SOCIAL CONNECTIONS, TRAJECTORIES OF HOPELESSNESS AND SERIOUS VIOLENCE IN IMPOVERISHED URBAN YOUTH

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Abstract

Adolescence is a time of immense change and transition. During adolescence, a hopeful sense for the future can facilitate positive development, support health-enhancing behaviors, and promote a successful transition into adulthood. The purpose of this study was to develop and test a longitudinal model linking positive social connections (connectedness to mother, neighborhood connectedness) and violence involvement during early adolescence with serious violence involvement (violence with a weapon) during later adolescence via trajectories of hopelessness during middle adolescence. The proposed hope/hopelessness trajectory model is influenced by ecological theory of development and research on adolescent development, and focuses on individual development in context. Propositions in the longitudinal model were evaluated.

Relationships between social connections, hopelessness trajectories and violent behaviors were examined in a sample of 723 adolescents who participated in 5 or more years of the Mobile Youth Survey (MYS). The MYS is a multiple cohort study involving 10-19 year old youth (mostly African American) from impoverished neighborhoods in Mobile and Pritchard, Alabama. This secondary analysis used general growth mixture modeling with multiple group analysis to (a) estimate parameters of hopelessness trajectories during middle adolescence, (b) identify latent classes based on developmental patterns of hopelessness, (c) identify precursors of middle adolescence hopelessness trajectories in early adolescent social connections and violence experiences, and (d) assess the impact of hopelessness trajectories on violence with weapon during later adolescence. This analysis was completed simultaneously for boys and girls.

A *low hopelessness class* and an *increasingly hopeless class* were identified for both boys and girls. The influence of early adolescent predictors varied based on gender and latent hopelessness trajectory class. Overall, connection to mother was associated with decreased levels of hopelessness, particularly for *increasingly hopeless girls* and *low hopeless boys*. For *increasingly hopeless girls*, fighting during early adolescence was associated with lower initial levels of hopelessness but also with increasing hopelessness over time. Gender differences were apparent for violence with a weapon during later adolescence. *Increasingly hopeless girls* participated in more serious violence during later adolescence than *low hopelessness girls*. Regardless of latent class, more boys than girls participated in serious violence during later adolescence.

Trajectories of hopelessness during middle adolescence influenced participation in violence with a weapon at a critical transition point in life. Identifying trajectories of hopelessness and examining the role of hopelessness trajectories in the relationship between social connectedness and violence involvement will serve as foundation for innovative, developmentally based nursing interventions designed to prevent youth violence among impoverished, at-risk youth.

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LIST OF SYMBOLS AND TERMS

Observed and Latent Variables

y	Continuous outcome variables; middle adolescent hopelessness
x	Background variables; covariates
x_{mother}	Background variable; early adolescent social connectedness to mother
$x_{neighborhood}$	Background variable; early adolescent social connectedness (positive) to neighborhood
x_{fight}	Background variable; early adolescent physical fighting
x_{weapon}	Background variable; early adolescent violence with a weapon
cg	Background categorical variable; known group; gender
c	Latent class variable; heterogeneity of change in hopelessness over middle adolescence
u	Distal binary outcome variable; later adolescent violence with a weapon

Subscripts and Counters

i	Subscript for individual persons
t	Subscript for occasions; middle adolescent ages 13, 14, 15, 16
j	Subscript for known group (0 = female; 1 = male)
p	Number of occasions for repeated measures (1, 2, 3 or 4)
m	Number of growth parameters (intercept, slope, quadratic coefficient)
K	Number of latent classes
q	Number of covariates
r	Number of binary outcome variables
z	Number of free (estimated) model parameters

Vectors and Matrices of Parameters

Λ_y	Fixed design matrix (p x m) linking time to growth parameters for $\mathbf{y_i}$
η	Vector of m growth parameters
B	Matrix ([m+q] x [m+q]) of regression coefficients of η and x on η and x
Γ_c	Matrix ([K – 1] x q) of regression weights for x predicting logit π_i
Γ_k	Matrix ([K – 1] x q) of regression weights for x predicting η_k
A	Matrix of (m x K) class-specific growth parameters means
v_k	Class-specific intercepts for latent trajectories
α	Vector of m means for individual growth parameters
ε_t	Residuals for y at each time; error at the individual level
ζ	Residuals for growth parameters
θ	Variance-covariance matrix for the ε_t
Ψ	Variance-covariance matrix of the growth parameters
τ	Thresholds for u influenced by c

CHAPTER I

THE RESEARCH PROBLEM

Background and Significance

Adolescence is a time of immense physical, biological, cognitive, and psychosocial development. These changes are critical to successful transition from childhood to adulthood. During adolescence, a hopeful sense for the future can facilitate positive development and successful transition into adulthood. Without hope for the future, adolescents are less likely to be concerned with engaging in behaviors such as fighting and weapon use that may adversely affect their future (Bolland, McCallum, Lian, Bailey, & Rowan, 2001; Bolland, 2003). Hope is dynamic, influenced by cognitive, psychological, physiological, social and environmental factors during childhood and adolescence. Few studies to date have assessed individual differences in trajectories of hopelessness during adolescence. Exposure to environmental factors such as violence and poverty has been shown to have a powerful negative impact on young people's sense of hope (Lorion & Saltzman, 1993; McGee, 1984). Positive social connections such as connection to family and neighborhood connectedness can buffer and protect even in stressful environments. *How* social and environmental factors influence developmental trajectories of hopelessness during adolescence remains unclear.

Youth Violence

Youth violence is a devastating social and public health problem. According to the Centers for Disease Control and Prevention (CDC) (2008b), 5,686 young people,

between the ages of 10 and 24 years were murdered in 2005. Of these, 82% were killed with firearms (CDCb). In 2006, over 720,000 10-24 year olds were treated in emergency rooms for injuries due to violence (CDCb). Members of specific demographic groups, especially males and African Americans, are at particular risk for involvement in serious forms of violence and related negative health and social sequelae (e.g., homicide, incarceration) (CDCb; Herrenkohl et al., 2000). Homicide is the leading cause of death among African American youth (CDCb). Males aged 15 to 19 are 6.2 times more likely to die from homicide than same-age females, and murder rates for African American males aged 10 to 24 are 3 to 16 times higher than rates for other groups of males (National Adolescent Health Information Center, 2007).

Violent behaviors that do not involve the healthcare or criminal justice systems are not routinely tallied, and are therefore more difficult to quantify. Nationwide, 35.5% of all high school students reported having been in a physical fight in the past year (CDCa, 2008). For boys and girls, being injured in a physical fight was higher among 9th grade students than older students (Eaton et al., 2008). About 18% of all high school students reported carrying a weapon in the past 30 days (CDCa). Nationally, weapon carrying was higher among 9th grade students than 11th or 12th grade students, and higher among 9th and 10th grade males than 12th grade males (Eaton et al.). By any account, violence is all too common among young people.

A history of violence involvement has been identified as a potent risk factor for ongoing violence involvement (Borowsky, Widome, & Resnick, 2008; Dahlberg & Potter; 2001; Herrenkohl et al., 2000). For some young people, violent behavior can

progress from physical fighting during childhood and early adolescence to more lethal forms of violence such as violence with a weapon during later adolescence.

Social Connectedness and Violence

The 2001 Surgeon General's Report on Youth Violence urged practitioners and policy makers to adopt evidence-based approaches to prevent youth violence, including programs that employ a dual strategy of addressing known risk factors for violence while simultaneously building protective factors that buffer adolescents from violence involvement (Department of Health and Human Services, 2001). While high levels of connectedness to family and community, developed during childhood and early adolescence, may have been shown to act as protective factors that buffer youth from violence involvement (Resnick, Ireland, & Borowsky, 2004; Widome, Sieving, Harpin, & Hearst, 2008), explanatory mechanisms linking these forms of social connectedness to later non-participation in violence are unknown.

Hopelessness

Hopelessness has been identified as a risk factor for youth violence involvement (Bolland, 2003; DuRant, Cadenhead, Pendergrast, & Slavens, 1994). Without hope, adolescents are less likely to be motivated to avoid circumstances and behaviors that can lead to involvement in serious forms of violence. Previous cross-sectional and longitudinal research has shown that hopelessness has an inverse relationship with parental and community connectedness (Bolland, Lian, & Formichella, 2005) and a positive relationship with violence involvement (Bolland et al., 2005; DuRant et al., 1994).

Adolescents are complex and dynamic beings influenced by their own development, their interaction with their social and environmental contexts, and their past experiences. Hope is also viewed as dynamic and influenced by multiple factors throughout childhood and adolescence. Hope during adolescence can be defined as a trajectory, or an individual's development in the domain of hope (Henly 2007; Raudenbush, 2001). Well defined individual trajectories of hope can be statistically compared and summarized. These individual parameters can be summarized and the population average can be examined; or these individual trajectories can be examined for the presence of latent classes, groups of adolescents whose levels of hope change in similar, unobserved ways.

Many factors can influence an individual's trajectory of hopelessness during adolescence including cognitive, psychological, physiological, social, and environmental factors (Erickson, 1968; Erickson, 1964; Lorion & Saltzman, 1993; Lynch, 1965; McGee, 1984; Piaget, 1932; Stotland, 1969). Because of differences between persons and their environmental contexts, individuals may exhibit varying trajectories of hopelessness during adolescence. For some, levels of hopelessness may be relatively static during adolescence, beginning low and remaining low as they reach later adolescence or beginning high and remaining high throughout adolescence. Other adolescents may begin adolescence with low hopelessness and exhibit increasing levels of hopelessness with age. Other adolescents may begin with high levels of hopelessness that become less with age. For still others, a sense of hopelessness may fluctuate tremendously throughout adolescence.

Little is known about the development of hopelessness during middle adolescence, whether variations on a common developmental course exist, whether hopelessness trajectories during middle adolescence affect the link between violent behaviors and social connectedness during early adolescence and serious violent behaviors during late adolescence, and whether these relationships are similar among boys and girls. A longitudinal approach that examines people and variables on multiple occasions in context during adolescence is necessary to explore these issues (Cairns, Elder, & Costello, 1996; Nesselroade, 1991)

While relationships between social connections and violence as well as hopelessness and violence have been explored, little is known about the developmental course of hopelessness, or links between hopelessness and violence over time for young people. Understanding links between social connections and violence during early adolescence, hopelessness during middle adolescence, and serious violence involvement in later adolescence will advance understanding of when, where and how to intervene to prevent violence and support young people's healthy development.

Significance of the Problem to Adolescent Nursing

Public health nursing has long understood that social and environmental factors have an influence on the health and well-being of individuals (Stanhope & Lancaster, 2004). Using knowledge of health promotion and prevention of disease and injury, public health nursing promotes and preserves the health of populations (APHA, 1996; Ervin, 2004). Youth violence is an important public health nursing issue because it impacts not only the health and well-being of the individual, but also the population as a whole. Seen

as an important public health issue, youth violence has been identified as a one of the Healthy People 2010 focus areas. Public health nursing activities around this important Health People 2010 area include defining the problem, identifying risk and protective factors, and developing and testing prevention principles and strategies (Ervin).

This study contributes to the continued understanding of the problem of youth violence. Risk and protective factors will be explored by examining social connections, hopelessness and violence among primarily African American youth living in impoverished urban neighborhoods. This study elucidates the role that hopelessness trajectories play in the relationships between social connectedness during early adolescence and serious violence involvement during later adolescence. Understanding trajectories of hopelessness and the relationship between hopelessness trajectories and involvement in serious violence can inform the development of innovative public health nursing interventions designed to prevent or reduce youth violence.

Statement of the Study Purpose

This study is a secondary analysis of data from the Mobile Youth Survey (Appendix A) (Bolland et al., 2005; Bolland et al., 2007). The Mobile Youth Survey (MYS) is a multiple cohort study designed to understand the development of risk behaviors among youth living in extreme poverty and to examine how contextual factors (such as families, schools and neighborhoods) affect the etiology of risk behaviors. Over 7,000 African American youth aged 10 – 19 years living in poor, urban neighborhoods in Mobile and Prichard, Alabama have taken part in the MYS since 1998.

The purpose of this study was to develop and test a longitudinal model linking social connectedness (connectedness to mother, neighborhood connectedness) and violence involvement during early adolescence with serious violence involvement (weapon-related violence) during later adolescence via trajectories of hopelessness during middle adolescence. General growth mixture modeling for multiple groups (boys and girls) was used (Muthén & Muthén, 1998-2007). The specific aims of this study were twofold. The first aim focused on the within period description of social connections and violence involvement during early adolescence, hopelessness over time during middle adolescence, and violence with a weapon during later adolescence for boys and girls. Aim 1 concludes with preliminary across period associations. The second aim was to link social connections and violence in early adolescence and violence with a weapon in later adolescence via hopelessness trajectories during middle adolescence to describe individual development using formal statistical models. Statistical models were hypothesized, estimated, compared, and the best model selected. Parameters of hopelessness trajectories during middle adolescence were estimated for boys and girls, and latent classes based on developmental patterns of hopelessness were identified as part of the analysis.

Findings from this study will fill a critical gap in scientific understanding of the roots of youth violence by assessing change at the individual level. The project explicitly links theory about change in hopelessness, longitudinal study design and a sophisticated repeated measures approach to statistical analysis (Collins, 2006). By creating a model that incorporates social connections, hopelessness and violent involvement, this study

moves beyond prediction to an explanatory model for the outcome of serious violence. Understanding trajectories of hopelessness, identifying latent classes of hopelessness trajectories, and examining the role of hopelessness trajectories in the relationship between social connectedness and violence involvement will serve as foundation for innovative, developmentally based nursing interventions designed to prevent youth violence among impoverished, at-risk youth.

CHAPTER II

REVIEW OF THE LITERATURE

Adolescence is an important time of change and transition. It is the time between childhood and adulthood; a time to acquire the skills needed to function as a productive adult. Young people involved in serious violence during adolescence are at increased risk of morbidity and mortality, foreclosing the possibility of becoming contributing members of society. Previous research has identified an array of factors that increase risk for violence involvement during adolescence and other protective factors that appear to buffer young people from involvement in violence. Viewed through an ecological lens, these risk and protective factors can be characterized as individual factors and factors within the larger social and environmental contexts. The focus of the current study is on relationships between risk and protective factors including violence involvement, connection to mother and community during early adolescence, hopelessness during middle adolescence, and weapon-related violence during later adolescence.

This chapter begins with an overview of adolescent development and ecological theory, the theoretical underpinnings for this study. The chapter proceeds with a review of empirical literature on adolescent violence, particularly weapon-related violence, hope and hopelessness during adolescence, and relationships between pro-social connections and adolescent violence involvement. Each section includes consideration of issues related to race, gender, and social class.

Theoretical Underpinnings

Adolescent Development

Adolescence is a time of immense physical, cognitive and psychosocial development (Neinstein, Juliani, & Shapiro, 1996). Three distinct phases are recognized: early (approximately age 10-14), middle (approximately age 15-17), and late (approximately age 18-21) adolescence. Early adolescence involves the transition from childhood into adolescence, while late adolescence is a time of transition into adulthood.

Physical development during adolescence is characterized by the onset of puberty, with changes in pubertal hormones, height, weight, body composition and sexual development. Pubertal changes are trigger by hormones during early adolescence, with changes in physical characteristics continuing into late adolescence. Adolescence is the period of the most intense and extensive biological changes since birth. Pubertal changes are also linked to changes in emotional and psychosocial development.

Cognitively, as individuals mature from childhood to adolescence, they acquire skills that facilitate the consideration of multiple dimensions of time (Piaget, 1975). Young children do not have a developed understanding of time, whereas adolescents are capable of abstract thinking and self-reflection, which enables thinking about multiple dimensions of time (Keating, 1990; Wessman & Gorman, 1977). The development of a nuanced sense of past, present and future continues through adolescence and probably consolidates with the development of formal operational thinking (Mclnerney, 2004)

Within cognition, the development of identity and time perspective during adolescence are important for the ability to think about the future (Greene, 1986; Lessing,

1972; Nurmi, 1991). Developmentally, adolescents are in the process of forming coherent identity that requires the integration of past, present, and future selves (Erickson, 1968; Erickson, 1964; Marcia, 1980). As part of identity formation, adolescents begin to make decisions about education, occupation, and social relationships that have considerable implications for adult life (McCabe & Barnett, 2000); all decisions that are influenced by their time perspective (Nurmi, 1993; Nuttin, 1985). Given their advanced cognitive abilities, adolescents are capable of thinking about the multiple dimensions of time and are able to examine their future and hope for the future.

Adolescence is also a time of spiritual development. Developmentalists view spirituality as a process that begins in childhood and continues through adolescence and into adulthood (Roehkepartain, King, Wagener & Benson, 2006). Erikson (1964) believed that spiritual development was linked to hope and that hopefulness over time transforms into mature faith, allowing one to believe without evidence that the universe is trustworthy. While spirituality is often viewed as an individual experience, there is a recognition of the role that context plays in the development of a spiritual self (Brofenbrenner, 1979; Lerner, 2002). For example, research in the African American community found that interpersonal relationships play a vital role in cultivating and shaping the spiritual development of adolescents (Roehkepartain, King, Wagener & Benson, 2006).

