3 bullying is possibly due to the limited age range for study subjects (mean age =12.6 years, standard deviation = 0.8) combined with the fact that the behavior is peaking at this age.

Correlations between Study Variables of Interest

Nearly all correlations between study variables were in the anticipated direction, with a few exceptions. A number of interesting correlations were noted. First, it was observed that each of the PSS normative environment variables was significantly correlated with its corresponding strength of bond variable. One correlation in particular, the family variables, was moderately strong ($r = 0.66$, $p < 0.0001$), while correlations between the peer variables ($r = 0.12$, $p < 0.0001$) and the school variables ($r = 0.20$) were weaker. Given the relatively high level of covariance between family normative environment and family bonding, one might expect that a statistical reason for a lack of a significant relationship between the strength of bond to family and wave 3 bullying was due to the amount of shared variance between the

normative environment and bonding variables; however, this could not be the case given the lack of a statistically significant correlation between the strength of bond to family and wave 3 bullying variables on bivariate analysis.

For both family and school social environments, these correlations indicated that the more prosocial the respective normative environments, the stronger the bond to that PSS. These findings are consistent with what one would expect and would be consistent with other theories such as Hirschi's Control Theory (Hirschi, 1969). On the other hand, the positive correlation between the peer norm and bond variables indicates that the more strongly bonded to a peer, the more likely that peer is to convey deviant norms, which runs directly counter to one of Oetting's primary postulates, that weak peer bonds can ultimately increase the chance of bonding with deviant peers. However, findings from this study suggest that the more strongly bonded to peers the adolescent is, the more likely he/she has peers who bully. Further research into this relationship is necessary; however, one potential explanation comes from a conclusion that Hirschi rejects in his description of SCT, namely that perhaps "delinquents are unusually dependent upon their peers, that loyalty and solidarity are characteristics of delinquent groups, (and) that attachment to adolescent peers fosters non-conventional behavior" (Hirschi, 1969).

Age was significantly and negatively correlated with all three strength of bond variables, indicating that the older the adolescent is, the weaker his/her bonds to each family, peers and school. This finding is very interesting given Oetting's assertion that peer influences can dominate during adolescence. If indeed that were true, and if the first postulate of the theory, that strength of bonds moderates the influence of norms held true, one might expect to see that the strength of bonds to family and school weaken with increasing age, but that strength

of bonds to peers would increase. This finding provides no evidence for the assertion that peer influences are dominate compared to family and school.

Parental education was significantly and positively correlated with both strength of bond to school and with school normative environment, which indicates that the higher the level of the adolescent's parent(s) education, the more prosocial the adolescent perceives the school environment and the more strongly bonded to school the adolescent is. This finding is not surprising, as it seems likely that parents who achieve higher levels of education would also be more likely to promote a positive attitude and high value toward school and education so that the adolescent would be more likely to bond with the school and integrate within the school. Parental education was also positively and significantly correlated with family normative environment, and strength of bonds to both family and peers, although as with the strength of the correlations to school, these correlations are relatively weak.

Both the strength of bond to family and strength of bond to school were significantly and positively correlated to strength of bond to bullying peers, albeit very weak correlations ($r=0.06$, $p<0.05$ and $r = 0.04$, $p<0.05$, respectively). This finding is surprising in that both families and schools are generally thought to be sources of prosocial norms. As previously noted, a probable explanation for this finding is that both strength of bonds to family and to schools are positively and significantly correlated with strength of bond to peers ($r = 0.1209$, $p<0.001$ and $r = 0.1624$, $p<0.001$, respectively), which is a component of the strength of bonds to bullying peers variable. The fact that adolescents with stronger bonds to their families also have stronger bonds to school and to peers is not surprising. These findings are consistent with one aspect of Social Control Theory, which proposes that adolescents with stronger attachment to their parent(s) also have stronger attachment to their school, and

adolescents who are attached to their peers are also more likely to be attached to their parent(s) (Hirschi, 1969).

A second unanticipated finding on bivariate analysis, which cannot be easily explained, is that increasing strength of bond to family was significantly associated with a more deviant peer normative environment ($r = 0.04$, $p < 0.05$). The correlation is very weak, but does contradict what would be anticipated based on Primary Socialization Theory.

Summary of Descriptive and Bivariate Analyses for Multinomial “Type of Bully” Variable

Interestingly, when broken down by type of bully, most adolescents who engaged in bullying engaged in either direct (58.2%) or mixed-type bullying (34.2%) at wave 3. Only a small proportion (7.6%) of bullies engaged in indirect-type bullying behaviors only.

Of note here is that the percentage of adolescents classified as bullies is considerably less than the percent classified as bullies by the previous binary measure. The reason for this difference is that, for the binary variable, an adolescent was classified as a bully if s/he reported engaging in any of the 6 bullying acts at least 3 to 5 times over the prior 3 months *or* s/he reported engaging in at least 2 acts at least 1 to 2 times each over the time period. This distinction, which is consistent with other measures of bullying, was made to reflect the repetitive nature of bullying.

For the multinomial categorical variable, the 6-item scale was divided into two subscales: one that included the 3 direct bullying items and the second that included the 3 indirect bullying items. Again, the participants were classified as bullies by the same strategy as above. However, for the multinomial categorical variable, a participant could have engaged in one direct-bullying act 1 to 2 times over the time period, and engaged in one indirect-

bullying 1 to 2 times, yet still be classified as a non-bully. This was because scores for the two types of bullying were calculated separately.

Therefore the difference between the binary and the multinomial categorical bullying variables lies in those adolescents who reported engaging in one direct-bully act only 1 to 2 times AND engaging in one indirect bully act only 1 to 2 times. This group of adolescents was classified as bullies for the binary variable, but as non-bullies for the multinomial variable. The binary measure reflects overarching bully behavior and the categorical variable reflects bullying behavior defined by type. An argument could be made for either measure, and emphasizes the need to develop a validated measure of adolescent bullying that distinguishes it from other forms of aggressive behaviors.

Although most variables from the main theoretical model were not subject to hypothesis testing in relation to the multinomial dependent variable, bivariate analyses for type of bullying were performed to explore the associations between the dependent variable and each of the main effect variables and control variables from the main effects model of the theory. When compared to bivariate analyses between study variables and the binary wave 3 bullying variable, results were not surprising. Significant associations were found for each of the 3 normative environment variables and for the school bond variables for the first and third logits (direct/non-bully, mixed-type/non-bully). However, the only significant association for the second logit (indirect/non-bully) was baseline type of bully, though interestingly, the second logit of the baseline bullying variable did not predict the second logit of the outcome variable.

6.2 STUDY STRENGTHS AND LIMITATIONS

Strengths

Earlier research on adolescent bullying has focused predominantly on identifying the psychosocial characteristics of those adolescents involved in bullying, either as perpetrators, victims or both. Few researchers have looked beyond individual characteristics to examine those social factors that may contribute to the development of such behavior. This present study contributes significantly to existing research by moving beyond the existing focus on psychosocial factors associated with bullying perpetration and victimization, and looks at social factors in the lives of adolescents that might contribute to the development of such behavior, which could have significant implications for prevention.

Use of a theoretical framework to guide the selection of study variables is another important strength. While empirical evidence can provide evidence as to the existence of a set of relationships, it is theory that aids us in our understanding of the nature of those relationships. The use of theory, *a priori*, helps us decide which factors to study, and, in the case of prevention research, guides the search for modifiable factors (Glanz *et al.*, 1996). In the review of existing literature on bullying, no studies were identified that acknowledged the use of a theoretical framework to either identify variables under study or to aid in the interpretation of research findings. Thus, this research is the first known to this author that applies a theoretical framework to the study of social influences on the development of adolescent bullying. Specifically, the study provides evidence of the predictive relationship between family, peer and school normative environments and development of adolescent bullying.

Additionally, this study contributes to the further development of Primary Socialization Theory by operationalizing its theoretical constructs and by empirically testing the proposed relationships. Some of the limitations of the PST, as it has been described, include a lack of clearly specified and defined theoretical constructs and conceptual models to clearly identify the relationships between those constructs. The authors go to great strides to discuss the various aspects of the theory; however one is forced to glean the necessary information on constructs and relationships, which leaves room for misinterpretation. Operationalizing the constructs and specifying the relationships between the constructs will serve to advance and refine the theory, even if my interpretations are not accurate, as this research can be viewed as a starting point from which to further correctly specify the details of the theory.

Methodologically, the longitudinal nature of this study strengthens causal inference regarding the predictive relationships of independent variables on the development of bullying, by providing evidence of temporality – the change in the independent variables occurred before the change in the dependent variable. With few exceptions, most of the existing research is cross-sectional in nature, seriously limiting the ability to draw conclusions regarding possible causal relationships between the factors under study and bullying. Lastly, the large sample size allowed sufficient power to detect a small effect size.

Limitations

Measurement: A number of issues play into the potential limitation of the measures used in this study. As mentioned earlier, the constructs that make up Primary Socialization Theory are not described in enough detail in the description of the theory so that operationalization of the constructs is perfectly clear. For this reason, measures of the

constructs were derived from both the descriptions in Primary Socialization Theory, and from related existing literature. Although I have tried to be careful to provide theoretical and/or empirical support for the operationalization of constructs in this study, it is possible that I have misinterpreted the authors' original conceptualizations of the theoretical concepts. Additionally, although some measures used in this study were validated measures, several measures were not. Although Cronbach's alpha as a measure of internal consistency reliability of these measures was relatively high for each of the measures, the validity of many of the measures has not been assessed.

For the normative environment measures, the measure of peer normative environment was specific to norms regarding bullying. Because of its specificity, at face value it seems a valid measure of the bullying-related norms within the peer context. The family normative environment variable most closely reflects Oetting's description of family norms by incorporating both parenting practices, which he states clearly are a context for family norms, as well as the more behavior-specific items reflecting family conflict and aggression. The school normative environment variable, however, measured a more general perceived level of prosocial environment within the school. A more valid measure of school normative environment might incorporate specific items related to the level of bullying that occurs within the school. Also, for this study I chose to measure the school normative environment with an individual-level variable, which I believe reflects the school environment as experienced by the subject. Another approach to this variable would be to develop a school-level measure of the normative environment as it pertains to bullying. One argument against this school-level measure would be that because often the students from different grades do not commingle extensively, if at all, there could potentially be several normative

environments within the school. More research into how to best measure school norms is clearly needed.

The measures of family and peer bonding reflected what has otherwise been described as level of attachment to each of these two, which I believe from Oetting's description, is an accurate approximation of his intent for the variable. Strength of bond to school was a composite measure which included the dimensions of school involvement and school commitment. These dimensions, described by Oetting and colleagues (1998), were consistent with other measures of school bonding as described two review articles on the topic (Libbey, 2004; Maddox & Prinz, 2003); however, the exact items used to measure this variable have not been assessed for construct validity.

As previously noted, bullying is a subtype of aggressive behavior that involves a power differential between perpetrator and victim, has a hostile intent, is repeated over time, and can be physical and/or verbal (Kristensen & Smith, 2003; O'Connell et al., 1999; Rigby, 2003). The measure of bullying in this research specified both verbal and physical acts that have been previously identified with bullying, and was similar to other measures in that it incorporated the repetitive nature of the bullying-related aggressive acts that helps distinguish bullying from other forms of aggression. However, a serious limitation to this and other measures of bullying is that the power differential between perpetrator and victim is not adequately captured. It could be that the measure used in this study is not adequately differentiating between bullying and other similar forms of aggressive behaviors.

Timing of the Study: Approximately 20.6% of the study sample initiated bullying in wave 3. In other words, 20.6% of all study participants did not engage in bullying behaviors at baseline, but did at the outcome. Because other previous research on bullying has

indicated that the behavior peaks around early adolescence, it is not surprising to have found such a high prevalence of the behavior both at baseline and at outcome in this study sample. However, findings for this study are limited to those factors that predicted initiation of the behavior in early adolescence. Identifying those factors that contribute to development of bullying among younger children might be more useful in developing primary prevention strategies. Additionally, because the referent time period was the 3 months prior to the time when the questionnaire was administered, and because only two time points were studied, conclusions can only be drawn about the factors that predict initiation in this short time frame. Examining the evolution of bullying behaviors over late childhood through adolescence could surely provide more insight into the factors that predict not only initiation, but also maintenance of the behavior, which could be more important.

Generalizability: The generalizability of study findings depends largely upon the degree to which the study sample represents some larger population. The sample for this study was a population of students from middle, K-8 and alternative schools in three counties in North Carolina. As noted previously, the population in these counties is, on the average, more economically disadvantaged and has a higher proportion of adults over the age of 25 without a high school diploma, than either the State of North Carolina or the United States. Another characteristic of the three counties is that they have a higher proportion of racial/ethnic minorities than the State or US as a whole. These factors perhaps limit the strict generalizability of results to middle school students in schools and counties with similar characteristics; however, looking beyond place and time-specific characteristics of a study sample, findings from this study should be considered only one piece of information

contributing to a larger body of knowledge regarding the social factors that contribute to adolescent bullying, and in that sense contribute to our overall understanding of the problem.

6.3 STUDY IMPLICATIONS

Theoretical: Primary Socialization Theory

At face value, Primary Socialization Theory is an attractive theory, which seems to integrate important aspects of existing social theories that by themselves do not adequately explain deviant behavior, either because they leave out potentially important concepts or because they are so broad that empirical tests of the theories in their entirety seem impractical. PST is similar to the Social Development Model (SDM) (Catalano & Kosterman, 1996) in this respect; however, it can be argued that PST is an even further advancement over the Social Development Model. PST appears to specify clearly which sources of socialization are important to the development of adolescent behavior, and provides an explanation for the roles of other, more distal, sources of socialization, which SDM does not do. Yet, as previously mentioned, several aspects of PST require further refinement and clarification.