Normative adolescent psychosocial development includes three sets of tasks that serve as the foundation for understanding how protective factors operate in helping adolescents to avoid harm and promote health and well-being (Neinstein et al., 1996;

Santrock, 1998). “Defining who I am” focuses on clarification of personal values, attitudes, knowledge, and behaviors and involves defining a clear sense of identity, a positive sense of self worth, and control over one’s life. “Finding my place in the world” focuses on finding or creating a fit with the environment. It involves forming relationships with others, using available support systems, finding a valued place in their world, and finding ways to be useful to others. Finally, tasks associated with “achieving my personal goals, hopes and aspirations” involves mastering social skills, developing advanced lifelong learning habits, continuing to develop a sense of curiosity and exploration, seeing a promising future with real opportunities, acquiring skills to participate in the economy and establishing a respect for diversity. A sense of hopelessness during this time of important cognitive and psychosocial development may limit mastery these important developmental tasks. Conversely, difficulty achieving these tasks could also lead to increases in hopelessness.

Context and Development

Development is influenced by the context in which a young person lives. For a young person, context includes family, school, neighborhood and larger society. Neighborhoods play an important role in adolescent development and influences behavior choices that can affect their health and well-being. The context in which a young person lives can influence their values, their expectations for normative behaviors and their expectations for the future. Both positive and negative features of neighborhoods may impact sense of hopelessness and related behaviors.

Neighborhoods may offer many features that promote the healthy development of young people. Positive features include neighborhoods that have high levels of community cohesion, where neighbors are willing to intervene on behalf of others in pro-social ways (Sampson & Raudenbush, 1997). Positive neighborhoods offer young people the opportunity to interact with caring adults who reinforce pro-social behaviors (Resnick et al., 2004; Resnick, Bearman, & Blum, 1997). Adolescents may also develop positive connections to their neighborhood when there are opportunities to contribute in meaningful ways (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Kegler et al., 2005; Widome et al., 2008).

A disadvantaged neighborhood is a neighborhood that lacks the basic resources or conditions believed to be necessary for an equal position in society. In addition to lacking economic resources, disadvantaged neighborhoods can also lack resources such as access to health care, quality education and positive neighborhood features that promote healthy development of young people. Both boys and girls living in disadvantaged neighborhoods are exposed to a greater number of risk factors, including family and community violence than their peers in more advantaged neighborhoods. Disadvantaged neighborhoods, compared to more advantaged neighborhoods have a higher prevalence of risk for delinquency and a lower prevalence of positive promotive factors. Young people who live in disadvantaged neighborhoods are also exposed to and witness more community violence. Girls are thought to have less exposure to community violence than boys (Kroneman, Loeber, & Hipwell, 2004).

The influence of neighborhood on development is reciprocal (Bronfenbrenner, 1979). For example a young person may encounter a change in neighborhood environment (e.g., the opening of a new after-school youth center) which, in turn, is affected by the young person's actions (e.g., attending the center). The young person may feel an increased sense of caring by his/her community and, by participating in the program, may be less inclined to participate in delinquent activities in his/her community. In turn, this may be recognized by community officials making the case for continued public funding of the center.

Ecological Theory of Development

Bronfenbrenner's ecological theory of human development informs the conceptual framework for the proposed study. Bronfenbrenner's theory (1979, 2005) (Figure 1) emphasizes three domains: (a) the context in which development is taking place; (b) the personal characteristics (biological and psychological) of the individual; and (c) the process, or interactions between the individual and the context through which their development occurs. The microsystem is the set of roles and relationships in settings directly experienced by the adolescent (e.g., home). The mesosystem is the connection between microsystems directly experienced by the adolescent (e.g., the links between the home environment and school). An adolescent is also influenced by indirect connections of family members, peers, teachers and other community members with each other in arenas not directly experienced by them (the exosystem) and by prevailing cultural, political, and economic patterns (the macrosystem). These systems are embedded, interdependent and constantly interacting. The individual is at the center of

Bronfenbrenner's theory. Individual development is postulated to occur in interaction with the individual's environment as well as influenced by events that occur in settings in which the adolescent is not present. Risk and resilience arise through interactions across multiple levels. According to Brofenbrenner, perceived context, rather than "objective reality" influences adolescent behavior and development.

Time (the chronosystem) is an important component of context (Bronfenbrenner, 2005) because development involves changes in characteristics that are continual over both time and space. Inclusion of time permits identification of the impact of prior life experiences on subsequent development. Whether normative (e.g., puberty, high school entry) or non-normative (e.g., death of a friend of family member, divorce, household move), changes within the individual and the external environment occur throughout the life span and can serve as the catalysts for developmental change.

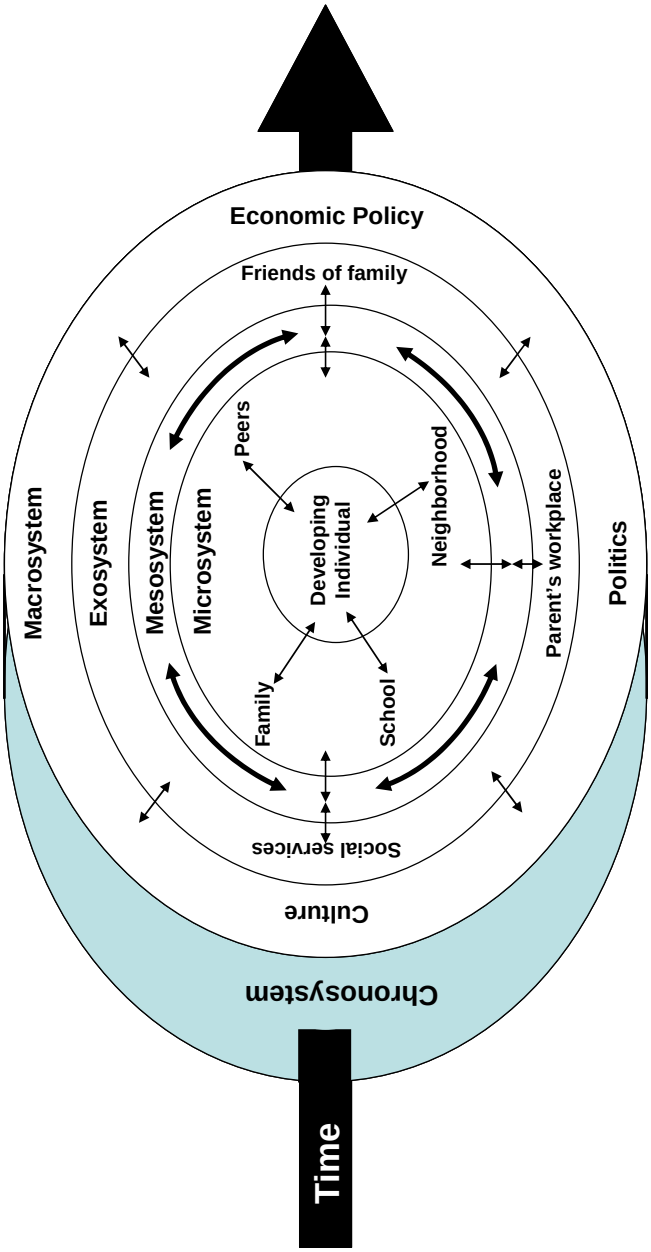

Figure 1. Bronfenbrenner's Ecology of Human Development

The hope/hopelessness trajectory model guiding this study, shown in Figure 2, implements current thought on analyzing development and change, adding time into the ecology of human development and recognizing the dynamic nature of hopelessness, its impact and outcomes. In the model, adolescents are assumed to be dynamic beings influenced by past experiences, development, and interactions with social and environmental contexts. The model portrays hopelessness as a dynamic variable, with patterns of change characterized by personal trajectories and proposes the existence of latent groups, or groups of adolescence who change in similar ways. Based on existing research (Pharris, Resnick, & Blum, 1997; Resnick et al., 2004; Widome et al., 2008), the model posits that core influences on an adolescent's trajectory of hopelessness include levels of connectedness to mother and neighborhood. The model posits that adolescents will demonstrate varying hopelessness trajectories (i.e., varying baseline levels of hopelessness in early adolescence with varying rates of change in hopelessness over time), related to differences in levels of connectedness to mother and neighborhood during early adolescence as well as differences in violence involvement during early adolescence. The model also posits that involvement in serious violence (i.e. fighting with a weapon) during later adolescence is predicted, in part, by an individual's trajectory of hopelessness during middle adolescence.

Five potential classes of trajectories of hopelessness were anticipated. For some, hopelessness would be relatively static, emerging low and remaining low throughout middle adolescence or beginning high and remaining high throughout middle adolescence. Others would enter middle adolescence with low levels of hopelessness that

increased with time. Still others would enter middle adolescence with high levels of hopelessness that decreased with time. For others, it was possible that hopelessness would fluctuate tremendously throughout middle adolescence.

The hope/hopelessness trajectory model was motivated by theory and supported by evidence from empirical studies (to follow). Theories and conceptual frameworks are important in nursing research as they provide direction and meaning (Polit & Beck, 2004). They provide a basis for applying statistical models. Theories and statistical models are in a reciprocal relationship. Theory guides and generates ideas for empirical testing, which in turn provides a foundation for advancing theories and conceptual frameworks. The proposed model provides a basis for predicting relationships between social connections, hopelessness and violent behaviors.

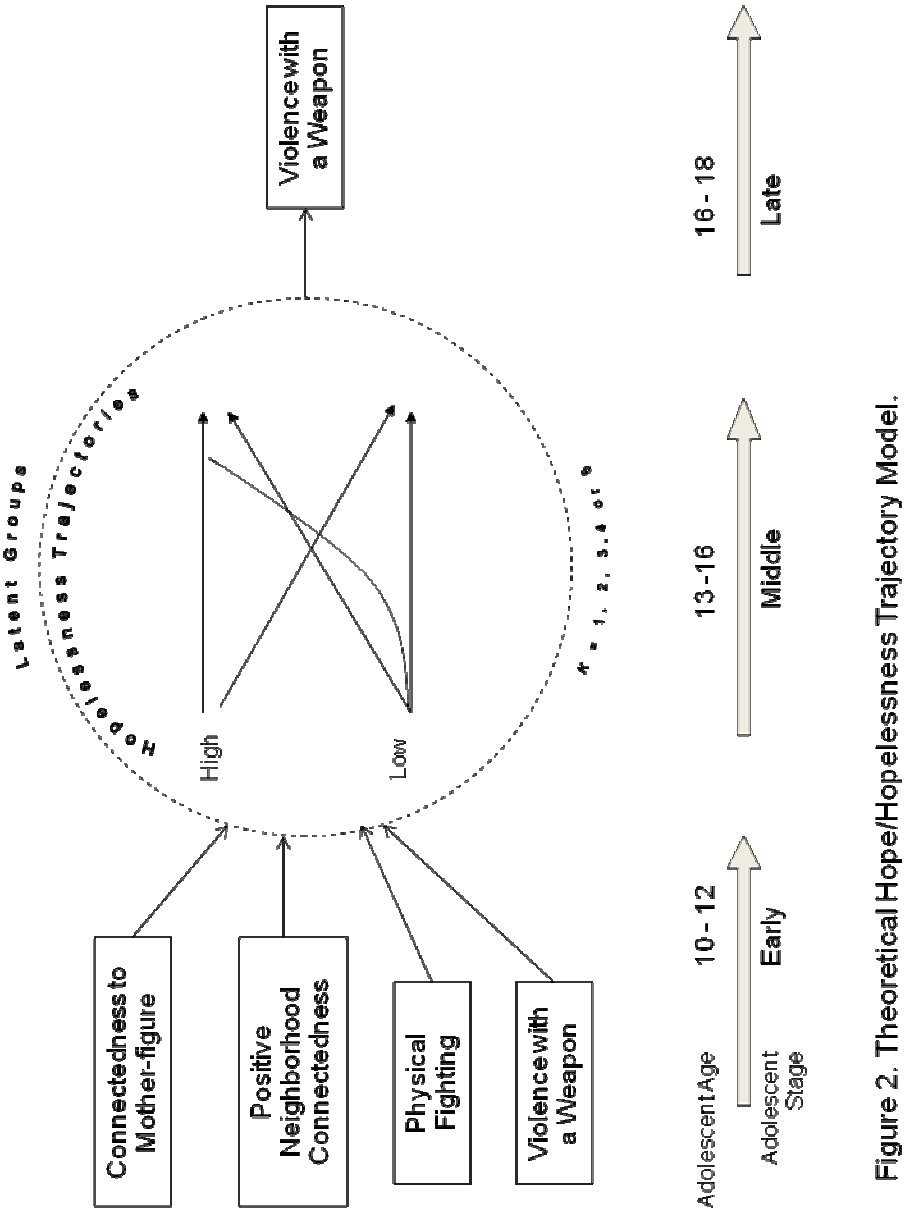

Figure 2. Theoretical Hope/Hopelessness Trajectory Model.

Youth Violence, Hope/Hopelessness, and Social Connections

Youth Violence

Violence is the " intentional use of physical force or power, threatened or actual, against oneself , another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation" (World Health Organization, 2009). Risk and protective factors for youth violence occur at individual, family, peer, and community levels, as noted in Table 1.

One of the strongest predictors of involvement in violence is a prior history of violent behavior (Borowsky et al., 2008; Herrenkohl et al., 2000). For some young people, violent behavior can progress from aggression and bullying to violence with a weapon including homicide. Previous research has identified a temporal path of aggression, bullying behaviors and physical fighting preceding more serious violent behaviors such as weapon carrying and weapon use, serious fight-related injuries and homicide (Dahlberg & Potter, 2001; Stueve, O'Donnell, & Link, 2001).

Violent behaviors tend to increase during the adolescent years, peaking at age 16 then decreasing after age 18 (Graham & Bowling, 1995). Several developmental influences are thought to contribute to this peak in violent behavior at this key time point during adolescence (Farrington, 1986). Physical changes during adolescence include increases in testosterone in particular for young men and changes in physical capabilities due to increase in physical size. Increasing independence and decreasing adult supervision during adolescence also increase opportunities for crime and violence.

Table 1. *Risk and Protective Factors for Violence Involvement.*

Level	Protective Factors	Risk Factors	Citations
Individual	Emotional health School achievement Spirituality Strong social skills Self-efficacy Hopefulness	Previous violent behavior: Aggresion, bullying, physical Fighting Violence victimization Hyperactivity Impulsivity Problem (antisocial) behavior Poor behavioral control Attention problems Peer rejection Learning problems Low intelligence Low school attainment School failure Substance use Hopelessness	Bolland, 2003 Bolland et al., 2001 Bolland et al., 2007 Krug et al., 2000 Resnick et al., 2004 Li et al., 2007 Dahlberg et al., 2001 Graves et al., 2007
Family	Parent/family caring/connectedness Parental monitoring and supervision Positive discipline methods Good parent-child communication Effective family problem solving skills Authoritative parenting style	Family violence Convicted parent by age 10 Antisocial parents Poor parental supervision/monitoring Parent aggression Parent/family conflict Absent father Father convicted of violence Low attachment to parent Low family cohesion Single parent, female-headed household Childhood abuse & neglect Household overcrowding Young/teen mother Parental substance abuse Low SES For boys: harsh parenting and child physical abuse	Nagin et al, 1997 Farmington, 1998 Krug et al., 2000 Resnick et al., 1997 Barber et al., 1992 Li et al., 2007 Dahlberg et al., 2001 Graves et al., 2007
Peer		Delinquent friends Involvement is antisocial groups	Hawkins, 1998
Neighborhood/ Community	School connectedness Connected to an adult in the community Neighborhood safety	Low SES/Poverty Living in high crime/bad neighborhood Neighborhood violence Availability/access to firearms Culture and history of violence Media violence	Herrenkohl et al., 2000 Krug et al., 2000 Sloan et al., 1988 Resnick et al., 1997 Widome et al., 2008 Li et al., 2007 Dahlberg et al., 2001 Graves et al., 2007

The importance of social influences through peer networks increases during adolescence. Peers can either be pro-social or offer negative influences. Peer influences can be negative if they there is strong pressures to engage in risk behaviors such as fighting and weapon carrying. Associations with delinquent peers, and delinquent groups of peers, increases the risk of serious delinquency and involvement in criminal activity (Dahlberg & Potter, 2001). Adolescents who belong to delinquent peers groups may engage in delinquent acts (including violence) in pursuit of higher status in the group.

Over the past 20 years, rates of delinquency and violence have increased among adolescent females (US Department of Justice, Office of Juvenile Justice and Delinquency, 2008). By 2004, girls accounted for 30 percent of all juvenile arrests (OJJ). While many risk factors are similar for boys and girls, factors specifically for girls include depression, suicidality, a friend's suicide, history of sexual or physical abuse, and negative peer influences (Graves, 2007). While also relevant for boys, it has been suggested that violence in girls is a product of internalized feeling of emotional distress, including distress from previous physical and sexual abuse, that can no longer be withheld (Graves, 2007). Violence becomes a release of negative feelings and anger. Among low SES African American and Hispanic adolescents, Stueve and colleagues (2001) found that changes in attitudes supporting violence were more closely linked with changes in physical aggression among girls.

There is a strong link between poverty and violence, with violence being more prevalent within poor neighborhoods, regardless of race or ethnic makeup of the neighborhood (Kroneman et al., 2004; Valois, MacDonald, Fischer, & Wanzer Drane,

2002). The mechanisms linking poverty and violence include neighborhood exposure to violence through delinquent peers, gangs and a high presence of crime (Valois et al.). It is often difficult to separate issues of poverty and neighborhood exposure to violence. Youth living within disadvantaged neighborhoods may also experience fewer opportunities for positive relationships and pro-social role models (Brooks-Gunn, Duncan, & Aber, 1997).

Parents and family can offer risk or protection from neighborhood violence (Graves, 2007). Parents and family members play a role in how their adolescent interprets and responds to conditions in the neighborhood, including violence (Herrenkohl et al., 2000). Parent and family attitudes that are favorable to violence are a risk factor for youth violence (Herrenkohl et al., 2000). Herrenkohl and colleagues found that adolescents of parents who showed favorable attitudes toward violence were significantly more likely to engage in violence by age 18.

Likewise, neighborhood factors can offer risk or protection from violence involvement. Exposure to neighborhood and community violence is a risk factor for participation in violence (Herrenkohl et al., 2000; Valois et al., 2002). Peer delinquency, gang membership, and the presence of neighborhood adults involved in crime all contribute to increased exposure of violence and the consequences of violent behaviors.

A culture and history of violence in a community may also have an important effect on the rate of violence and attitudes towards violence in young people (Borowsky et al., 2008; Flannery, Vazsonyi, & Waldman, 2007). Residents of a defined geographic space (community) are likely to share the same attitudes, beliefs, and behaviors and adopt

and adhere to a common way of doing things (Gephart, 1997; Sampson & Morenoff, 1997). If the attitudes and values of the community support violent behavior and encourage violence as an acceptable way to resolve conflict, young people may view violence as the norm.

Hope and Hopelessness

Definitions. Hope is the "anticipation of a future which is good, based on mutuality, a sense of personal competence, coping ability, psychological well-being, purpose and meaning in life, and a sense of the possible" (Miller & Powers, 1988). It reflects a belief that a personal tomorrow exists (Hinds, 1984). An adolescent who possesses a comforting, life-sustaining belief that a personal and positive future exists is hopeful. In contrast, an adolescent who possesses negative expectancies toward oneself and the future, expectations that highly desired outcomes will not occur or that negative ones will occur, and that nothing will change things for the better is hopeless (Hinds; Joiner & Wagner, 1995).

Correlates. For adolescents, higher levels of hope have been associated with scholastic achievement, social acceptance, feelings of self-worth, and overall psychological well-being (Gilman, Dooley, & Florell, 2006; Miller & Powers, 1988; Snyder, Hoza, Pelham, & Rapoff, 1997; Valle, Huebner, & Suldo, 2004). Hope is positively associated with engaging in self-care behaviors (Canty-Mitchell, 2001). In contrast, hopelessness has been associated with depression, school problems and risk behaviors including engaging in violence, substance abuse, risky sexual behaviors and

accidental injury (Bolland, 2003; Kashani, Reid, & Rosenberg, 1989; Spirito, Williams, Stark, & Hart, 1988).

Development of during childhood and adolescence. Human development is a continuous process with the past influencing the future. Many of the individual factors that influence the development of hope have a basis in the mastery of developmental tasks during infancy and childhood. Hope has been identified as one of the earliest and most stable of the basic ego qualities and the positive outcome of the earliest stage of psychosocial development (trust and mistrust) (Erickson, 1964). If a child's emotional needs are met during the period in early childhood, affective states of goodness and hope emerge (Erickson). Conversely, when emotional needs are not met during early childhood, the roots of hopelessness form.

Underlying hope and hopelessness is the ability to conceptualize and believe in the future. It has been suggested that in order for an individual to experience hope or hopelessness, cognitive development must reach a certain level. Piaget (1932) proposed that the time perspective required for hopelessness cannot be experienced until at least the adolescent years. With the emergences of formal operational thinking, adolescents develop the capacity to assess probabilities and imagine their futures (Cameron, Desai, Bahador, & Dremel, 1977-78; Greene, 1986; Klineberg, 1967).

The roots of hope or hopelessness can be learned through the child's interaction with social and physical environments (Lynch, 1965; McGee, 1984; Piaget, 1932; Stotland, 1969). How children learn to think about themselves in relation to barriers they encounter is an important contributor to hope (Snyder et al., 1997). A nurturing

environment and the involvement of competent and supportive adults who assist children in negotiating barriers lead to hopefulness (McGee, 1984).

Environmental factors such as violence and poverty can inhibit the development of hope. Life within a chronically violent community is one in which trust and hope are not cultivated (Lorion & Saltzman, 1993). Children who grow up in violent environments may believe their only option is a life of violence and could feel hopeless.

Children who constantly witness violence may have a foreshortened sense of the future (Lorion & Saltzman, 1993). Children who have a limited sense of the future lack the fundamental components necessary for hope. Poverty may also negatively influence an adolescent's ability to think about the future, potentially affecting the developmental process and leading to feelings of hopelessness (Lorion & Saltzman, 1993). Without hope, adolescents are less likely to be concerned about poor choices that may adversely affect their future.

What is Social Connectedness?

Social connectedness refers to the relationships people have with others. Social connections include links to family members, as well as feelings of belonging with people within the school, community or neighborhood. For adolescents, this perceived caring and connectedness to others plays an important role in healthy development and offers protection from participating in risky behaviors (Resnick et al., 1997). This section reviews two types of social connection, connection to mother and neighborhood connectedness.

Relationships Between Social Connections and Youth Violence

Maternal connections. Parent and family caring and connectedness has shown to be protective against violence and other health risk behaviors (Resnick et al., 2004; Resnick et al., 1997). Adolescents who are more connected to their parents were less likely to commit weapon violence over time (Henrich, 2005). High quality parent-child relationships may protect urban male adolescents who have been exposed to violence from engaging in violent behaviors (Brookmeyer, Henrich, & Schwab-Stone, 2005; Gorman-Smith, Henry, & Tolan, 2004). In a study that assessed changes in hopelessness over time, warmth towards mother was significantly associated with decreased hopelessness (Bolland et al., 2005).

Positive, caring relationships with parents have shown to be protective factors against violence for youth (Resnick et al, 1997; Resnick et al., 2004). Parenting that is warm with positive communication can protect young people from violence. Conversely, ineffective parenting, family stress and conflict, and exposure to violence within the family all place young people at greater risk (Herrenkohl et al., 2000; Valois et al., 2002). Youth who have little interaction with or attachment to parents are at risk for delinquency and violence.

Neighborhood connections. Increasing evidence has pointed to the role that neighborhood cohesion and a sense of connectedness to one's neighborhood can play in the health and development of young people, especially disadvantaged youth (Ellen, Jennings, Meyers, Chung, & Taylor, 2004; Gold, Kennedy, Connell, & Kawachi, 2002; Leventhal & Brooks-Gunn, 2000; Wickrama & Bryant, 2003). In particular, evidence

points to relationships between neighborhood connection and violence involvement among urban youth from disadvantaged neighborhoods (Molnar, Cerda, Roberts, & Buka, 2008; Widome et al., 2008). Widome and colleagues found that youth with higher levels of intentions to contribute to their neighborhood reported less involvement in fighting and violence. Molnar and colleagues found that higher collective efficacy in neighborhoods was linked to less violence among young people ages 9 - 15 in neighborhoods. Higher collective efficacy has also been associated with less carrying of concealed firearms (Molnar, Miller, Azrael, & Buka, 2004)

However, evidence also suggests no relationship or a negative relationship between being connected to one's neighborhood and violent behavior (Caughy, O'Campo, & Muntaner, 2003; Wright & Fitzpatrick, 2006). Strong neighborhood connections may not always lead to positive outcomes, particularly if the collective neighborhood supports antisocial rather than pro-social norms (Caughy et al.). Adolescents who are strongly connected to individuals and neighborhoods that support violence are probably at greater risk of involvement in violence. Important to note, adolescents living in areas of concentrated poverty may have fewer sources of social support and their communities tend to be less cohesive (Brooks-Gunn et al., 1997).

Social Connectedness, Youth Violence and Hopelessness Trajectories

The Mobile Youth Survey (MYS) is a multiple cohort study designed to understand the development of risk behaviors among youth living in extreme poverty and to examine how contextual factors (such as families, schools and neighborhoods) affect the etiology of risk behaviors. Due to the temporal design and availability of variables of

interest, MYS offers a unique opportunity to explore the relationships between social connectedness, youth violence and hopelessness trajectories over time. Data from the MYS have been employed to explore the origins of hopelessness, associations between hopelessness and community connectedness, and link between hopelessness and health risk behaviors among youth from impoverished urban communities. Young people, particularly adolescent boys, participating in MYS have high levels of hopelessness (Bolland et al., 2007; Bolland et al., 2005; Bolland, 2003). Among 1999 MYS participants aged 10 – 18 years, 50% of males and 25% of females report moderate to severe feelings of hopelessness (Bolland, 2003). For MYS participants, life disruptions including change in mother figure, exposure to violence, traumatic stress and worry are risk factors for hopelessness. Social connections including maternal connectedness, neighborhood connectedness, and religiosity are protective against high levels of hopelessness (Bolland et al., 2005). Among MYS participants, high levels of hopelessness predict involvement in health risk behaviors including violence involvement, substance use, suicide and sexual risk behaviors (Bolland et al., 2007).

This study extends previous MYS analyses in three ways. *First*, social connectedness, hopelessness and violence involvement are included in a single model. This study brings together previously identified relationships - connectedness and hopelessness, and hopelessness and violent behavior - into a unified model. *Second*, individual development of hopelessness (or hope, when hopelessness is decreasing) is being modeled. This analysis allows differences in hopelessness between persons at each time point and differences within individuals across time points to be described, and the

identification of subgroups of youth who experience development of hopelessness in similar ways. *Third*, the theoretical basis explaining the social connections-violence link through hopelessness trajectories is proposed and then evaluated using a systematic, empirical model building process.

CHAPTER III

RESEARCH METHODS

This study, a secondary analysis of longitudinal data from the Mobile Youth Survey (MYS), examined relationships between the social connections to mother and neighborhood during early adolescence, hopelessness during middle adolescence, and violence with a weapon during later adolescence. MYS surveys have been administered yearly since 1998 to adolescents who reside in impoverished areas of Mobile and Prichard, AL. This chapter will include a discussion of the specific aims for this study; research design of the MYS and of this study; core study variables and their measurement; and the analysis plan for this study.

Specific Aims

The purpose of this study was to develop and test a longitudinal model linking social connectedness (connectedness to mother, positive neighborhood connectedness) and violence (fighting and violence with a weapon) during early adolescence with violence with a weapon during later adolescence via trajectories of hopelessness using growth mixture modeling.

The specific aims of this study were to:

1. Describe social connections and violence involvement during early adolescence, hopelessness during middle adolescence, and violence with a weapon during later adolescence for boys and girls.

2. Link social connections and violence during early adolescence and violence with a weapon during later adolescence via hopelessness trajectories during middle adolescence.

A key aspect of this aim was to estimate parameters of hopelessness trajectories during middle adolescence, and determine whether latent classes defined by developmental patterns of hopelessness could be justified on empirical and theoretical grounds.

Design

The aims explicitly incorporate temporality. A temporal design with multiple observations was necessary to address the study aims, as it is at the core of studying development and change (Collins, 2006; Nesselroade, 1991). To adequately study the dynamics of social connectedness, hopelessness trajectories, and violence involvement during adolescence, a longitudinal design with multiple data points on an individual during this time of rapid change and transition is necessary. Including multiple annual measurements increased the ability to capture changes related to development and assess for state verses trait changes. Data from the MYS were used for this study because the MYS survey included measures of hopelessness, connections to mother and neighborhood, and fighting and weapon use at all time points specified in the model (noted in Figure 3). For this study, ages of 10 – 12 years were considered as the early adolescent phase, ages 13 – 16 as the middle adolescent phase, and ages 16 – 18 as the later adolescence.

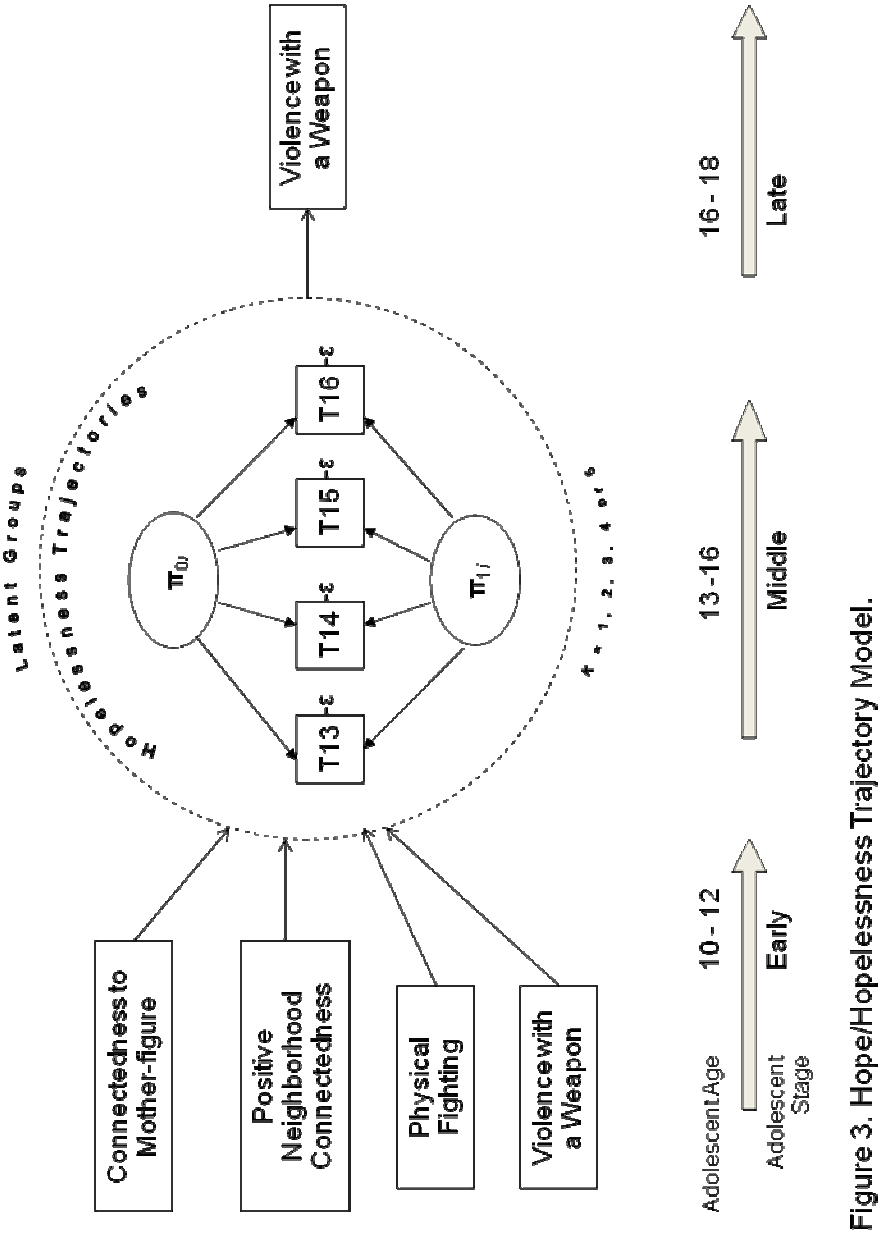

Figure 3. Hope/Hopelessness Trajectory Model.

Population and Sample

The target population was adolescents from 10 – 18 years of age, who had participated in the MYS multiple years between 1998 and 2006. The inclusion criteria for this study were male or female adolescents who: (a) completed annual MYS surveys five or more years between 1998 and 2006; and (b) completed at least one survey during early adolescence (ages 10-12); and (c) completed at least one survey during later adolescence (ages 16-18). Data from participants meeting the above criteria who missed one or more MYS annual survey was included in this study. Excluded from this study: (a) adolescents living outside the Mobile, Alabama Statistical Area; (b) adolescents who participated in MYS fewer than 5 years between 1998-2006; (c) MYS participants who did not complete a survey during early adolescence (ages 10-12); and (d) MYS participants who did not complete a survey during later adolescence (ages 16-18).