Although Oetting and colleagues cite considerable existing research in support of their proposed theoretical relationships, they use terms for their theoretical concepts without providing definitions for those concepts. It seems as though, because the terms they include are widely used in existing literature, that they are assuming that the definitions must be known to the reader. Unfortunately, such a consensus does not appear to exist and concepts such as bonds and norms have been used by different researchers to mean different things. The authors need to more clearly define what exactly family, peer cluster and school norms

are and whether they must be behavior specific or can also be generally measured as prosocial or deviant. For example, in reading the text of the papers describing the theory, it is unclear as to whether the authors are truly discussing norms or more of a general social context within each of these groups. For example, within the school context, Oetting proposes a number of indicators of the school environment (Oetting & Donnermeyer, 1998) such as unclear rules and school “normlessness,” but then also proposes that factors such as size of school, poorly trained teachers, racial prejudice, and lack of financial or other resources would be indicative of the school’s environment. Such indicators might be more consistent with a social context within the school rather than the normative environment or actual norms. With regards to the bonding variable, I was able to glean from their description that what they intended was most likely similar to what Hirschi described as the attachment dimension of his concept of bond (Hirschi, 1969); however, it wasn’t perfectly clear that this interpretation was accurate.

Additionally, future research is needed to confirm or refute findings from this study with regards to support for the proposed relationships of PST. Few of the proposed relationships in the theory were supported by current findings; however, the reasons for this need to be further explored to determine whether proposed relationships are not correct, or if other factors such as measurement error or misinterpretation of the theory contributed to the lack of empirical support in this study. In that light, future tests of the theory would be well served by research that involves primary data collection with validated measures of the theoretical constructs so that potential influences of systematic measurement error on research findings can be reduced to the greatest degree possible.

Additionally, the contradicting postulates described by the authors also need to be further explored and these conflicts resolved in order to develop a clear and testable model of deviant behavior development. Distinguishing whether bonds to PSS moderate the direct relationship between PSS norms and behavior, or they are an independent predictor of behavior, the effects of which are mediated by other variables, is an example of such conflict.

The main focus in advancing this theory should be placed on clarifying the constructs and refining the primary relationships proposed by PST. However, an interesting and unique aspect to this theory, which served as the basis for hypotheses 7 and 8, should not be overlooked. PST proposes a mediation model for the influence of both individual characteristics and secondary sources of socialization. The theory posits that both individual characteristics and secondary socialization source, such as neighborhoods or religious groups for example, influence the development of deviant behavior by influencing the primary socialization process (norms and/or the bonds to PSS), which in turn leads to behavior. Although findings from this research did not support this postulate with regards to the influence of gender on behavior, once the main premises of the theory have been better developed future research into these propositions would be very intriguing.

Practical Implications

Although many of the proposed relationships tested in this research were not supported by study findings, results do suggest possible points for intervention and for future study. One important finding from this study is that a relatively high proportion of students report engaging in bullying behaviors, which implies the behavior might be more prevalent in some settings than previously thought. Given that existing research indicates adolescents who are

involved in bullying, both as perpetrators and as victims, are at increased risk to experience adverse physical and psychosocial outcomes, some of which are very serious such as suicidal ideation and depression, this research indicates that interventions to prevent bullying should have a high priority.

Findings from this study also indicate that the normative environments of family, peers and schools were all significant predictors of bullying initiation and have implications for prevention interventions. Interventions that target modification in one or more of these three environments could prove to be an effective primary prevention strategy. Specifically, potential intervention strategies could work with families and target the constructs of parental demandingness and responsiveness in an effort to improve parenting style and to facilitate the parent-child socialization process. Additionally, family interventions could possibly address conflict within the family and work with families to find means to resolve conflict without violence and aggression.

Adolescents who engaged in bullying were found to be more likely to associate with others who engage in bullying than those who did not engage in bullying. This has implications for intervention, much in the same way that substance abuse prevention has developed interventions that promote parental involvement in their child's peer associations. Targeting parental awareness of the bullying-related actions of their child's friends is one potential way in which parents could intervene to prevent their child from developing such behaviors.

Lastly, findings from this study indicate that adolescents who perceive a more prosocial school environment are less likely to become bullies than those who perceive a less prosocial environment. Promoting those aspects, considered prosocial in the school setting, such as

treating others with respect and willingness to help others, could be yet another way to reduce bullying in the school.

6.4 FUTURE RESEARCH

Research on adolescent bullying in the US is relatively new. Further effort should be directed toward developing a better understanding of the extent of this public health problem in this setting.

In addition to an improved understanding of adolescent bullying prevalence, this research provides a basis for further research into the underlying causative factors that contribute to the development of bullying behaviors among adolescents. To date, much of the research on the topic has examined the individual psychosocial characteristics of both perpetrators and victims of bullying, which can provide insight into the potential individual-level risk factors and possible consequences of the behavior, although due to the cross-sectional nature of much of this work, cause and effect are difficult to disentangle. Previous research has also contributed knowledge that can be used to design secondary prevention interventions that might identify at-risk adolescents for bullying involvement, either as perpetrator or victim, and interventions to assist those who are already involved in bullying, in order to prevent future consequences. However, an important public health task is to identify those factors that contribute to the development of a health-related problem so that primary prevention strategies may be developed.

It was also observed that nearly all of the research on the topic has been atheoretical. Future research into adolescent bullying would benefit from the further application of theoretical frameworks to guide it. Such application can aid in the choice of factors to study

in relation to adolescent bullying, as well as aid the understanding of the nature of relationships that are established by empirical research.

Lastly, an important task for future research into adolescent bullying is to develop a valid measure of the problem that adequately represents all of its dimensions. Most measures of bullying, including the Olweus Bully/Victim Questionnaire (Solberg & Olweus, 2003) and the measure used in this study, address two of the three dimensions noted in the conceptual definition of the construct: types of behaviors classified as bullying, and the recurrent nature of the behavior. However, none adequately addresses the issue of a power differential between perpetrator and victim. Development of a valid bullying measure that includes these three dimensions is critical to the study of the behavior so that it is adequately differentiated from other forms of aggressive behavior.

6.5 CONCLUSION

Applying Primary Socialization Theory to the study of adolescent bullying with this research has provided interesting findings with regards to both the topic and the theory. Future study application of Primary Socialization Theory to other forms of deviant behavior could well help to refine and more clearly specify this theory. The relationships proposed by Oetting and colleagues, while not entirely new, are intriguing and may very well hold promise of advancing the study of deviant behaviors by taking some of the more promising components of existing social theories and combining them in a way that is more integrated and complete, yet can be empirically tested.

This study provided little support for the relationships proposed by Primary Socialization Theory. There are a number of possible explanations for this. First it could be that, because

the theoretical constructs and relationships are described somewhat ambiguously and conflictingly in the papers on the theory, I have misinterpreted one or more aspects of the theory. Secondly, measurement error could have significantly influenced the findings, given that the measures used to assess the theoretical constructs, though hopefully well-informed, were not specifically developed for this purpose. Lastly, it is possible the proposed relationships simply are not supported. Much work remains on clarifying the theoretical constructs, the nature of the relationships between these constructs, and testing these relationships empirically.