As noted in Figure 4, the sampling frame for this study included 7,694 adolescents who participated in MYS between 1998 and 2006. Of these, 1,387 adolescents completed five or more annual MYS surveys during this period. There were 1, 041 MYS participants who completed a survey for the first time between the ages of 10-12. Of these, 733 also completed a survey at least one year during later adolescence. As participant age was an important factor in the study, data were reviewed for age inconsistencies. Obvious age inconsistencies were corrected (e.g., reported ages 12, 13, 14, **12**, 16, 17; Second age 12 changed to age 15). A total of 3 adolescents were excluded from the sample due to unresolveable age inconsistencies. The final sample for this analysis consisted of 723 participants, including 370 boys and 353 girls.

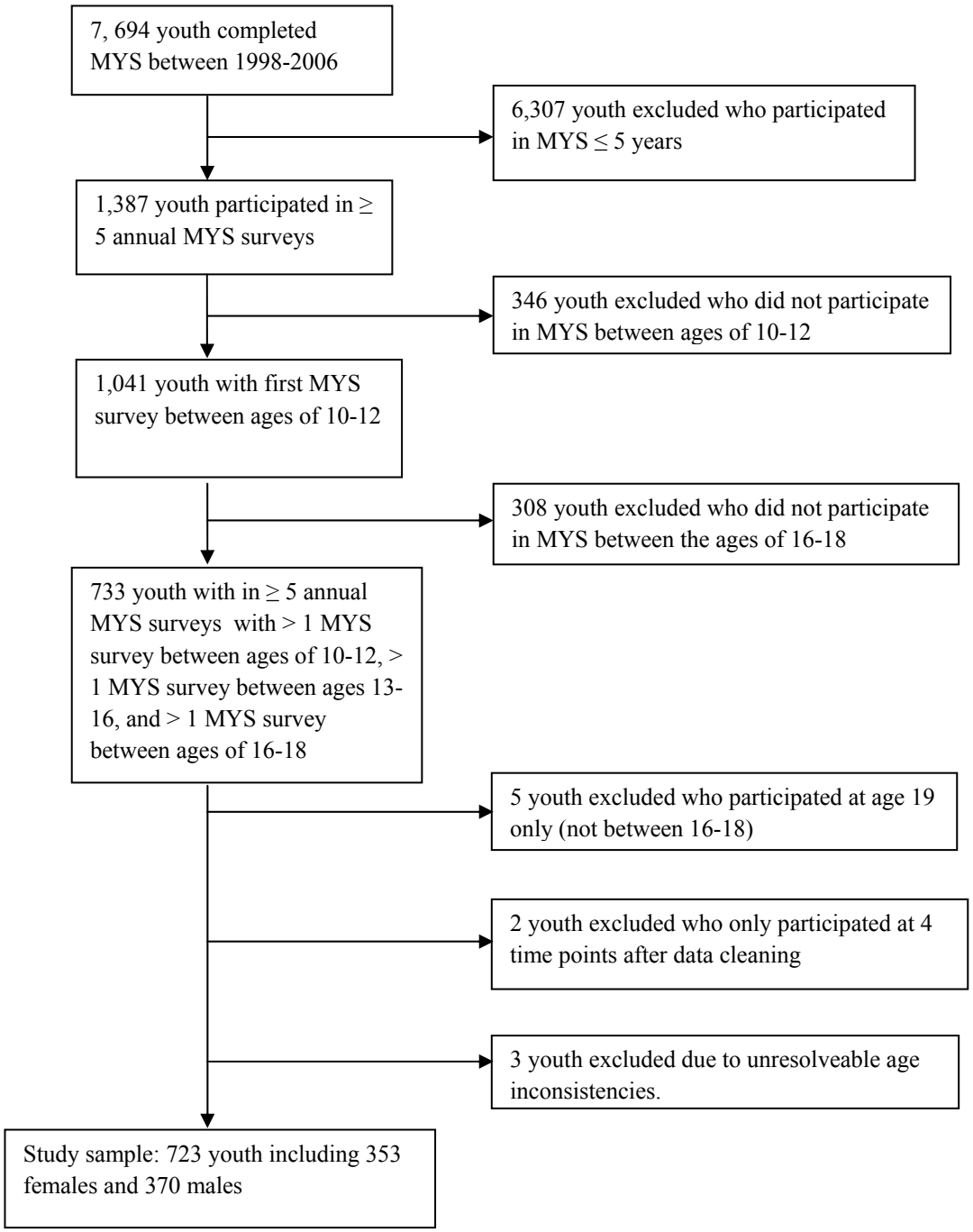

*Figure 4.*Sampling flowchart.

Variables and Measurement

Later Adolescent Violence with a Weapon

Violence has been defined as the " intentional use of physical force or power, threatened or actual, against oneself , another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation" (World Health Organization, 2009). The outcome of interest, violence with a weapon during later adolescence, was based on responses to four items measuring the overt violent behaviors of threatening someone with a weapon, brandishing a weapon on someone, and shooting or stabbing someone noted in Table 2. A dichotomous variable was created with 0 indicating a *no* response to all items and 1 indicating that the participant reported involvement in any of the items.

A single measure of violence with a weapon during late adolescence was desired for the study's statistical analyses. A large portion of participants (n = 601; 83% of sample) had violence measures available at age 16, the preferred measurement time point for violence with a weapon as it is the transition from middle to later adolescence. If data were not available at age 16, responses from age 17 (n = 101; 14%) or 18 (n = 21; 3%) were used (see Table 3).

Hopelessness

An adolescent who is hopeless possesses negative expectancies toward oneself and the future, expectations that highly desired outcomes will not occur or that negative ones will occur, and that nothing will change things for the better (Hinds, 1984; Joiner & Wagner, 1995). Hopelessness was measured using the Brief Hopelessness Scale (BHS)

detailed in Table 4. Based on Kazdin's Hopelessness Scale for Children (Kazdin, Rodgers, & Colbus, 1986), this 6-item BHS scale consisted of five items from the HSC and an additional item measuring expectations for living a long life (Bolland, McCallum, Lian, Bailey, & Rowan, 2001). All items had response options of *agree* = 1; *disagree* = 0. Responses to individual items were summed to obtain a total score that could range from 0 to 6. Higher scores indicated higher levels of hopelessness. BHS internal consistency reliability estimates ranged from α = .71-.75 in previous studies of MYS participants (Bolland et al., 2001; Bolland, 2003), with a five week test-retest reliability estimate of .62 (Bolland, 2003). For purposes of this study, BHS measures were derived from MYS surveys completed by participants between the ages of 13 – 16 years. With middle adolescent data from the current sample, internal consistency reliability estimates for the BHS ranged from α = .72-.80.

Social Connectedness

Social connectedness refers to the relationships people have with others. Social connectedness includes relationships with family members, as well as relationships with other's in one's community or neighborhood. This study included two types of social connectedness, connection to mother and neighborhood connectedness.

Connection to Mother

Connection to mother, a component of family connectedness is the closeness to and perceived caring by an identified mother and satisfaction with that relationship (Resnick, et al., 1997). Connection to mother was measured with the *Warmth towards*

Table 2. *Outcome Variable: Later Adolescence Violence with a Weapon*

Variable	**Items**
Violence with a Weapon	1. In the past 3 months (90 days), did you tell someone you were going to cut, stab, or shoot them? 2. In the past 3 months (90 days), did you pull a knife or gun on someone? 3. In the past year (12 months), did you cut or stab someone else? 4. In the past year (12 months), did you shoot a gun at someone else?

Table 3. *Age at Measurement for Early and Later Adolescent Variables*

	Total n (%)	**Females n (%)**	**Males n (%)**
Age at social connections measurement			
Age 10	13 (1.8)	8 (2.3)	5 (1.4)
Age 11	57 (7.9)	35 (9.9)	22 (6.0)
Age 12	653 (90.3)	310 (87.8)	348 (92.7)
Age at later adolescent violence measurement			
Age 16	601 (83.1)	278 (78.8)	323 (87.3)
Age 17	101 (13.9)	60 (17.0)	41 (11.1)
Age 18	21 (2.9)	15 (4.3)	6 (1.6)

Table 4. *Middle Adolescent Measure of Hopelessness*

Variable	**Items**
Hopelessness	1. All I see ahead of me are bad things, not good things. 2. There's no use in really trying to get something I want because I probably won't get it. 3. I might as well give up because I can't make things better for myself. 4. I don't have good luck now and there's no reason to think I will when I get older. 5. I never get what I want, so it's dumb to want anything. 6. I don't expect to live a very long life.

mother scale. *Warmth towards mother*, a 6-item scale, measured participants' self-reported closeness to their mother or the person who was most like a mother to them and included items such as *She usually helps me if there is something I don't understand*. Items comprising this scale are listed in Table 5. Responses to individual items (*agree* = 1*; disagree* = 0) were summed to create a scale with scores ranging from 0 – 6. Higher scores reflected greater warmth towards mother. Internal consistency reliability for the study sample during early adolescences was α = .76.

Positive Neighborhood Connectedness

Neighborhood connectedness is defined as the social cohesion of individuals in a neighborhood and includes the extent to which individuals know, look out for, and talk to each other (Widome et al., 2008; Wright & Fitzpatrick, 2006). Positive neighborhood connectedness was measured using 6 items from the Psychological Sense of Community Scale (Glynn, 1981) which assesses neighborhood attachment. The 6-item scale measured positive connections to one's neighborhood and included items such as *There are people in my neighborhood, other than my family, who really care about me*. Items comprising this scale are listed in Table 5. Responses to individual items (*agree = 1; disagree = 0*) were summed to create a scale score ranging from 0 - 6. Higher scores reflected higher levels of positive neighborhood connectedness. Internal consistency reliability for the study sample during early adolescence was α = .72.

Early Adolescent Violence

Two variables were created to measure violence involvement during early adolescence, physical fighting and violence with a weapon.

Table 5. *Early Adolescent Measures of Social Connections and Violence*

Variable	Items
Connection to Mother	Please tell us about the person who is most like a mother to you: 1. I can usually count on her to help me out if I have some kind of problem. 2. She usually keeps pushing me to do my best in whatever I do. 3. We do fun things together. 4. She usually helps me if there is something I don't understand. 5. When she wants me to do something, she usually explains the reasons why. 6. She spends time just talking with me.
Neighborhood Connectedness	1. I feel I am an important part of my neighborhood. 2. If I moved away from my neighborhood, I would be sorry to leave. 3. I have friends in my neighborhood who know they can depend on me. 4. There are people in my neighborhood, other than my family, who really care about me. 5. I have friends in my neighborhood I can depend on. 6. If I am upset about a personal problem, there are people in my neighborhood I can turn to.
Physical Fighting	1. In the past 3 months (90 days), were you in a physical fight?
Violence with a Weapon	1. In the past 3 months (90 days), did you tell someone you were going to cut, stab, or shoot them? 2. In the past 3 months (90 days), did you pull a knife or gun on someone? 3. In the past year (12 months), did you cut or stab someone else? 4. In the past year (12 months), did you shoot a gun at someone else?

Physical Fighting

Physical fighting consisted of a single item (noted in Table 5), *In the past 3 months (90 days), were you in a physical fight?* The original item response options were *No*; *Yes, just once*; and *Yes, more than once*. For this study, a dichotomous variable was created with 0 indicating *no* and 1 indicating any level of physical fighting in the past 90 days.

Violence with a Weapon

During early adolescence, the violence with a weapon measure included 4 items assessing overt violent behaviors of threatening someone with a weapon, pulling a weapon on someone, and shooting or stabbing someone, noted in Table 5. For this study, a dichotomous variable was created with 0 indicating a *no* response to every item and 1 indicating that a participant reported participating in any of the violence with a weapon items.

A single time point for measurement of social connections and early violence during early adolescence was desired for this study's statistical analyses. A large portion of the study sample had social connection measures at age 12 (n = 653, 90%) so this became the preferred time point for the measure for social connections and early violence (see Table 3). Age 12 was also important as it was defined as a transition point between early and middle adolescence in this study. If data from age 12 were not available, responses from age 11 (n = 57) or age 10 (n = 13) were used.

Gender

The study used participants' self report of gender during early adolescence. Participants responded to the item *Are you male or female (a boy or a girl)?* Response options included *male (boy)* or *female (girl).* For analysis, girls were coded as 0 and boys were coded as 1.

Human Subjects Protection, Data Management and Security

The protocol for this study, a secondary analysis of existing data, was reviewed and approved by the University of Minnesota Institutional Review Board. The study was exempt from full IRB review as secondary data analysis (see Appendix D). Data from the MYS project were sent as an encrypted zip file by email to the principal investigator (PI). Prior to receipt, data were stripped of name identifiers to ensure confidentiality and protection of the study participants. Participants were identified by study ID only. The PI did not have access to the key linking study ID codes with participant names. All data were stored on a password-protected computer. The PI analyzed the data.

Analysis Plan

Plans for data analysis are described by study aim. Demographic characteristics of the study sample, descriptions of the variables of interest (within period) and relationships between the variables of interest (between period) (Aim1) were completed using STATA, a general purpose statistics program (http://www.stata.com/). Aim 2 includes an initial data analysis (IDA) and formal modeling. Initial data analysis focused on graphical and numeric descriptive and exploratory analysis. Initial data analysis for Aim 2 was completed using STATA and set the stage for formal modeling. Formal

statistical models were estimated and tested using M*plus*, a special-purpose statistical program designed to model observed and latent continuous and categorical data (Muthén & Muthén, 1998-2007) . The multi-level and mixture add-on modules of M*plus* are designed specifically to estimate parameters of models for longitudinal data (trajectories) and evaluate latent class structure (Muthén & Muthén).

Descriptive characteristics were completed for the entire sample and separately for boys and girls. Aim 2 IDA and conditional growth models were completed separately for boys and for girls to assess characteristics by gender. Growth mixture modeling was completed using the multiple group approach, modeling boys and girls simultaneously in a single model.

Demographic Characteristics of the Study Sample

An overall description of the study sample included the following demographic characteristics: gender, MYS participation including participation during early and later adolescence, neighborhood of residence at first MYS survey, and an indicator of neighborhood change during the 1998 – 2006 study period.

Aim 1:

Social Connectedness, Hopelessness and Violence among Boys and Girls

The goal of Study Aim 1 was to describe variables of interest within time periods, and their associations across time points, in a sample of primarily African American youth living in extremely impoverished neighborhoods.

Within Period Analysis

Descriptive statistics, including internal consistency reliability estimates for study variable at relevant measurement points as well as correlations across occasions (stability) for the hopelessness scale were examined. Dichotomous responses for the violence involvement measures (fighting, violence with a weapon) during early adolescence and violence with a weapon during late adolescence were examined.

Between Period Associations

Logistic regression analyses were used to examine bivariate relationships between each social connectedness and violence variable during early adolescence and violence with a weapon during later adolescence.

Based on previous research and theory the following relationships were hypothesized and are reflected in Table 6. Research suggests that social connectedness is a protective factor, thus it was hypothesized that higher levels of early social connectedness (SC) during early adolescence would be associated with lower levels of weapon violence (WV) during later adolescence. Social connections have also shown to be protective against hopelessness; thus, it was hypothesized that higher levels of social connections (SC) during early adolescence would be associated with lower levels of hopelessness during middle adolescence. Early fighting and violence are well known to be repeated during later adolescence. Because violence is a risk factor, it was hypothesized that higher levels of early violence (EV) would be associated with higher levels of violence with a weapon (LWV) during late adolescence. Hopelessness has been

Table 6. *Proposed Relationships between Study Variables*

Early Adolescence (Age 10 – 12)	Middle Adolescence (Age 13 – 16)	Later Adolescence (Age 16 – 18)	Hypothesized Relationship
SCM →		WV	-
SCPN →		WV	-
VF →		WV	+
VW →		WV	+
SCM →	H		+
SCPN →	H		+
VF →	H		-
VW →	H		-
	H →	WV	-

Note. SCM = Social connection, connection to mother; SCPN = Social connection, positive neighborhood connectedness; VF = violence, physical fighting; VW = violence with a weapon; H = hopelessness

linked to increased violent behavior. Thus it was hypothesized that higher levels of early violence would be associated with higher levels of hopelessness during middle adolescence, and that higher levels of hopelessness during middle adolescence would be associated with higher levels of violence with a weapon during later adolescence.

Aim 2:

Linking Social Connections and Violence via Hopelessness Trajectories

The goal of Study Aim 2 was to link social connections and violence during early adolescence and violence with a weapon during later adolescence via hopelessness trajectories during middle adolescence. The data analysis plan involves mapping theoretical models (figures) to statistical models that can be estimated and compared (Collins, 2006). The theoretical models hypothesize differences in growth trajectories which will be captured by the statistical models through class-varying random coefficients including class-varying growth factor means, variance and covariance structure, and time-specific error variances. Measures of hopelessness were derived from MYS surveys completed by the participants between the ages of 13 and 16 years.