This research has also provided some insight into the study of bullying behavior by identifying several predictors of the development of the behavior among early adolescents. Additionally, the study has highlighted the need for further research to better define just what “bullying” is, as well as to identify other factors that contribute to the development of this public health problem so that strategies to reduce or prevent the problem can be developed and implemented.

APPENDIX I

Study Variables and Corresponding Item Numbers from the Context of Adolescent Substance Use Study Questionnaire.

Variable	Item Number(s) from Context Study Questionnaire
Bullying	36F, 36G, 36H, 36I, 36N, 36O
Family Normative Environment	52A-F, 64A-F, 76A-C
Strength of Bond to Family	53, 54, 55, 65, 66, 67
Peer Normative Environment	36F, 36G, 36H, 36I, 36N, 36O (from nominated friends' questionnaires)
Strength of Bond to Peers	4A-E
School Normative Environment	37A-C
Strength of Bond to School	C39A-F, 40A-D, 87A
Strength of Bonds to Peers who Bully	4A-E (from subject's questionnaire); 36F, 36G, 36H, 36I, 36N, 36O (from nominated friends' questionnaires)
Age	80, 81, 82
Gender	83
Ethnicity	84
Parental education	51, 63



APPENDIX II

Context of Adolescent Substance Use Study Questionnaire

Understanding Adolescent Health Risk Behaviors


Sponsored by: University of North Carolina at Chapel Hill and Wake Forest University

Instructions

- Do not write your name anywhere on this questionnaire.
- Use only the No. 2 pencil we have given you to mark your answers.
- Completely fill in the circle you want to mark.
- Correct Mark:  
- Completely erase any answers you want to change.
- Do not make any stray marks on the questionnaire.
- For the answers to some questions, you will be instructed to go ahead to a certain question. If there are no instructions next to your answer, go on to the next question.

Subject	School	Wave
0 8 0 4	0 2	0 1
<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9

Example

1. Do you have a pet at home?
☐ No  GO TO QUESTION 4
☐ Yes
2. How many pets do you have at home?
☐ 1
☐ 2
☐ 3 or more
3. How many of these pets are dogs?
☐ None
☐ 1
☐ 2 or more
4. Do you have a bicycle at home?
☐ Yes
☐ No



If you answered NO to question 1, then go ahead to question 4. Do not answer question 2 or question 3.
If you answered YES to question 1, then go on to question 2.

These first questions are about your friendships.



- Please write the first names of up to five of your closest friends, starting with your very best friend, on the 'First name' line. Then,
 - For each friend who goes to your school, look up his or her name in the Student Directory, write the number shown, and fill in the bubbles for each number.
 - For all other friends (in other schools, not in school, etc.), write 0000 in the number box, and fill in the bubbles 0000 for each number.
 - If you have fewer than five close friends, leave the unused friend columns blank.

	Best friend	Friend 2	Friend 3	Friend 4	Friend 5
First name:					
Number:					
	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1
	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2
	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3
	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4
	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5
	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6
	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7
	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8
	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9

- What is the sex of each of your friends?

Best friend	Friend 2	Friend 3	Friend 4	Friend 5
Male Female	Male Female	Male Female	Male Female	Male Female
(M) (F)	(M) (F)	(M) (F)	(M) (F)	(M) (F)

- Answer the following questions about each of your friends:

- Have you ever gone to your friend's home or had your friend to your home?
- Did you go somewhere or do something with your friend outside of school in the last week?
- Have you met your friend's parents?
- Have your parents met your friend?
- Have your parents met your friend's parents?

Best friend	Friend 2	Friend 3	Friend 4	Friend 5
Yes No	Yes No	Yes No	Yes No	Yes No
(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)
(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)
(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)
(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)	(Y) (N)

- How close do you feel towards each of your friends?

Best friend	Friend 2	Friend 3	Friend 4	Friend 5
<input type="radio"/> Very close <input type="radio"/> Somewhat close <input type="radio"/> Not very close <input type="radio"/> Not close at all	<input type="radio"/> Very close <input type="radio"/> Somewhat close <input type="radio"/> Not very close <input type="radio"/> Not close at all	<input type="radio"/> Very close <input type="radio"/> Somewhat close <input type="radio"/> Not very close <input type="radio"/> Not close at all	<input type="radio"/> Very close <input type="radio"/> Somewhat close <input type="radio"/> Not very close <input type="radio"/> Not close at all	<input type="radio"/> Very close <input type="radio"/> Somewhat close <input type="radio"/> Not very close <input type="radio"/> Not close at all

5. How many of these friends do you think . . .

- a. Drink alcohol (beer, wine, wine cooler, or liquor)
- b. Smoke cigarettes
- c. Use other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)
- d. Smoke marijuana
- e. Use other drugs (cocaine, LSD, heroin, Ecstasy, or other)

None	One	A few	Most or All
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. In general, how do you think these friends would feel if you:

- a. Drank alcohol
- b. Got drunk from drinking alcohol
- c. Smoked cigarettes
- d. Used other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)
- e. Smoked marijuana
- f. Used other drugs (cocaine, LSD, heroin, Ecstasy, or other)

Like it a lot	Like it some	Dislike it some	Dislike it a lot
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. How much do you agree or disagree with the following statements about how others your age see your friends:

- a. Others see your friends as smokers.
- b. Others see your friends as non-smokers.
- c. Others see your friends as drinkers.
- d. Others see your friends as non-drinkers.

Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions are about cigarette smoking.



8. How much have you ever smoked cigarettes in your life?

- ☐ None at all, not even a puff → GO TO QUESTION 19 ON THE NEXT PAGE
- ☐ 1 or 2 puffs but not a whole cigarette
- ☐ 3 or more puffs but not a whole cigarette at once
- ☐ 1 to 2 whole cigarettes
- ☐ 3 to 5 whole cigarettes
- ☐ 6 to 20 whole cigarettes
- ☐ More than 20 whole cigarettes

9. During the past 3 months, about how many days did you smoke cigarettes?

- ☐ 0 days → GO TO QUESTION 19 ON THE NEXT PAGE
- ☐ 1 to 2 days
- ☐ 3 to 5 days
- ☐ 6 to 9 days
- ☐ 10 to 19 days
- ☐ 20 days or more

10. About how much did you usually smoke when you smoked in the past 3 months?

- ☐ A puff or more, but less than 1 cigarette per day → GO TO QUESTION 19 ON THE NEXT PAGE
- ☐ 1 to 5 cigarettes per day
- ☐ About 1/2 pack per day
- ☐ About 1 pack per day
- ☐ About 1 and 1/2 packs per day
- ☐ 2 packs or more per day

Th

11. How important is each of the following reasons to you for smoking cigarettes?

- a. To forget your problems
- b. It helps you when you feel depressed or nervous
- c. To forget your worries
- d. It helps you enjoy a party
- e. It makes social gatherings more fun
- f. It improves parties and celebrations

Not at all important	Not very important	Somewhat important	Very important
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. During the past 3 months, did you ever try to quit smoking?