Initial Data Analysis

Purpose. The purpose of the initial data analysis was to gain a sense of the overall growth patterns of hopelessness and the variability of those patterns during middle adolescence. Patterns of change (growth) and variability were explored for both boys and girls.

Approach. First, empirical growth plots were created to visualize changes in hopelessness during the middle adolescent years in the entire sample. Nonparametric

smoothing was used. Second, OLS regression was used to obtain preliminary estimates of intercepts and slopes for linear models of change. Visual impression from the graphs and information about the distribution of slopes, intercepts, R^2, and residual variances were combined to determine the suitability of various polynomial models for describing change and to search informally for evidence of latent groups (Singer & Willett, 2003). Growth plots and OLS regression analysis were completed in STATA for boys and girls separately. Age was centered at 13 for this initial analysis.

Decision. The initial data analysis culminates in a decision about the theoretically plausible growth models that also appear as though they may be justified in the data. The key outcomes of the IDA include: linear and quadratic growth are reasonable alternatives, and differences between boys and girls are apparent. Therefore, proceed with general growth mixture modeling, including option for equal and group-specific prediction of hopelessness trajectories from early adolescent covariates.

General Growth Mixture Modeling

The General Model

The general growth mixture model (GGMM) (Li, Duncan, Duncan & Acock, 2001; Muthén, 2001) is a model for means and covariance structures that incorporates latent growth curve analysis at the levels of individuals, categorical latent mixtures of distinct subgroups characterized by similar change over time that may be influenced by prior covariates and that may predict distal outcomes in one or more unknown groups. The four plausible GGMMs estimated in this study are listed in Table 7 and shown in Figures 5 – 8. The four models consist of the following: (a) 4 measurement time points

between the ages of 13 – 16 for the continue measure hopelessness (y1, y2, y3, y4); (b) latent growth factors (intercept, slope, and, in 2 models, quadratic); (c) covariates *x* include connection to mother, positive neighborhood connectedness, physical fighting, and violence with a weapon measured during early adolescence; and (d) one distal outcome *u* violence with a weapon measured during later adolescence. Up to 5 latent classes (K) are postulated. Presentations of parts of the following model follow Li and colleagues (2001).

Individual latent growth curves. A wide variety of change trajectories may be conveniently described by linear and quadratic functions (Singer & Willett, 2003).The following equation defines the conventional latent growth model for the continuous observed variables with continuous growth parameters, η, for individuals *i* across t = 4 years of data:

$$y_i = \Lambda_y \eta + \varepsilon_t \qquad (1)$$

where $\boldsymbol{y_i}$ is a vector containing observed hopelessness scores for person *i* on *t* occasions. η contains m growth parameters (coefficients for intercept, linear and/or quadratic terms), and Λ_y is a (p x m) fixed design matrix for intercept, linear and/or quadratic effects.

The equation for the individual growth parameter vector η is:

$$\eta_i = \alpha + B\eta_i + \zeta_i \qquad (2)$$

where η_i is as described above, α is a vector containing latent growth means (α_o, α_s), B is a null matrix, and ζ_i is a vector of deviations of individual parameters the overall respective growth factor mean. Individual growth is the group average plus the deviation from the average.

Models for change are interpretable in terms of the parameters. Individual change in hopelessness characterized by intercept and slope terms follow a linear model with constant rate of change during middle adolescence. The quadratic model for change is more complex because if implies a changing rate of change over time, or linear acceleration (or deceleration). Quadratic models thus show rapid positive or negative change rates in hopelessness as middle adolescents' transition to later adolescence.

At the individual level, the ε_t are assumed to have a multivariate normal distribution with mean = 0 and equal variances over time. Θ is the variance-covariance matrix of ε_t. The deviations ζ_i are assumed to have a multivariate normal distribution with mean equal 0 and variance-covariance matrix equal to Ψ.

Latent classes. An important but simple extension of Equation 1 permits modeling of unobserved heterogeneity in growth in the population. This extension posits that individuals belong to distinct subpopulations, where subpopulation membership is not known but is inferred from observed data on change over time (Muthén, 2004). This is referred to as the unconditional growth mixture model. Let K = 1, 2, 3…K hypothesized number of classes and v_k be the intercepts of the observed continuous y variables measured over time.

$$y_{ik} = v_k + \Lambda_y \eta + \varepsilon_t \quad (3)$$

gives the trajectory model for person I in latent class K and

$$\eta_{ik} = \alpha_k + B_k\eta_{ik} + \zeta_{ik} \quad (4)$$

gives the model for the individual growth parameters for person I in group K in terms of change within latent class (rather than across the entire population). The variance-covariance matrices of the ε_{ik} and ζ_{ik} may vary across the latent classes. The latent class variables indicated by C in the path diagram.

Based on differences in change in hopelessness during middle adolescence, individuals in this study are grouped into unobserved latent classes. Latent classes with linear trajectories of hopelessness suggest that change in hopelessness is constant over time during middle adolescence; latent classes captured by quadratic function implies differential change (acceleration or deceleration) in hopelessness during middle adolescence. It is useful to group individuals into latent classes based on similarities in change for ease of explanation of change in hopelessness and to facilitate understanding of impact.

Incorporation of covariates. Class membership can be better defined and explained (predicted) by incorporation of covariates. With the addition of covariates, growth mixture modeling takes into account relationships between covariates and class membership defined by the η_{ik}. The model is now fit to the conditional distribution of the

η_{ik} (personal growth parameters within class K) given a set of covariates. Here, there are q = 4 covariates measured at early adolescence: (x_{mother}, $x_{neighorhood}$, x_{fight}, x_{weapon}) thought to influence class membership for hopelessness change during middle adolescence so that

$$\eta_{ik} = A_k + \Gamma_k x_{ik} + \zeta_{ik} \quad (5)$$

where, η_{ik} is an (m x 1) vector of growth parameters for person *i* in latent class K, A_{ik} is an (m x 1) matrix α_k intercepts for the observed variables y within the Kth class, Γ_k is an matrix of within class regression coefficients of growth parameters on q covariates, and ζ_{ik} is an m-dimensional residual vector for growth parameters for *i* in latent class K. The normally distributed ζ_{ik} have expectation of 0 with class specific variance-covariance matrix Ψ_k

Covariates can offer either equal prediction or class-specific prediction and are an important consideration in growth mixture modeling. Equal prediction implies that covariates do not vary based on latent class; group-specific prediction implies covariate variability. Equal prediction allows for a simpler model with fewer parameters by settings elements of Γ_k, K = 1 – 4 equal. Covariates are group-specific when Γ_k has different elements for each latent class K. Practically, the equal prediction model is easier to estimate and to interpret. Theoretically, one should ask *Is there any reason to believe that covariates differentially impact change, depending on how i (the individual) is changing?* It is important to note that the group-specific prediction model will fit better because it is very highly parameterized.

Distal binary outcome. The final outcome in the model is violence with a weapon during later adolescence. This single distal outcome (r = 1) is a binary variable (0 = no, 1 = yes). The GGMM gives the probability of violence with a weapon during later adolescence (u) for person *i* in latent class c and known group *j* with covariates x_i as the

$$T_{ij} = P(u_{ij} = 1 | c_{ij}, x_i) \quad (6)$$

The related log odds is:

$$\text{logit}(\tau_i) = \Lambda_u c_i + K_u x_i \quad (7)$$

with Λ_u (1 x K) containing that conditional probabilities for u_{ij} for each latent growth class c, and K_u (1 x q) is a vector of regression coefficients of u_{ij} on the early adolescence covariate predictors x_i. The regression of u_{ij} on the x_i may vary by class K. Thus, the log odds associated with later adolescent violence with a weapon is a linear function of the hopelessness change latent class during middle adolescence and covariates measured during early adolescence (see Figures 5 – 8).

Latent class membership. With GGMM, relationships among early adolescent covariates and latent classes defining middle adolescent change in hopelessness is modeled using multinomial regression for unordered polytomous variables (Muthén & Muthén , 1999). Let $\pi_{ik} = p(C_{ik} = 1 | xi)$ be a vector of probabilities of membership in each latent class K = 1, 2, …, K – 1 for each person and let the (k – 1)-dimensioned

vector of log odds of membership in class K, K = 1, 2, … K = 1 with respect to probability of membership in class K be logit (π_i) = (log [π_{i1} / π_{ik}], log [π_{i2} / π_{ik}], log [π_i K-1 / π_{ik}]. Then:

$$\text{logit}\,(\pi_i) = \alpha_c + \Gamma_c\, x_i \qquad (8)$$

where α_c is a (K – 1)-dimensional vector of mean log odds for classes K = 1, 2,… K – 1 and Γ_c is (K – 1) x q and contains coefficients linking individual covariates with log odds. The second term adjusts overall log odds of hopelessness trajectory membership for early adolescent covariates connection to mother, positive neighborhood connectedness, early fighting, and early violence with a weapon.

To summarize, the conditional distribution of the continuous observed hopelessness variables *y* measured on 1 to 4 occasions during middle adolescence and binary outcome variable *u* given covariates *x* is regulated by parameters that vary across the K categories of a latent categorical variable *c*.

Known classes. Based on the literature, differences in violence involvement based on gender are expected. Therefore, it was also anticipated that the magnitude of the relationships among social connectedness, hopelessness trajectories, and violence during adolescence would vary based on gender. Using multiple group growth mixture modeling, gender was incorporated as a moderator variable and all of the model parameters potentially vary as a function of membership to the identified gender groups.

Modeling Plan

Growth mixture modeling. General growth mixture modeling (GGMM) using a maximum likelihood approach was used to describe the pattern of hopelessness, assess for trajectory subgroups, and social connectedness and violence across adolescent phases. GGMM uses multinomial logistic regression based on unknown class membership. GGMM estimated the mean growth curve for each potential class and captured individual variation by estimating intercepts and slopes for each class (Li, Duncan, Duncan, & Acock, 2001; Muthén, 2004). GMM completed using M*plus* software provided: (a) parameter estimates, standard errors, z statistics, and p-values; (b) measures of model goodness-of-fit; (c) probabilities of class membership and estimated parameters based on these probabilities; and (d) residual analysis (Muthén & Muthén, 1998-2007).

Covariate predictors can contribute to growth mixture modeling in two ways. First, covariates maybe used to predict within-class variability in the latent trajectory parameters and can tests whether the effects of the predictors vary over classes. Second, covariates can predict the probability that an individual belongs to a particular group. This is accomplished through using multinomial regression that relates the predictors to the individual probabilities of group membership (Bauer & Curran, 2003).

To determine heterogeneity in hopelessness trajectories, a preliminary conditional growth model that included covariate predictors (connection to mother and neighborhood, fighting and violence with a weapon during early adolescence) and the distal outcome of violence with a weapon during later adolescence was estimated, assuming one single latent class (K=1) (i.e., no obvious sub groups) separately for boys

and for girls (Li et al., 2001; Muthén, 2004). Due to results of IDA of individual trajectories, linear models were estimated for girls and quadratic models for boys. Second, theorizing distinct subgroups, conditional growth mixture model with up to K = 5 classes were estimated for boys and for girls, allowing for various patterns of growth trajectory (i.e., allowing the means, variance and covariance, and time related error variances to vary for each group).

In addition to the overall models for girls and boys, four additional growth mixture models were estimated for each gender: (a) a 2-class model (H_0: K = 2), a 3-class model (H_0: K = 3), (c) a 4-class model (H_0: K = 4), and a 5-class model (H_0: K = 5). It was anticipated that up to five distinct subgroups existed. All models, including the baseline K = 1 model, were compared. The probabilities of the outcome variable, violence with a weapon during later adolescence, are allowed to vary across trajectory groups. General growth mixture modeling provides the ability to examine whether the probability of the outcome variables (violence with a weapon) varies as a function of the covariates (social connectedness and early violence) and hopelessness trajectory membership as described in equation 7.

Candidate Models for Multiple Group Analysis.

Multiple group analysis within GGMM estimated simultaneously for girls and boys, was used to test for gender differences on the initial levels of hopelessness, the course of hopelessness during middle adolescence, and the class-specific distal outcome of violence with a weapon. The multiple groups approach is preferable to simply treating gender as a covariate in the models, which would impose equalities between genders that

may not be valid (structure of classes, within-class variability, effects of covariates, and associations between class membership and distal outcomes). In multiple group analysis, class membership is treated as partially known and fully informed by gender-specific growth mixture models. Partial known means that, for example, girls could be in only those classes derived from mixture models carried out for girls, but the exact class membership was re-estimated within the multiple group model. Thus the multiple group analysis results in a 4-class model containing two classes for girls and two classes for boys.

Based on the preliminary assessment for latent classes by gender, four multiple group models were proposed, compared, and tested (see Table 5 and Figures 5-8). Model 1 was a linear model with covariate predictors held equal across latent classes. This model makes the following assumptions: (a) distinct latent classes exist; (b) change in hopelessness is linear; (c) the rate of change is constant over time (specific individuals change at the same rate throughout middle adolescence); (d) relationship between the covariate predictors do not vary based on class membership.

Model 2 was a linear model that allowed covariate predictors to vary across latent classes. This model makes the following assumptions: (a) distinct latent classes exist; (b) change in hopelessness is linear; (c) the rate of change is constant over time; (d) covariate predictors may differ based on latent class.

Model 3 was a quadratic model with covariate predictors held equal across latent classes. This model makes the following assumptions: (a) distinct latent classes exist; (b) change in hopelessness is quadratic with individuals varying in their rate or pattern of

Table 7. *Multiple Group Models.*

Candidate Model	Covariates	Hopelessness Trajectory	Latent Classes	Gender Groups	Total Latent Classes	Figure
Model 1	Equal prediction	Linear	2	2	4	5
Model 2	Group specific	Linear	2	2	4	6
Model 3	Equal prediction	Quadratic	2	2	4	7
Model 4	Group specific	Quadratic	2	2	4	8

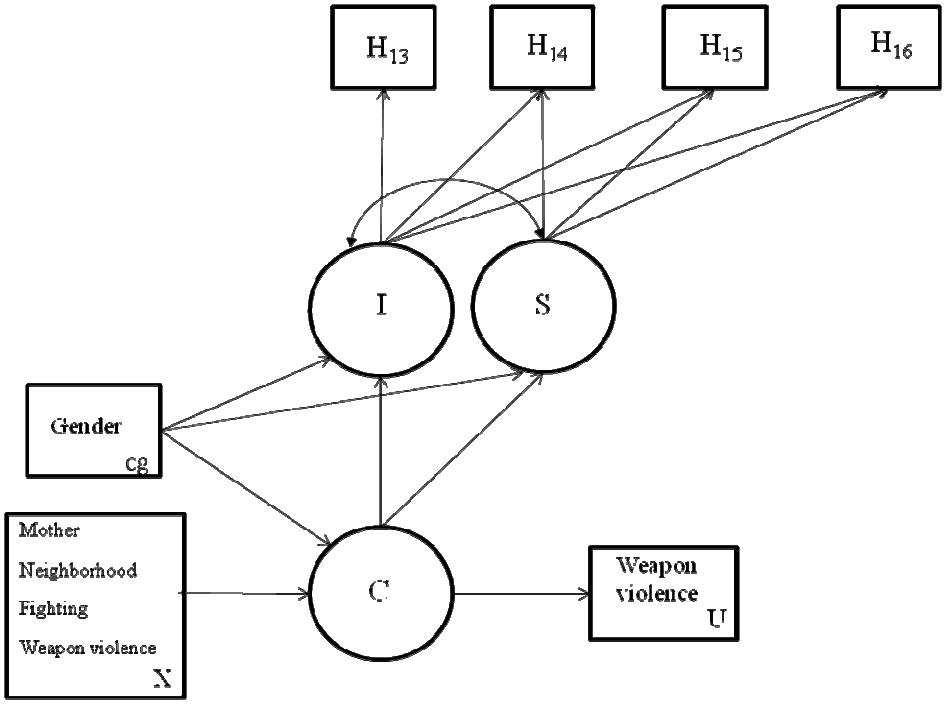

Figure 5. *Model 1. Linear change, covariate prediction equal across latent classes.*