- ☐ Yes
- ☐ No

13. Are you seriously thinking of quitting smoking now?

- ☐ No, not thinking of quitting
- ☐ Yes, within the next 30 days
- ☐ Yes, within the next 3 months
- ☐ Yes, but not within the next 3 months

14. How soon after you wake up do you smoke your first cigarette?

- ☐ Within 5 minutes
- ☐ 6 to 30 minutes
- ☐ 31 to 60 minutes
- ☐ After an hour

15. Did you find it difficult to keep from smoking in places where it is forbidden?

- ☐ Yes
- ☐ No

16. Which cigarette would you most hate to give up?

- ☐ The first one in the morning
- ☐ Any other cigarette

17. Do you smoke more frequently during the first hours of waking than during the rest of the day?

- ☐ Yes
- ☐ No

18. Do you smoke even if you are so sick that you are in bed most of the day?

- ☐ Yes
- ☐ No

The next questions are about your use of other kinds of tobacco.



19. Have you ever in your life . . .

- a. Used chewing tobacco (such as Redman, Levi Garrett or Beechnut) or snuff (such as Skoal, Skoal Bandits or Copenhagen)
- b. Smoked a pipe with tobacco, a cigar, bidis (flavored cigarettes from India), or kreteks (clove cigarettes)

Yes	No
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>

20. During the past 3 months, about how many times have you . . .

- a. Used chewing tobacco or snuff
- b. Smoked a pipe with tobacco, a cigar, bidis, or kreteks

None	1-2 times	3-5 times	6-9 times	10 times or more
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. During the past 3 months, did you ever try to quit any of the following?

- a. Chewing tobacco or snuff
- b. Pipes, cigars, bidis, or kreteks

Don't use	Yes	No
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Pa

Page 4

The next questions are about alcoholic beverages, including beer, wine, wine coolers, and liquor. Do not include wine that you might have had at church. For these questions, a "drink" means a glass of wine, a can of beer, a bottle or can of wine cooler, a shot glass of liquor, or a mixed drink.



22. How much alcohol have you ever had in your life?

- ☐ None at all, not even a sip → GO TO QUESTION 28 ON THE NEXT PAGE
☐ 1 or 2 sips, but not a whole drink
☐ 3 or more sips, but not a whole drink at one time
☐ 1 to 2 whole drinks
☐ 3 to 4 whole drinks
☐ 5 to 10 whole drinks
☐ 11 to 20 whole drinks
☐ More than 20 whole drinks

23. During the past 3 months, about how many days did you have 1 or more drinks of alcohol?

- ☐ 0 days → GO TO QUESTION 28 ON THE NEXT PAGE
☐ 1 to 2 days
☐ 3 to 5 days
☐ 6 to 9 days
☐ 10 to 19 days
☐ 20 days or more

24. About how much did you usually have when you drank in the past 3 months?

- ☐ Less than 1 drink → GO TO QUESTION 28 ON THE NEXT PAGE
☐ 1 drink
☐ 2 drinks
☐ 3 drinks
☐ 4 drinks
☐ 5 or more drinks

25. During the past 3 months, about how many times have you. . .

- a. Had 3 or 4 drinks in a row
 b. Had 5 or more drinks in a row
 c. Gotten drunk or very high from drinking alcoholic beverages
 d. Drunk alcohol when you were alone
 e. Been hung over

None	1-2 times	3-5 times	6-9 times	10 times or more
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. How important is each of the following reasons to you for drinking alcohol?

- a. To forget your problems
 b. Because it helps you when you feel depressed or nervous
 c. To forget your worries
 d. Because it helps you enjoy a party
 e. Because it makes social gatherings more fun
 f. Because it improves parties and celebrations

Not at all important	Not very important	Somewhat important	Very important
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. During the past 3 months, about how many times have you. . .

- a. Gotten into trouble with your parents because you had been drinking
 b. Had problems with someone you were dating because you had been drinking
 c. Did something you later regretted because you had been drinking
 d. Gotten into a sexual situation that you later regretted because you had been drinking
 e. Gotten into a physical fight because you had been drinking

None	1-2 times	3-5 times	6-9 times	10 times or more
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions are about other drugs.



28. Have you ever used any of the following in your life?

- a. Inhalants (sniff glue, paint, gas or other things you inhale to get high)
- b. Anabolic steroids (without a doctor telling you to take them)
- c. Andro (androstenedione) to build your muscles to help your performance in sports or working out
- d. Marijuana (also called weed, reefer, pot, grass, herb, sinsemilla, smoke, hash, Thai stick, or blunts)
- e. Other hard drugs (cocaine, LSD, heroin, Ecstasy, or other)

Yes	No
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>

29. During the past 3 months, about how many times have you used. . .

- a. Inhalants
- b. Anabolic steroids
- c. Andro (androstenedione)
- d. Marijuana
- e. Other hard drugs

None	1-2 times	3-5 times	6-9 times	10 times or more
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. If you wanted to, how easy or hard would it be for you to get each of the following types of drugs?

- a. Alcohol (beer, wine, wine coolers, liquor)
- b. Cigarettes
- c. Chewing tobacco, snuff, or other kinds of tobacco
- d. Inhalants
- e. Marijuana
- f. Other hard drugs

Very easy	Somewhat easy	Somewhat hard	Very hard
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

31. Three months from now, do you think you will be using each of the following drugs?

- a. Alcohol (beer, wine, wine coolers, liquor)
- b. Cigarettes
- c. Chewing tobacco, snuff, or other kinds of tobacco
- d. Inhalants
- e. Marijuana
- f. Other hard drugs

Definitely not	Probably not	Probably will	Definitely will
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

These next questions are about some of your beliefs about smoking, drinking alcohol, and drug use.



32. Some people your age think good things come from smoking cigarettes, such as looking cool, having more friends, and feeling relaxed. Some people your age think bad things come from smoking cigarettes, such as having fewer friends, getting into trouble with adults, and getting sick. Do you believe that smoking cigarettes every day would bring you:

- ☐ Only good things
- ☐ Much more good than bad
- ☐ A little more good than bad
- ☐ About equal good and bad
- ☐ A little more bad than good
- ☐ Much more bad than good
- ☐ Only bad things

33. Do you believe that drinking alcohol one or more days a week would bring you:

- ☐ Only good things
- ☐ Much more good than bad
- ☐ A little more good than bad
- ☐ About equal good and bad
- ☐ A little more bad than good
- ☐ Much more bad than good
- ☐ Only bad things

34. Do you believe that smoking marijuana one or more times a week would bring you:

- ☐ Only good things
- ☐ Much more good than bad
- ☐ A little more good than bad
- ☐ About equal good and bad
- ☐ A little more bad than good
- ☐ Much more bad than good
- ☐ Only bad things

35. How much do you agree or disagree with the following statements?

- a. I see myself as a smoker.
- b. I see myself as a non-smoker.
- c. I see myself as a drinker.
- d. I see myself as a non-drinker.

Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions ask about some things that you might do.

36. During the past 3 months, about how many times have you...

- a. Skipped school
- b. Damaged school or other property that did not belong to you
- c. Cheated on a test
- d. Been in a fight in which someone was hit
- e. Threatened to hurt a teacher
- f. Threatened someone with a weapon (gun, knife, club, etc.)
- g. Spread a false rumor about someone
- h. Picked on someone
- i. Started a fight between other people
- j. Hit someone you were dating
- k. Threatened to hurt someone you were dating
- l. Driven a car or other vehicle when you had been drinking
- m. Gone to school but skipped class
- n. Excluded another student from your group of friends
- o. Hit or slapped another kid

None	1-2 times	3-5 times	6-9 times	10 times or more
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions are about your school and school experiences.

37. How strongly do you agree or disagree with each of the following statements about your school?

- a. Students in this school treat each other with respect.
- b. Students at this school are willing to go out of their way to help someone.
- c. My school is like a family.

Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Almost none	About one-quarter (25%)	About half (50%)	About three-quarters (75%)	Almost all
38. At your school, about how many students your age do you think . . .					
a. Drink alcohol (beer, wine, wine cooler, or liquor)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Smoke cigarettes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Use other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Use inhalants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Use marijuana	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Use other hard drugs (cocaine, LSD, heroin, Ecstasy, or other)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No
39. Which of the following school activities have you participated in (or do you plan to participate in) during this school year?		
a. Sports teams	<input type="radio"/>	<input type="radio"/>
b. Service clubs (like Key Club) or interest clubs (like Art Club or Spanish Club)	<input type="radio"/>	<input type="radio"/>
c. Performance groups (like pep band or jazz band)	<input type="radio"/>	<input type="radio"/>
d. School newspaper or yearbook	<input type="radio"/>	<input type="radio"/>
e. Honor societies	<input type="radio"/>	<input type="radio"/>
f. Anti-drug use groups	<input type="radio"/>	<input type="radio"/>

	A	B	C	D or lower	I didn't take this subject
40. At the most recent grading period, what was your grade in each of the following subjects? (If you haven't finished a grading period this year, answer for the final grading period last year.)					
a. English/Language Arts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. History/Social Studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions ask about your feelings about yourself and some other things.

	Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
41. How strongly do you agree or disagree with these statements?					
a. I like to test myself every now and then by doing something a little risky.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I sometimes find it exciting to do things for which I might get in trouble.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Excitement and adventure are more important to me than security.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Never or almost never	Seldom	Often	Always or almost always
42. How often did you feel each of the following ways in the past 3 months?				
a. Mad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Furious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
43. How strongly do you agree or disagree with the following statements in describing how you have felt in the past 3 months?					
a. I had trouble getting my breath.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I got mad easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. I felt sick in my stomach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I was tired a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I worried about what was going to happen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. I worried when I went to bed at night.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. I often worried about bad things happening to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I hated myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I was a bad person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. I did everything wrong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

44. How often do you attend church or religious services?

- ☐ Never
- ☐ Less than once a month
- ☐ About once a month
- ☐ About 2 or 3 times a month
- ☐ Once a week
- ☐ More than once a week

45. How important is religion to you?

- ☐ Not at all important
- ☐ Not very important
- ☐ Somewhat important
- ☐ Very important

46. How much do your religious beliefs influence what you do?

- ☐ Not at all
- ☐ Not very much
- ☐ Some
- ☐ Very much

47. How strongly do you agree or disagree with the following statements?

- a. It is good to be honest.
- b. People should not cheat on tests.
- c. In general, police deserve respect.

Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

48. About how many close or best friends do you have?

- ☐ None
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

The next questions are about your mother, stepmother, or someone else who is like a mother to you (such as your grandmother or aunt). If you have both a mother and a stepmother, or if you have more than one woman who is like a mother to you, please answer the questions for the one you live with most of the time. If you do not have a mother, stepmother, or anyone who is like a mother, please go to the shaded box before question 61.

49. What is her relationship to you?

- ☐ Natural mother
- ☐ Adoptive mother
- ☐ Stepmother
- ☐ Foster mother
- ☐ Grandmother
- ☐ Aunt
- ☐ Other

50. How often do you usually see her?

- ☐ Every day or almost every day
- ☐ A few times a week
- ☐ Once a week
- ☐ A few times a month
- ☐ Once a month
- ☐ A few times a year
- ☐ Once a year
- ☐ Never or almost never

→ GO TO THE SHADED BOX BEFORE QUESTION 61

51. How far in school has she gone?

- ☐ Didn't graduate from high school
- ☐ Graduated from high school
- ☐ Some college, community college or technical school
- ☐ Graduated from community college or technical school
- ☐ Graduated from college
- ☐ Graduate or professional school after college
- ☐ Don't know

52. How well does each of the following statements describe her?

- a. She tells me when I do a good job on things.
- b. She makes me feel better when I am upset.
- c. She wants to hear about my problems.
- d. She has rules that I must follow.
- e. She tells me times when I must come home.
- f. She makes sure I don't stay up too late.

Just like her	A lot like her	Sort of like her	Not like her
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

53. How often does she kiss or hug you?

- ☐ A lot
- ☐ Some
- ☐ Not very much
- ☐ Never

54. How close do you feel toward her?

- ☐ Very close
- ☐ Somewhat close
- ☐ Not very close
- ☐ Not close at all

55. How close do you think she feels toward you?

- ☐ Very close
- ☐ Somewhat close
- ☐ Not very close
- ☐ Not close at all

56. How do you think she would feel about you doing each of the following things?

- a. Drinking alcohol
- b. Smoking cigarettes
- c. Using other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)
- d. Using marijuana or other drugs

Like it a lot	Like it some	Dislike it some	Dislike it a lot
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

57. Has she ever smoked cigarettes in her life?

- ☐ Yes
- ☐ No
- ☐ Don't know

58. About how many cigarettes do you think she now smokes in a day?

- ☐ None
- ☐ Some but less than 1 cigarette a day
- ☐ About 1 cigarette to almost half a pack a day
- ☐ About half a pack to a pack a day
- ☐ More than a pack a day
- ☐ Don't know

59. Has she ever had a drink of alcohol in her life?

- ☐ Yes
☐ No
☐ Don't know

60. About how many days a week do you think she drinks now?

- ☐ None
☐ 1-2 days
☐ 3-4 days
☐ 5-7 days
☐ Don't know

The next questions are about your father, stepfather, or someone else who is like a father to you (such as your grandfather or uncle). If you have both a father and a stepfather, or if you have more than one man who is like a father to you, please answer the questions for the one you live with most of the time. If you do not have a father, stepfather, or anyone who is like a father to you, please go to question 73.