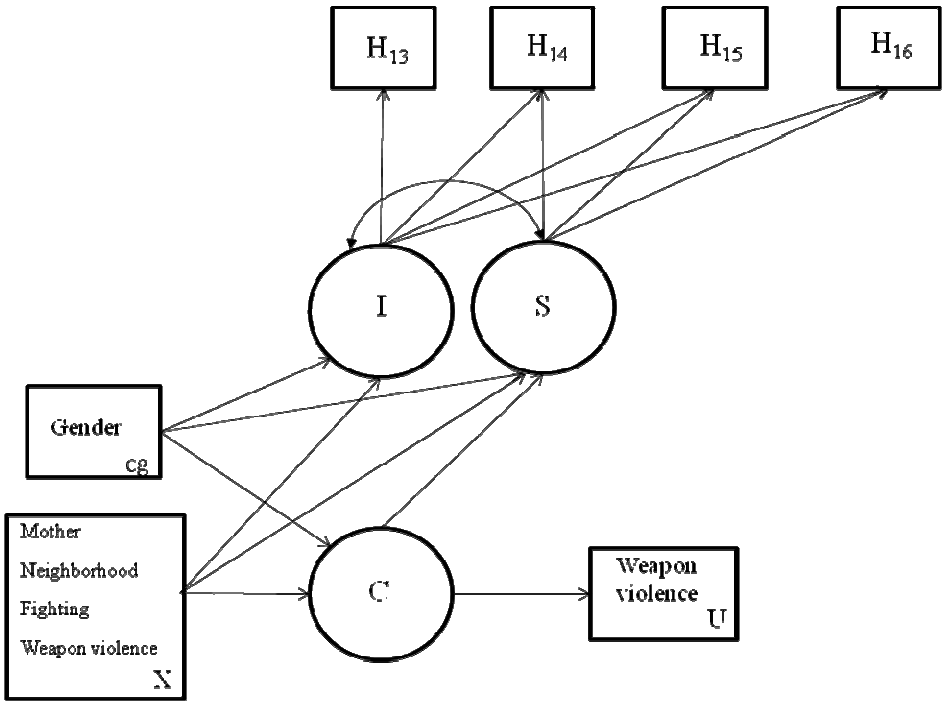

Figure 6. *Model 2.Linear change, covariate prediction specific to latent classes.*

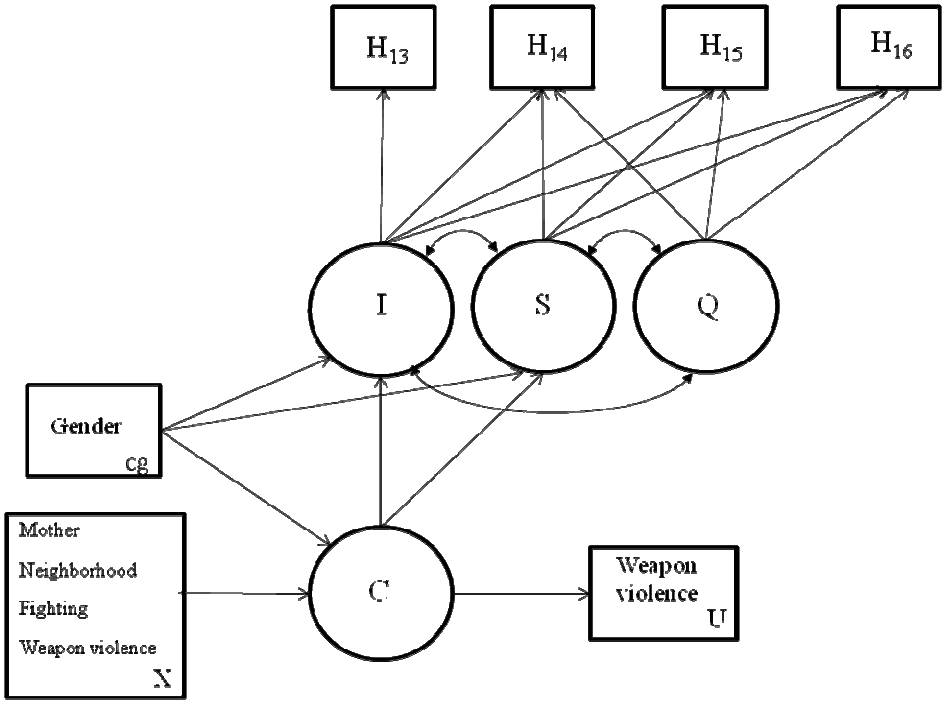

Figure 7. *Model 3. Quadratic change, covariate prediction equal across latent classes.*

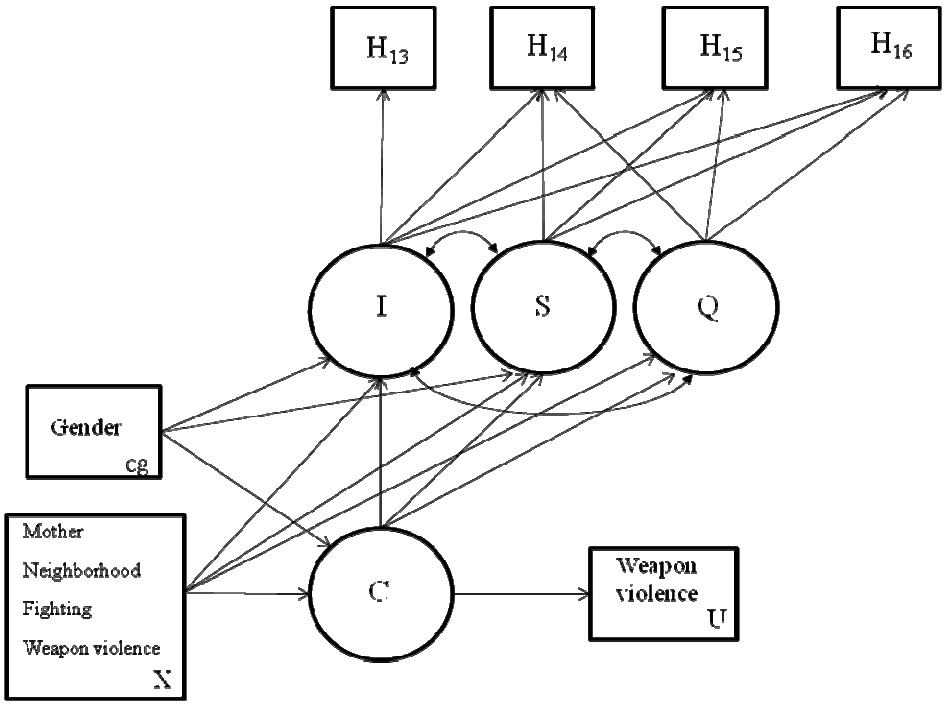

Figure 8. *Model 4. Quadratic change, covariate prediction specific to latent classes.*

change (acceleration or deceleration over time); (c) covariate predictors are not unique based on latent class.

Model 4 was a quadratic model that allowed covariate predictors to vary across latent classes. This model makes the following assumptions: (a) distinct latent classes exist; (b) change in hopelessness is quadratic with an individual varying in their rate or pattern of change in hopelessness (acceleration or deceleration over time); (c) covariate predictors may differ based on latent class. Model 4 provided the ideal fit, incorporating both the theory of the predictors and the theory of change.

By holding the covariates equal in models 1 and 3, the predictors are only used to predict the probability of class membership. In models 2 and 4, class differences in the covariates were examined. M*plus* code for each model is available in Appendix E.

Model Estimation

The maximum likelihood estimator based on the expectation-maximization (EM) algorithm implemented in M*plus* was used (Muthén & Muthén, 1998-2007). The numerical, iterative solution is obtained as follows. The conditional probability of individual *i* belonging to the latent class *K* or the posterior probabilities of group membership, and an individual's score on the growth factors is estimated. The EM algorithm starts with a random split of people into classes. Reclassification is based on an improvement criterion with reclassification occurring until the best classification of people is found. Random start values are used to avoid solutions at a local minimum (Muthén & Muthén, 1998-2007). The model with the lowest log likelihood is selected.

Missing Data

The M*plus* software uses maximum likelihood estimation under the assumption that the data are missing at random (MAR).

Model Evaluation and Selection

To evaluate model quality, a combination of statistical fit and theoretical plausibility and usefulness were used to answer the questions "how well does the model account for the data?" and "does it make sense?" (Browne, 1998; Cudick & Henly, 2003; Henly, Vermeersch & Duckett, 1998). Model usefulness examines the substantive interpretation, or does the model make sense in terms of theoretical a priori plausibility. Models were assessed on two aspects of theory: (a) theory of the relationship between the covariates and hopelessness trajectories; and (b) theory of change.

Statistical fit. Models were assessed for statistical fit by comparing the Akaike information criterion (AIC), Bayesian information criterion (BIC), and the adjusted BIC. All are based on the negative log likelihood of the model with a penalty function for the number of parameters. Comparatively smaller values for all fit indices indicate a better fitting model (Fuzhong et al., 2001; Muthén, 2004).

The AIC is defined as:

$$AIC = -2 \log L + 2z \quad (9)$$

where z is the number of free parameters. The BIC is defined as:

$$BIC = -2 \log L + z \ln n \quad (10)$$

The adjusted BIC takes into account the sample size (Sclove, 1987) such that

$$\text{Adj. BIC} = -2 \log L + z \ln (n + 2 / 24) \quad (11)$$

Entropy. Usefulness is also examined through classification quality or "How well do the members fit in each class" and can be examined through entropy. Entropy is a summary measure of how well people are classified into classes; that cases within groups are like each other and not like those in other groups in the way they change. Entropy is measured on a *0* to *1* scale; closer to 1 being more desirable.

Theoretical plausibility: Relationship between covariates and hopelessness trajectory. This analysis is based on the proposition that an adolescent's level of connectedness to mother and neighborhood are core influences on his or her trajectory of hopelessness. It is proposed that an adolescent's trajectory of hopelessness is related to differences in levels of social connectedness to mother and neighborhood as well as to differences in violence involvement during early adolescence.

Theoretical plausibility: Theory of change in hopelessness. As described in Chapter 2 with the hope/hopelessness trajectory model, it is hypothesized that adolescents will demonstrate varying hopelessness trajectories (i.e., varying baseline levels of hopelessness in early adolescence with varying rates of change in hopelessness over time) during middle adolescence. Five potential classes of trajectories of hopelessness were anticipated. For some, hopelessness could be relatively static, emerging low and remaining low throughout middle adolescence or beginning high and remaining high throughout middle adolescence. Others could enter middle adolescence with low levels of

hopelessness that increased with time. Still others could enter middle adolescence with high levels of hopelessness that decreased with time. For others, it is possible that hopelessness would fluctuate tremendously throughout middle adolescence. The initial data analysis suggested that change in hopelessness during middle adolescence could be explained with a quadratic form suggesting that change is systematic, not erratic. A quadratic form allowed for change in rate of change as a function of time.

CHAPTER IV

RESULTS

The purpose of Chapter IV is to present the results of analyses directed at responding to the study aims. The specific aims of this study were to:

1. Describe social connections and violence involvement during early adolescence, hopelessness during middle adolescence, and violence with a weapon during late adolescence for boys and girls.
2. Link social connections and violence during early adolescence and violence with a weapon during later adolescence via hopelessness trajectories during middle adolescence.

The chapter begins with a description of demographic characteristics of the study sample. Within-period descriptive statistics and between-period exploratory associations are presented for the variables used in the hope/hopelessness trajectory model (Aim 1). Results of the initial hopelessness trajectory analysis, conditional growth models, tentative multiple group models, and the final multiple group growth mixture model are presented (Aim 2).

Demographic Characteristics

The demographic characteristics of the study sample are reported in Table 8. The proportions of males and females were approximately equal (51% and 49% respectively). Based on inclusion criteria, all participants completed MYS surveys on 5 or more

occasions (years). While the majority of the sample (79%) completed 5-7 surveys, 17% of the sample completed 8 surveys and 4% completed 9 surveys between the ages of 10-18 years. The majority of the sample reported being African American (93%). All fifteen study neighborhoods were represented at the early adolescent time point. About one-half of the sample reported changing neighborhoods at least one time over the study period.

Aim 1: Social Connectedness and Violence among Boys and Girls.

Within Period Description

Early Adolescence

Social connections. Strong connections to mother were reported among both males (M = 4.83, SD=1.53; Range: 0 - 6) and females (M = 5.07, SD=1.34; Range: 0 - 6) during early adolescence (Table 7). Males (M = 3.86, SD = 1.66; Range: 0 – 6) and females (M = 3.99, SD = 1.70; Range: 0 – 6) were similar in their self-reported levels of positive neighborhood connectedness. Both reported moderate positive connection to their neighborhood (Table 9).

Early violence. Both males (52%) and females (34%) reported fighting during early adolescence (Table 10). The proportion of males reporting fighting during early adolescence was significantly higher than females ($\chi^2 = 24.2$, p =.000). Boys (30%) were also more likely than girls (19%) (Table 10) to participate in violence with a weapon during early adolescence ($\chi^2 = 11.2$, p = .001).

Table 8. *Characteristics of the Sample*

	Total n (%)	Females n (%)	Males n (%)
Total	723 (100)	353 (48.8)	370 (51.2)
Years of Participation			
5	179 (24.8)	85 (24.1)	94 (25.4)
6	214 (29.6)	108 (30.6)	106 (28.7)
7	175 (24.2)	86 (24.4)	89 (24.1)
8	126 (17.4)	59 (16.7)	67 (18.1)
9	29 (4.0)	15 (4.3)	14 (3.8)
Race/Ethnicity			
Black	679 (93.9)	337 (95.5)	342 (92.4)
White	12 (1.7)	5 (1.4)	7 (1.9)
Mixed Race or Creole	30 (4.2)	12 (3.4)	18 (4.9)
Hispanic	40 (5.53)	13 (3.68)	27 (7.3)
Age first participated in MYS			
Age 10	292 (40.4)	143 (40.5)	149 (40.3)
Age 11	221 (30.6)	110 (31.2)	111 (30.0)
Age 12	210 (29.1)	100 (28.3)	110 (29.73)
Neighborhood of Residence at Early Adolescence			
Alabama Village	86 (11.9)	43 (12.2)	43 (11.6)
Bessemer Apartments	34 (4.7)	18 (5.1)	16 (4.3)
Harlem	17 (2.4)	8 (2.3)	9 (2.4)
Plateau	24 (3.3)	12 (3.4)	12 (3.2)
Martin Luther King	26 (3.6)	14 (4.0)	12 (3.2)
Toulminville	4 (.6)	0 (.0)	4 (1.1)
Snug Harbor	22 (3.0)	9 (2.6)	13 (3.5)
Other	66 (9.1)	32 (9.1)	34 (9.2)
Orange Grove	189 (26.1)	95 (26.9)	94 (25.4)
Josephine Allen	77(10.7)	32 (9.1)	45 (12.2)
Roger Williams	59 (8.2)	25 (7.1)	34 (9.2)
Oaklawn	9 (1.2)	4 (1.1)	5 (1.4)
R.V. Taylor	72 (10.0)	38 (10.8)	34 (9.2)
Gulf Village	21 (2.9)	13 (3.7)	8 (2.2)
Trinity Gardens	17 (2.4)	10 (2.8)	7 (1.9)
Changed neighborhoods during study period (yes)	345 (47.8)	171 (48.4)	174 (47.0)

Table 9. *Social Connection Measures in Early Adolescence*

	Items	α	Total M (SD)	Female M (SD)	Male M (SD)
Connection to Mother	6	.76	4.95 (1.45)	5.07 (1.34)	4.83 (1.53)
Positive Neighborhood Connectedness	6	.72	3.93 (1.68)	3.99 (1.70)	3.86 (1.66)

Table 10. *Measures of Violence in Early Adolescence*

	Total		Female		Male	
	n	(%)	n	(%)	n	(%)
Fighting	309	(43)	118	(34)	191	(52)
Violence with a weapon	177	(25)	67	(19)	110	(30)

Middle Adolescence

Hopelessness. Average levels of hopelessness by age and gender are reported in Table 11. On average, levels of hopelessness decreased with age for girls. For boys, levels of hopelessness decreased from age 13 to age 14, then increased after age 14. Hopelessness measures were available for all 4 middle adolescent time points for 52.7% of the sample, with an additional 31.8% having 3 time points available (Table 12). Correlations in the hopelessness variable by age and gender are listed in Table 13. Distributions of hopelessness by age are displayed in Figures 9 – 12 and suggest a bimodal distribution which is desirable when examining for latent classes (Bauer & Curran, 2003).

Later Adolescence

Violence with a weapon. At the later adolescent measurement point, 21% (n = 75) of girls and 33% (n =123) of boys reported participating in violence with a weapon. During later adolescence, boys were significantly more likely than girls to participate in violence with a weapon ($\chi^2 = 13.07$, $p = .000$).