61. What is his relationship to you?

- ☐ Natural father ☐ Grandfather
☐ Adoptive father ☐ Uncle
☐ Stepfather ☐ Other
☐ Foster father

62. How often do you usually see him?

- ☐ Every day or almost every day
☐ A few times a week
☐ Once a week
☐ A few times a month
☐ Once a month
☐ A few times a year
☐ Once a year
☐ Never or almost never → GO TO QUESTION 73

63. How far in school has he gone?

- ☐ Didn't graduate from high school
☐ Graduated from high school
☐ Some college, community college or technical school
☐ Graduated from community college or technical school
☐ Graduated from college
☐ Graduate or professional school after college
☐ Don't know

64. How well does each of the following statements describe him?

- a. He tells me when I do a good job on things.
b. He makes me feel better when I am upset.
c. He wants to hear about my problems.
d. He has rules that I must follow.
e. He tells me times when I must come home.
f. He makes sure I don't stay up too late.

Just like him	A lot like him	Sort of like him	Not like him
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

65. How often does he kiss or hug you?

- ☐ A lot
- ☐ Some
- ☐ Not very much
- ☐ Never

66. How close do you feel toward him?

- ☐ Very close
- ☐ Somewhat close
- ☐ Not very close
- ☐ Not close at all

67. How close do you think he feels toward you?

- ☐ Very close
- ☐ Somewhat close
- ☐ Not very close
- ☐ Not close at all

68. How do you think he would feel about you doing each of the following things?

- a. Drinking alcohol
- b. Smoking cigarettes
- c. Using other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)
- d. Using marijuana or other drugs

Like it a lot	Like it some	Dislike it some	Dislike it a lot
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

69. Has he ever smoked cigarettes in his life?

- ☐ Yes
- ☐ No
- ☐ Don't know

70. About how many cigarettes do you think he now smokes in a day?

- ☐ None
- ☐ Some but less than 1 cigarette a day
- ☐ About 1 cigarette to almost half a pack a day
- ☐ About half a pack to a pack a day
- ☐ More than a pack a day
- ☐ Don't know

71. Has he ever had a drink of alcohol in his life?

- ☐ Yes
- ☐ No
- ☐ Don't know

72. About how many days a week do you think he drinks now?

- ☐ None
- ☐ 1-2 days
- ☐ 3-4 days
- ☐ 5-7 days
- ☐ Don't know

These next questions are about your family.



73. How many brothers and sisters do you have (count all your brothers and sisters including your stepbrothers and stepsisters)?

- ☐ None ☐ 3
☐ 1 ☐ 4 or more
☐ 2

74. How many of your brothers and sisters do each of the following at least once a month?

- a. Drink alcohol
 b. Smoke cigarettes
 c. Use other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)
 d. Smoke marijuana
 e. Use other drugs (cocaine, LSD, heroin, Ecstasy, or other)

None	1	2	3	4 or more	I don't have brothers or sisters
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

75. How many of your brothers and sisters would dislike it if you did each of the following?

- a. Drank alcohol
 b. Smoked cigarettes
 c. Used other kinds of tobacco (chewing tobacco, snuff, cigars, etc.)
 d. Smoked marijuana
 e. Used other drugs (cocaine, LSD, heroin, Ecstasy, or other)

None	1	2	3	4 or more	I don't have brothers or sisters
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

76. Think about your family life in the past 3 months. How strongly do you agree or disagree with each statement?

- a. We fight a lot in our family.
 b. Family members sometimes get so angry they throw things.
 c. Family members sometimes hit each other.

Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

77. During the past 3 months, which, if any of your parents, talked with you about...

- a. What you can or cannot do when it comes to drinking alcohol
 b. How they would punish you if you drank alcohol
 c. The bad things that can happen from drinking alcohol

 d. What you can or cannot do when it comes to smoking cigarettes
 e. How they would punish you if you smoked cigarettes
 f. The bad things that can happen from smoking cigarettes

 g. What you can or cannot do when it comes to using marijuana or other drugs
 h. How they would punish you if you used marijuana or other drugs
 i. The bad things that can happen from using marijuana or other drugs

Mother only	Father only	Both parents	Neither parent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next question is about the neighborhood you live in all or most of the time.



78. How strongly do you agree or disagree with the following statements about your neighborhood?

- a. People feel safe there.
- b. Most of the people there know each other.
- c. People socialize together there.
- d. People are afraid to come to my neighborhood.
- e. People sell illegal drugs in my neighborhood.
- f. Adults tell other parents if their child has done something bad.
- g. People there have violent arguments.
- h. Adults keep an eye on what teens are up to.
- i. Adults would be willing to break up a fight going on there.

Strongly agree	Agree somewhat	Neither	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The next questions ask for some background information.



79. How old are you?

- ☐ Younger than 10
- ☐ 10
- ☐ 11
- ☐ 12
- ☐ 13
- ☐ 14
- ☐ 15
- ☐ 16
- ☐ 17
- ☐ 18
- ☐ Older than 18

80. What year were you born?

- ☐ Before 1985
- ☐ 1985
- ☐ 1986
- ☐ 1987
- ☐ 1988
- ☐ 1989
- ☐ 1990
- ☐ 1991
- ☐ After 1991

81. What month is your birthday?

- ☐ January
- ☐ February
- ☐ March
- ☐ April
- ☐ May
- ☐ June
- ☐ July
- ☐ August
- ☐ September
- ☐ October
- ☐ November
- ☐ December

82. What day of the month is your birthday?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ 11
- ☐ 12
- ☐ 13
- ☐ 14
- ☐ 15
- ☐ 16
- ☐ 17
- ☐ 18
- ☐ 19
- ☐ 20
- ☐ 21
- ☐ 22
- ☐ 23
- ☐ 24
- ☐ 25
- ☐ 26
- ☐ 27
- ☐ 28
- ☐ 29
- ☐ 30
- ☐ 31

83. What is your sex?

- ☐ Female
- ☐ Male

84. Which of the following best describes you? Please mark only one circle.

- ☐ White
- ☐ Black or African-American
- ☐ Hispanic or Latino
- ☐ American Indian or Native American
- ☐ Asian or Pacific Islander
- ☐ Multiracial (mixed race)
- ☐ Other
- ☐ Don't know

85. Who do you live with most of the time?

- ☐ Mother and father ☐ Father only
☐ Mother and stepfather ☐ Stepmother only
☐ Stepmother and father ☐ Stepfather only
☐ Mother only ☐ Other

86. Have you ever had to repeat a grade in school?

- ☐ No
☐ Yes, one time
☐ Yes, two or more times

87. How important or unimportant are the following things to you?

- a. Finishing high school
 b. Going to college
 c. Having a happy family life
 d. Having a close group of friends
 e. Being popular

Very important	Somewhat important	Not very important	Not at all important
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The last questions are about your physical development.



88. How strongly do you agree or disagree with each of the following statements?

- a. Most of the time I am happy with the way I look.
 b. I am proud of my body.
 c. I feel strong and healthy.