Between-Period Associations

Significant correlations (i.e., $p < .05$) between social connections during early adolescence and hopelessness at each middle adolescent time point are shown in Table 14. Connection to mother during early adolescence was significantly correlated with hopelessness in both genders. Young people who reported stronger connections to their mothers were less hopeless. There were no significant correlations between positive

Table 11. *Hopelessness about the Future (Brief Hopelessness Scale; BHS)*

		Age			
	Sample	**13**	**14**	**15**	**16**
N	Total	622	609	596	601
	Female	306	301	295	278
	Male	316	307	301	322
BHS Mean (SD)	Total	1.51 (1.66)	1.25 (1.63)	1.32 (1.68)	1.36 (1.77)
	Female	1.30 (1.58)	1.03 (1.50)	1.09 (1.66)	.97 (1.56)
	Male	1.71 (1.71)	1.46 (1.72)	1.54 (1.67)	1.69 (1.88)
α, 6-item BHS measure	Total	.72	.76	.76	.80

Table 12. *Number of Time Points for Hopelessness Measures between Ages of 13-16*

Number of time points	**Frequency**	**%**
1	14	1.9
2	98	13.6
3	230	31.8
4	381	52.7

Table 13. *Correlations of Hopelessness between Time Points for Boys and Girls*

	Age 13	Age 14	Age 15	Age 16
Age 13	1.00	.32*	.26*	.24*
Age 14	.32*	1.00	.33*	.18*
Age 15	.27*	.42*	1.00	.28*
Age 16	.32*	.32*	.28*	1.00

Note. Correlations significant at p = .05 are starred. Boys are above the diagonal; girls are below diagonal.

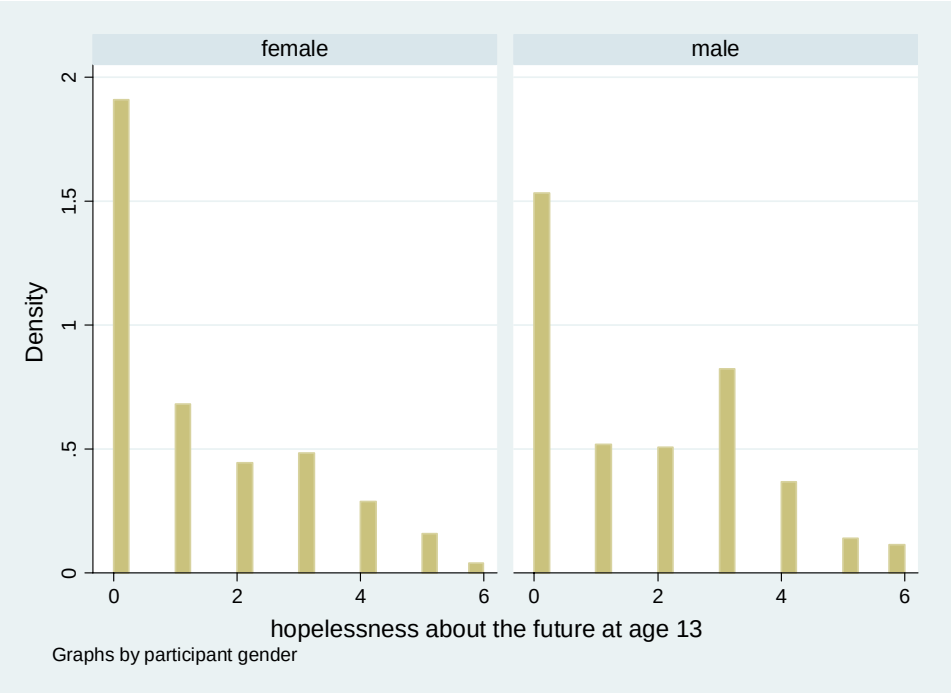

Figure 9. Hopelessness about the future for boys and girls at age 13.

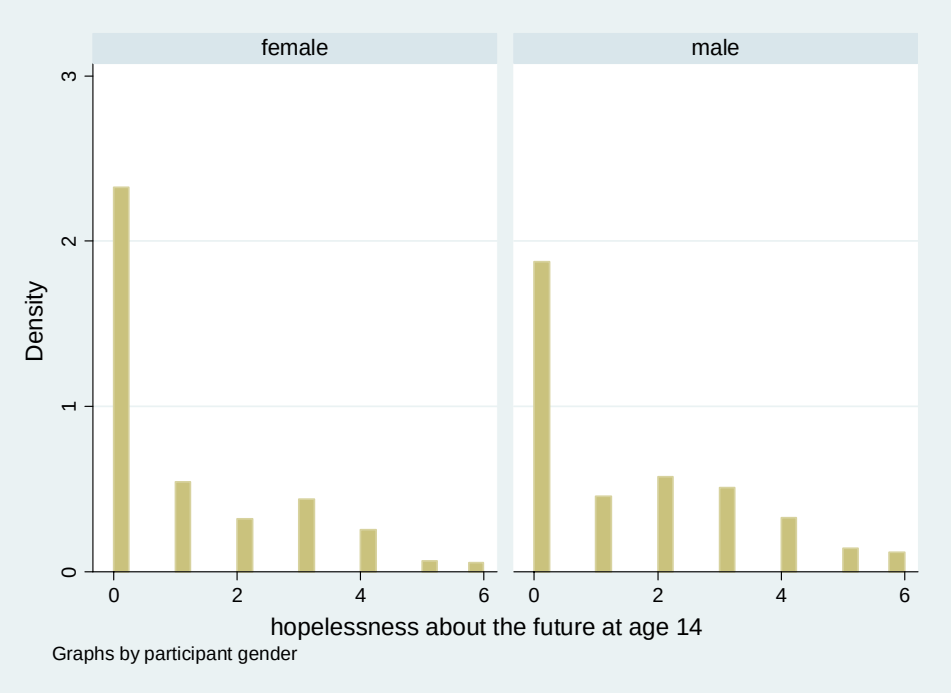

Figure 10. Hopelessness about the future for boys and girls at age 14.

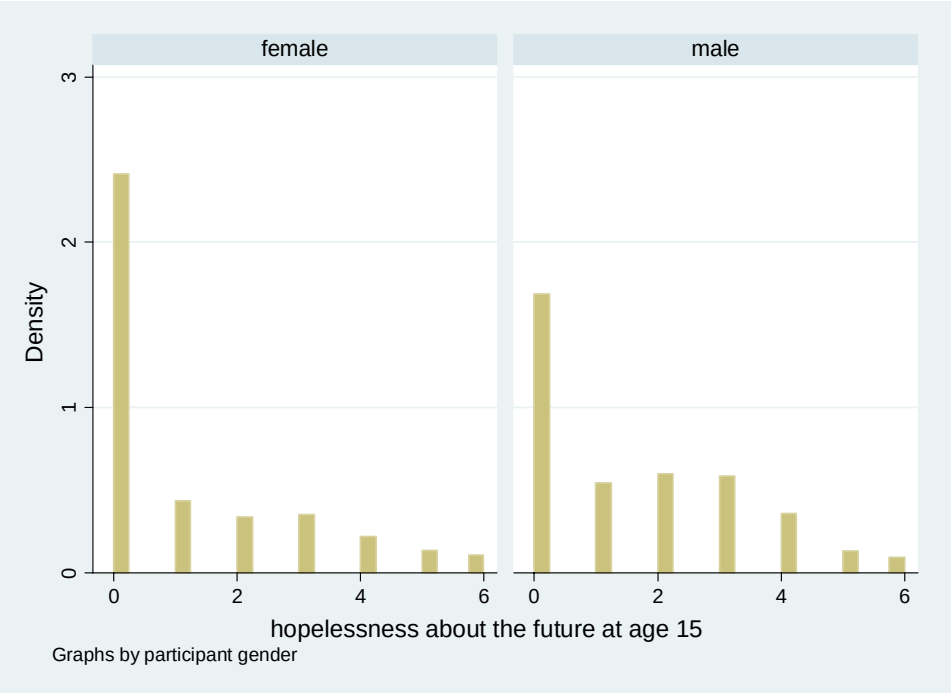

Figure 11. Hopelessness about the future for boys and girls at age 15.

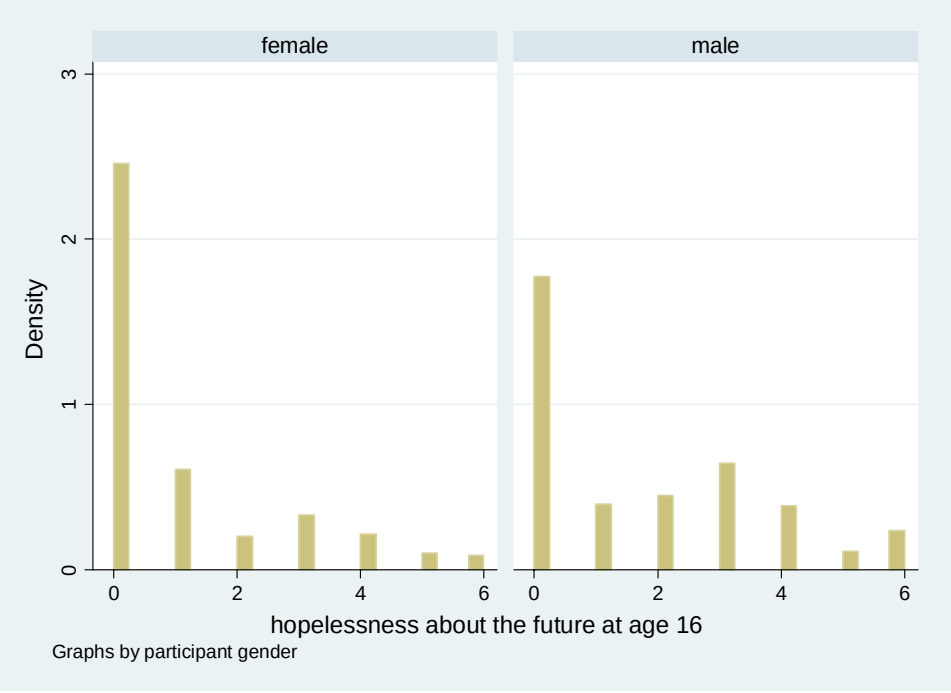

Figure 12. Hopelessness about the future for boys and girls at age 16.

neighborhood connectedness during early adolescence and hopelessness during middle adolescence.

Significant correlations (i.e., $p < .05$) between violence during early adolescence and hopelessness at each middle adolescent time point are shown in Table 15. Physical fighting during early adolescence was associated with increased hopelessness at age 14 for the total sample and for girls, as well as increased hopelessness at age 16 for the total sample. Violence with a weapon during early adolescence was associated with increased hopelessness among the total sample at age 14. Violence with a weapon during later adolescence was associated with increased hopelessness at age 16 for the total sample and for boys.

Table 16 shows significant relationships between measures of social connection and violence during early adolescence and violence with a weapon during later adolescence. For both boys and girls, fighting and violence with a weapon during early adolescence were significantly related to violence with a weapon during later adolescence. For boys, connection to mother during early adolescence was protective against violence with a weapon during later adolescence (OR = .88, $p = .06$). Positive neighborhood connectedness during early adolescence was not associated with violence with a weapon during later adolescence.

Table 14. *Significant Correlations between Social Connection Measures in Early Adolescence and Hopelessness in Middle Adolescence*

	Hopelessness Age 13			Hopelessness Age 14			Hopelessness Age 15			Hopelessness Age 16		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Connection to mother figure	-.13	-.16		-.17	-.13	-.19	-.15	-.17		-.16	-.18	
Positive sense of community												

Table 15. *Significant Correlations between Hopelessness during Middle Adolescence and Violence Measures*

	Hopelessness Age 13			Hopelessness Age 14			Hopelessness Age 15			Hopelessness Age 16		
	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
Early Adolescence												
Fighting				.11		.12				.12		
Violence with a weapon				.10								
Late Adolescence												
Violence with a weapon										.16	.21	

Table 16. *Odds Ratios for Prediction of Later Adolescent Weapon Use from Early Adolescent Variables*

	Weapon Use During Late Adolescence					
	Boys			Girls		
	Coef.	OR	CI	Coef.	OR	CI
Early fighting	.59	1.80*	1.16, 2.80	1.07	2.90*	1.72, 4.90
Early violence with a weapon	.76	2.13*	1.34, 3.39	1.29	3.64*	2.04, 6.48
Connection to mother	-.13	.88†	.76, 1.01	-.08	.93	.77, 1.11
Positive sense of community	-.02	.98	.86, 1.12	.09	1.10	.94, 1.28

Note. * $p < .05$; † $p = .06$. Results from bivariate analysis.

Aim 2:
Linking Social Connections and Violence via Hopelessness Trajectories

Initial Data Analysis

OLS Linear Regression Estimates

For the initial data analysis, age/time was centered on age 13, so intercepts give values at the start of middle adolescence. Examples of individual hopelessness trajectories for boys and girls are shown in Figures 13 and 14. For both boys and girls, differing trajectory patterns are displayed. Results of the OLS regression analyses (initial data analysis) are shown in Table 17. Across this sample, the average estimated intercept for hopelessness was 1.44 and average slope was -0.05. In other words, the average adolescent in this sample reported a hopelessness score of 1.4 at age 13 and that score decreases by about -0.05 points per year during middle adolescence. The magnitude of the sample standard deviation (in comparison to the mean) suggests that adolescents are scattered widely around both these averages, and particularly so for the estimated intercept (SD = 1.91). This finding means that adolescents differ considerably in their fitted initial level of hopelessness and their fitted rates of change. The correlation of intercept with slope of -0.77 indicates a negative relationship between fitted value at age 13 and fitted rate of change, suggesting that adolescents with higher initial hopelessness change less over time.

Examining genders separately, the average estimated intercept for hopelessness among girls was 1.24 and average estimated slope was -0.07, meaning that girls on average were less hopeless at age 13 and decreased more each year than the overall sample. The average estimated intercept for hopelessness among boys (1.62) was higher

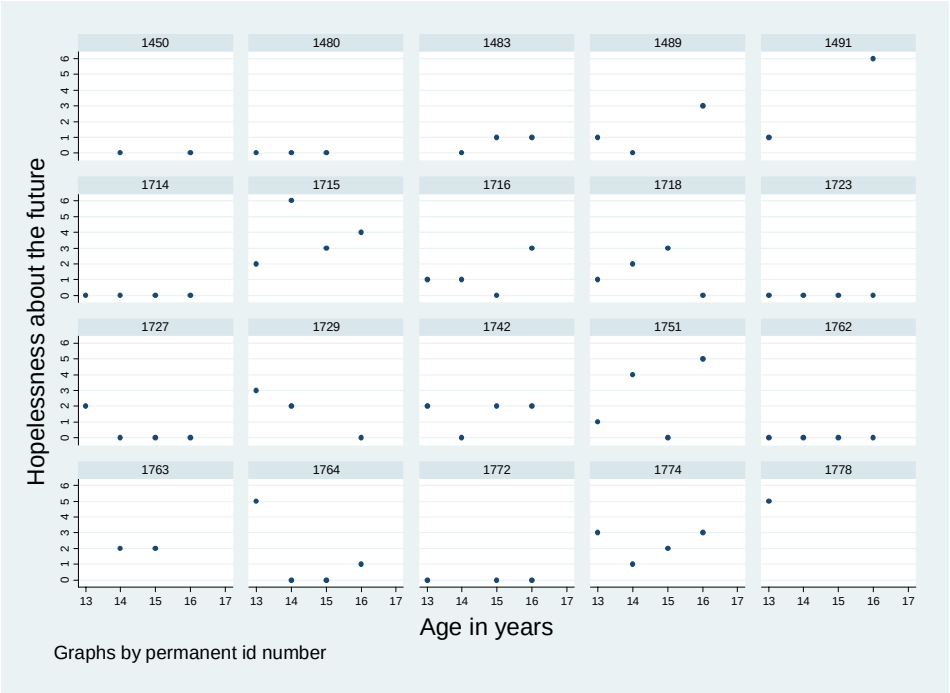

Figure 13. Individual hopelessness data plots for selected cases of boys.

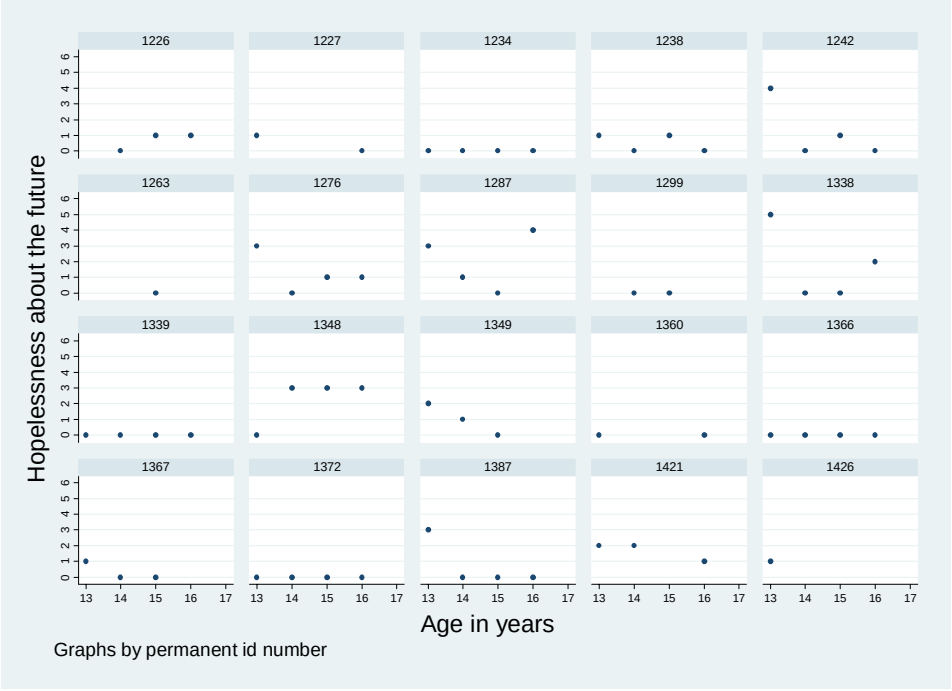

Figure 14. Individual hopelessness data plots for selected cases of girls.