Strongly agree	Agree somewhat	Disagree somewhat	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

89. Which of the following best describes your body hair growth? (Body hair means hair any place other than your head, such as under your arms.)

- ☐ Not yet started
☐ Barely started
☐ Definitely started
☐ Seems complete

90. Which best describes the changes in your skin, such as pimples?

- ☐ Not yet started
☐ Barely started
☐ Definitely started
☐ Seems complete

91. Which of the following best describes your growth in height (growth spurt)?

- ☐ Not yet started
☐ Barely started
☐ Definitely started
☐ Seems complete

92. Compared to most others your age and sex, do you think your physical development is:

- ☐ Much earlier
☐ Somewhat earlier
☐ About the same
☐ Somewhat later
☐ Much later

FOR BOYS ONLY



93. Which best describes the changes (deepening) in your voice?

- ☐ Not yet started
- ☐ Barely started
- ☐ Definitely started
- ☐ Seems complete

94. Which best describes the hair growth on your face?

- ☐ Not yet started
- ☐ Barely started
- ☐ Definitely started
- ☐ Seems complete

BOYS STOP HERE



FOR GIRLS ONLY



95. Which best describes the growth of your breasts?

- ☐ Not yet started
- ☐ Barely started
- ☐ Definitely started
- ☐ Seems complete

96. Have you ever had a menstrual period?

- ☐ Yes
- ☐ No

→ **STOP HERE**

97. How old were you when you had your very first menstrual period?

- | | | |
|--------------------------------------|--------------------------|-------------------------------------|
| <input type="radio"/> Younger than 9 | <input type="radio"/> 11 | <input type="radio"/> 14 |
| <input type="radio"/> 9 | <input type="radio"/> 12 | <input type="radio"/> 15 |
| <input type="radio"/> 10 | <input type="radio"/> 13 | <input type="radio"/> Older than 15 |

**Thank you very much
for answering these questions.**



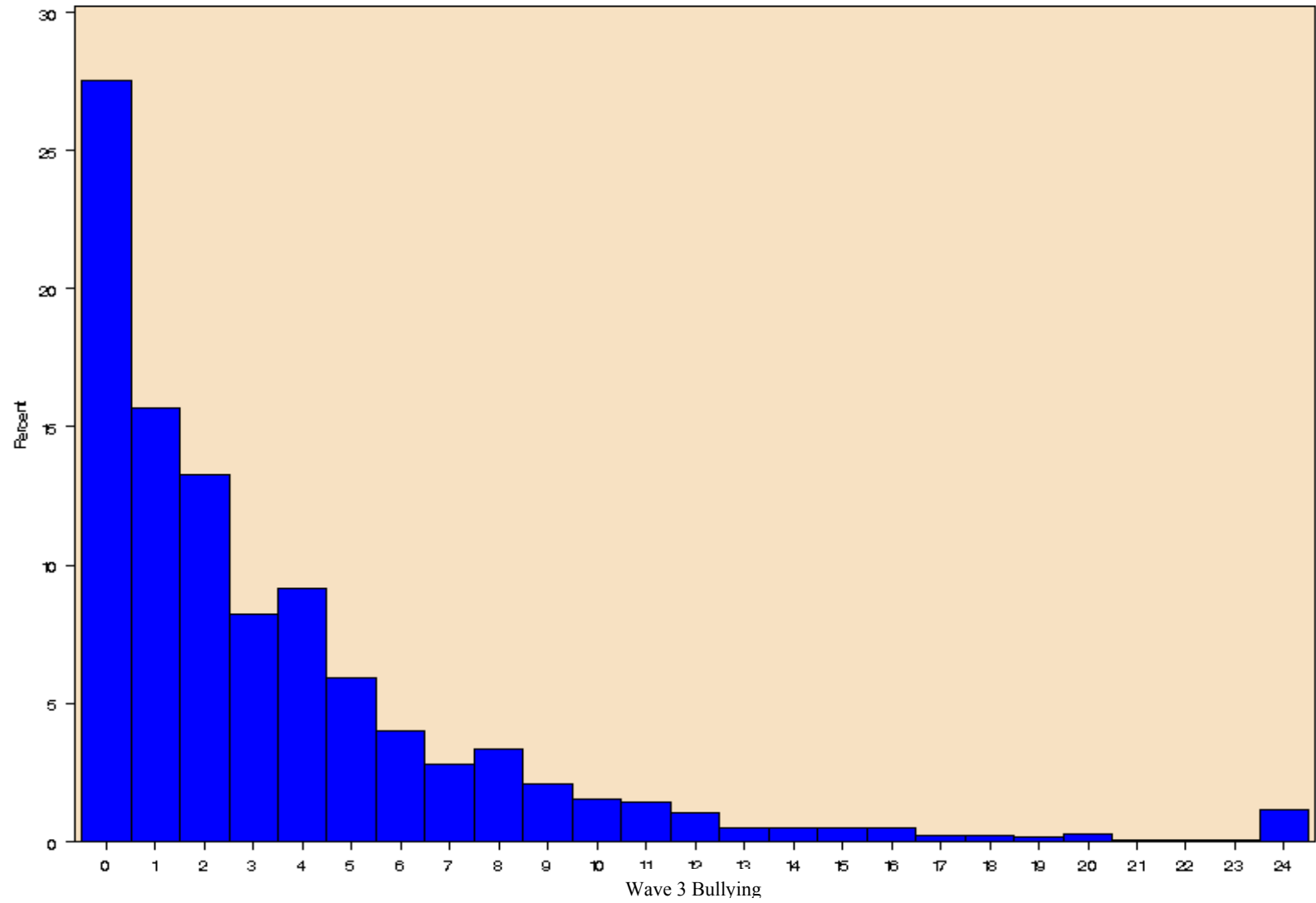
Appendix III

Comparison of Bivariate Correlations for Study Variables
with Outcome Bullying Variable (Wave 3 Bully) and
Bullying Variable with Cut-Point Increased from 2 to 3
(Wave 3 Bully – Revised).

	Wave 3 Bully	<i>Wave 3 bully - revised</i>
Wave 1 Bully		
Wave 3 Bully	1.0000	
<i>Wave 3 bully - revised</i>	.90	<i>1.000</i>
Age	0.0283	<i>0.048*</i>
Ethnicity	-0.0236	<i>-0.007</i>
Gender	0.0305	<i>0.003</i>
SES	-0.0149	<i>-0.053*</i>
Family Norms	-0.1171***	<i>-0.143***</i>
Family Bonds	-0.0337	<i>-0.053*</i>
Peer Norms	0.0898***	<i>0.092***</i>
Peer Bonds	0.0185	<i>0.018</i>
School Norms	-0.1460***	<i>-0.139***</i>
School Bonds	-0.0798**	<i>-0.1***</i>
Bond to Bully Peers	0.0852***	<i>0.092***</i>

Appendix IV

Distribution of Continuous Bullying Measure



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