Table 17. *Initial Data Analysis Examining Hopelessness with OLS Regression*

	Initial status (Intercept)	Rate of change (Slope)
Total sample		
Mean	1.44	-.05
Standard deviation	1.91	.67
Correlation between intercept and slope		-.77*
Girls		
Mean	1.24	-.07
Standard deviation	2.00	.67
Correlation between intercept and slope		-.81*
Boys		
Mean	1.62	-.03
Standard deviation	1.80	.66
Correlation between intercept and slope		-.74*

Note. *p < .05

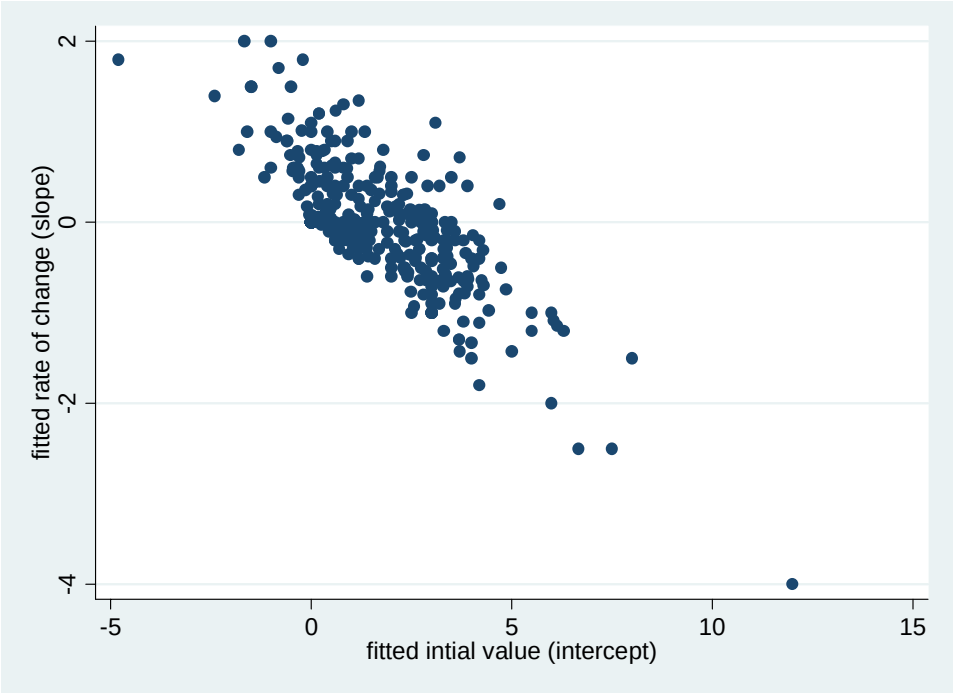

Figure 15. Scatter plot comparing intercept and slope for boys.

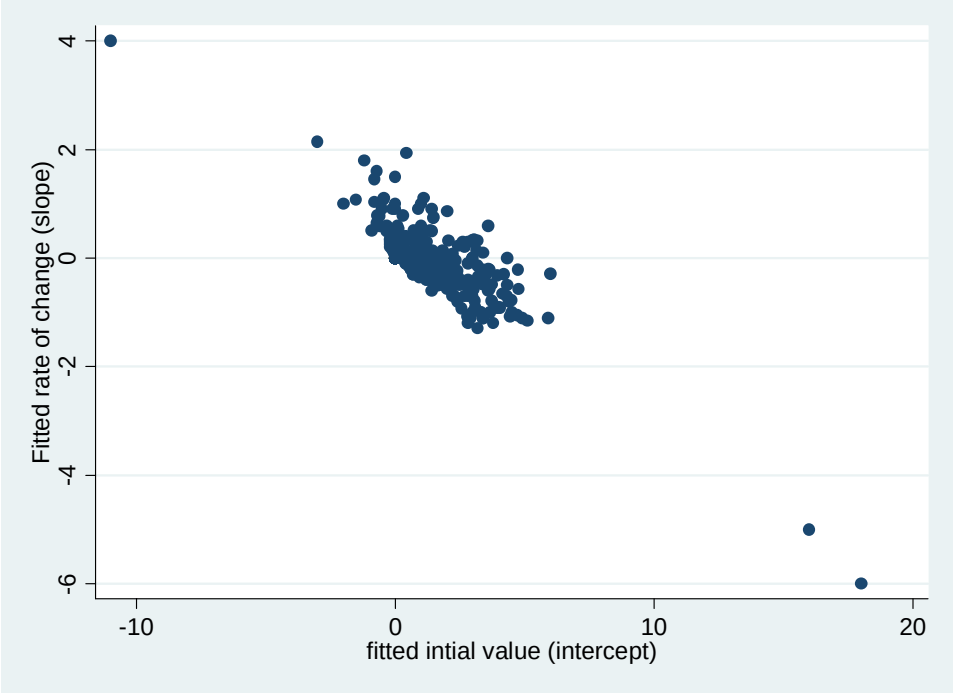

Figure 16. Fitted intercept and fitted slope for girls.

than the overall mean. On average, boys' levels of hopelessness showed very little across the middle adolescent years (slope = .03). Both boys and girls were scattered widely around the gender averages (more so for the intercept), showing considerable variability in their fitted initial status and fitted rates of change. The correlation of intercept with slope for boys was -0.74 and -0.81for girls. Girls with higher initial hopelessness tend to decrease more over time than boys with an equivalent level in initial hopelessness.

Modeling

Conditional Growth Models

Heterogeneity in hopelessness trajectories was explored separately for girls and boys. Preliminary models for K = 1,2,3,4 and 5 classes were estimated. These preliminary conditional growth models included early adolescence covariate predictors (connection to mother, positive neighborhood connectedness, early fighting, early violence with a weapon) and the distal outcome of violence with a weapon during later adolescence. Covariates were allowed to influence latent growth parameters (intercept, slope, quadratic coefficients as applicable) as well as class membership. The effects of covariates on growth parameters were constrained to be the same across classes. Information-based criteria (AIC, BIC, Sample adjusted BIC) were used for average model comparison and entropy was used to index goodness of classification in latent classes.

Girls. Informed by results from initial data analysis, growth models were based on linear function for girls. Due to negative residual variance in the slope, fixing the slope variance to 0 was required for the conditional models for girls. Fit statistics, entropy and latent class size can be found in Table 18. The 5-class model yielded latent covariance

matrix (psi) that were not positive definite regarding the intercept. The best fitting model for girls identified three distinct trajectory groups.

Boys. Results from initial data analysis favored a quadratic change function for boys, thus the conditional growth models for boys included a quadratic parameter. Fit statistics, entropy and latent class size can be found in Table 19. The best fitting solution for boys was a two latent class model. The latent class covariance matrix (psi) was not positive definite due to high correlations between slope and quadratic variance in the 3-, 4-, and 5-class models.

Candidate Models- Model Evaluation and Selection

The results of the conditional growth models, in particular the final solution of a two class model for boys, led the proposed multiple group models to be based on a two latent class model computed simultaneously for boys and for girls (2 known classes). Four models were estimated:

1. Linear change with equal covariate prediction.
2. Linear change with class-specific covariate prediction.
3. Quadratic change with equal covariate prediction.
4. Quadratic change with class-specific covariate prediction.

Initial solutions produced negative variance estimates for intercepts and slopes (Model 1) and slopes (Model 2). Therefore, the residual intercept and slope variances in Model 1 were fixed at 0 and the residual slope variance in Model 2 was fixed at 0.

Model evaluation and selection were based on statistical fit, classification quality (entropy) and theoretical plausibility. Theoretical plausibility included the theory of the

Table 18. *Conditional Linear Growth Models for Girls*

Criterion	1 class	2 class	3 class	4 class
AIC	4733	4604	4539	4450
BIC	4795	4696	4662	4573
Sample Adj. BIC	4744	4620	4561	4472
Entropy		.92	.92	.90
Number for each class	C1 = 353	C1 = 59 C2 = 292	C1 = 276 C2 = 35 C3 = 40	C1 = 42 C2 = 231 C3 = 61 C4 = 17

Note. 5 class model: covariance matrix (psi) not positive definite. Intercept problems.

Table 19. *Conditional Quadratic Growth Models for Boys*

	1 class	2 class	3 class*	4 class*
AIC	5338	5265	NA	NA
BIC	5439	5402	NA	NA
Sample Adj. BIC	5357	5291	NA	NA
Entrophy		.77	NA	NA
Number for each class	C1=370	C1=229 C2=141		

Note. *covariance matrix not positive definite.

relationship between the covariates and hopelessness trajectories and the theory of change in hopelessness.

Statistical fit. Models were assessed for statistical fit by comparing the Akaike information criterion (AIC), Bayesian information criterion (BIC), and the sample adjusted BIC. Statistical fit using the AIC, BIC, and sample adjusted BIC indices were similar for the three models (Table 20). Model 3 (quadratic change with equal covariate prediction) was the best fitting model indicated by the lowest AIC, BIC, and sample adjusted BIC.

Model 4, the ideal model, attempted to incorporate class-specific differences in covariate prediction with quadratic change in hopelessness during middle adolescence. This model was eliminated because the latent variable covariance matrix (psi) that was not positive definite due to high correlations between the slope and quadratic.

Classification quality. Entropy is a summary measure of how well people are classified into classes; or that cases within groups are more similar to each other and less similar from those in other groups in the way they change. Entropy is measured on a *0* to *1* scale, with numbers closer to 1 being more desirable. Ideally entropy is greater than 0.90. Both Model 2 (Linear change with class-specific covariate prediction) and Model 3 (Quadratic change with equal covariate prediction) had entropy greater than 0.90, with Model 2 showing a stronger classification quality with entropy of 0.92 (Table 20).

Theoretical plausibility: Relationship between covariates and hopelessness trajectory. Models 1 and 3 held the covariate prediction of connection to mother, positive neighborhood connection, early fighting and early violence with a weapon equal for all

Table 20. *Comparison of Statistical Fit for the Proposed Multiple Group Models*

	Model 1*	**Model 2****	**Model 3**	**Model 4*****
Change	Linear	Linear	Quadratic	Quadratic
Covariates	Equal	Class specific	Equal	Class specific
AIC	10972	10971	10844	NA
BIC	11114	11227	11050	NA
Sample Adj. BIC	11015	11049	10907	NA
Entropy	.871	.920	.908	
Number for each class	C1= 277	C1=295	C1=292	
	C2=74	C2=56	C2=59	
	C3=236	C3=113	C3=235	
	C4=134	C4=257	C4=135	

Note. *Intercept and slope variance fixed at 0; **Slope variance fixed at 0; **Covariance (psi) matrix not positive definite. *** Eliminated.

classes. For Model 1, none of these covariates significantly predicted initial status or rate of change of hopelessness during middle adolescence. With an increase in early violence with a weapon, the slope for hopelessness increased by 0.11 ($p < 0.08$). For Model 3, connection to mother predicted a lower initial status of hopelessness at middle adolescence (-0.11, $p < 0.02$).

This analysis is based on the proposition that an adolescent's trajectory of hopelessness is related to differences in levels of connectedness to mother and neighborhood during early adolescence as well as differences in violence involvement during early adolescence. Model 2 best met this proposition by allowing for covariate prediction to vary by latent class. Results from Model 2 are described below under *Final Model.*

Theoretical plausibility: Theory of change in hopelessness. An overview of the theory of change in hopelessness was presented in Chapter 2 with the Hope/Hopelessness Trajectory model and in Methods on p. 63, Models 1 and 2 examined linear change and the plausibility that hopelessness increases or decreases at a constant rate from the initial value at age 13 through age 16. Models 3 and 4 examined quadratic change or the idea that hopelessness has a variable rate of change during middle adolescence. For example, an increasingly hopeless individual becomes increasingly hopeless faster over time.

Missing Data

In this study, cases were selected based on the inclusion and exclusion criteria defined on p. 34 and in Figure 4 (i.e., based on the availability of data). Because selection of cases was based on these criteria, there are fewer missing data points in the current study.

Specific to GGMM and the modeling the trajectories of hopelessness, 84% of the participants had at least 3 of the 4 time points for hopelessness, with over 50% having all 4 time points available. Coverage gives the proportion of cases contributing to each element in the variance-covariance matrix. In GGMM, the minimum covariance coverage recommended for reliable model convergence is 0.10 (Muthén & Muthén, 2004). In this study, variance coverage ranged from 0.689 to 1.00 and covariance coverage ranged from 0.691 to 1.00.

Final Model

Model 2, linear change with class-specific covariate prediction, was selected as the study's final model. M*plus* output for the final model can be found in Appendix F. Parameter estimates are presented in Table 21. Two types of latent classes emerged for both boys and girls: (a) a *low hopelessness class* characterized by a lower initial status of hopelessness that decreased over time; and (b) an *increasingly hopeless class* characterized by similar initial levels of hopelessness that increased with time (Figure 17). Observed individual values with estimated latent class means and fitted individual values with estimated latent class means are shown by latent class in Figures 18 – 25.

For *low hopelessness girls* (Class 1), there were no significant relationships ($p < .05$) between the early adolescent covariates and trajectory membership in either initial status or rate of change in hopelessness. However, girls in this class who fought during early adolescence had an initial hopelessness score that was 0.47 point higher than girls who did not fight during early adolescence ($p < .10$). There was significant variation in the initial status of hopelessness (intercept).

Significant relationships existed between covariates and trajectory membership for the *increasingly hopeless girls* (Class 2). With every 1-point increase in early adolescent connection to mother, the initial level of hopelessness decreased by -0.23 ($p < .03$). For these young women, being connected to their mother was linked to increasing hopelessness during middle adolescence (.10, $p < .08$). Fighting during early adolescence resulted in a decrease in initial hopelessness of -2.04 ($p < .00$). With an increase in early fighting, hopelessness increased during middle adolescence by 0.83 ($p < .01$). Neighborhood connectedness trended towards increasing hopelessness during middle adolescence (0.83, $p < .10$).

For *low hopelessness boys* (Class 4), connection to mother was significantly related to initial level of hopelessness. With every 1-point increase in early adolescent connection to mother, young men's initial level of hopelessness decreased by -0.19 ($p = .01$).

Using a nominal p-value of .05, there were no significant relationships between early adolescent covariates and trajectory membership for *increasingly hopeless boys* (Class 3). However, several relationships approached significance. For young men in this class, positive connections to neighborhood during early adolescence was marginally related to higher initial levels of hopelessness (0.17, $p < .10$). Connection to mother was associated with decreases in the rate of change for hopelessness during middle adolescence (-.09, $p < .08$), so while this group's level of hopelessness increases over time, connection to mother slows the rate of change. In this class of young men, those

who fought during early adolescence exhibited decreases in hopelessness during middle adolescence (-0.29, $p < .08$).

Thresholds give an indication of the ease of responding *yes* to a binary variable. Thresholds are class specific and link pattern of change in hopelessness with propensity for violence with a weapon. It was more difficult for *low hopelessness girls* to respond affirmatively to the violence with a weapon item than *increasingly hopeless girls* ($\tau = .80$ verses $\tau = .15$, respectively); i.e., their threshold was higher. *Increasingly hopeless boys* were more likely to respond affirmatively to the violence with a weapon ($\tau = -.34$) than *low hopelessness boys* ($\tau = -.06$); i.e., their threshold was lower. Thresholds were lower for both classes of boys.

Table 22 displays the modeled means for the social connectedness covariates and hopelessness at each time point weighted by the estimated class probabilities for each class in the *Final Model*. Modeled values reflect trends in observed data, but with smoothness and clarity that highlights patterns across adolescent phases.

Tables 21 and 22 provide estimates of the proportion of violence with a weapon during later adolescence for each class. To reiterate, values in the table are estimates, not actual reported values. Predicted values of violence with a weapon during later adolescence were very different for the girls in the *increasingly hopeless class* (46%) compared to those in the *low hopelessness class* (31%). Among boys, hopelessness class membership was less related to predicted violence; the predicted value for of *increasingly hopeless class* was 58% and 49% for *low hopelessness class*.

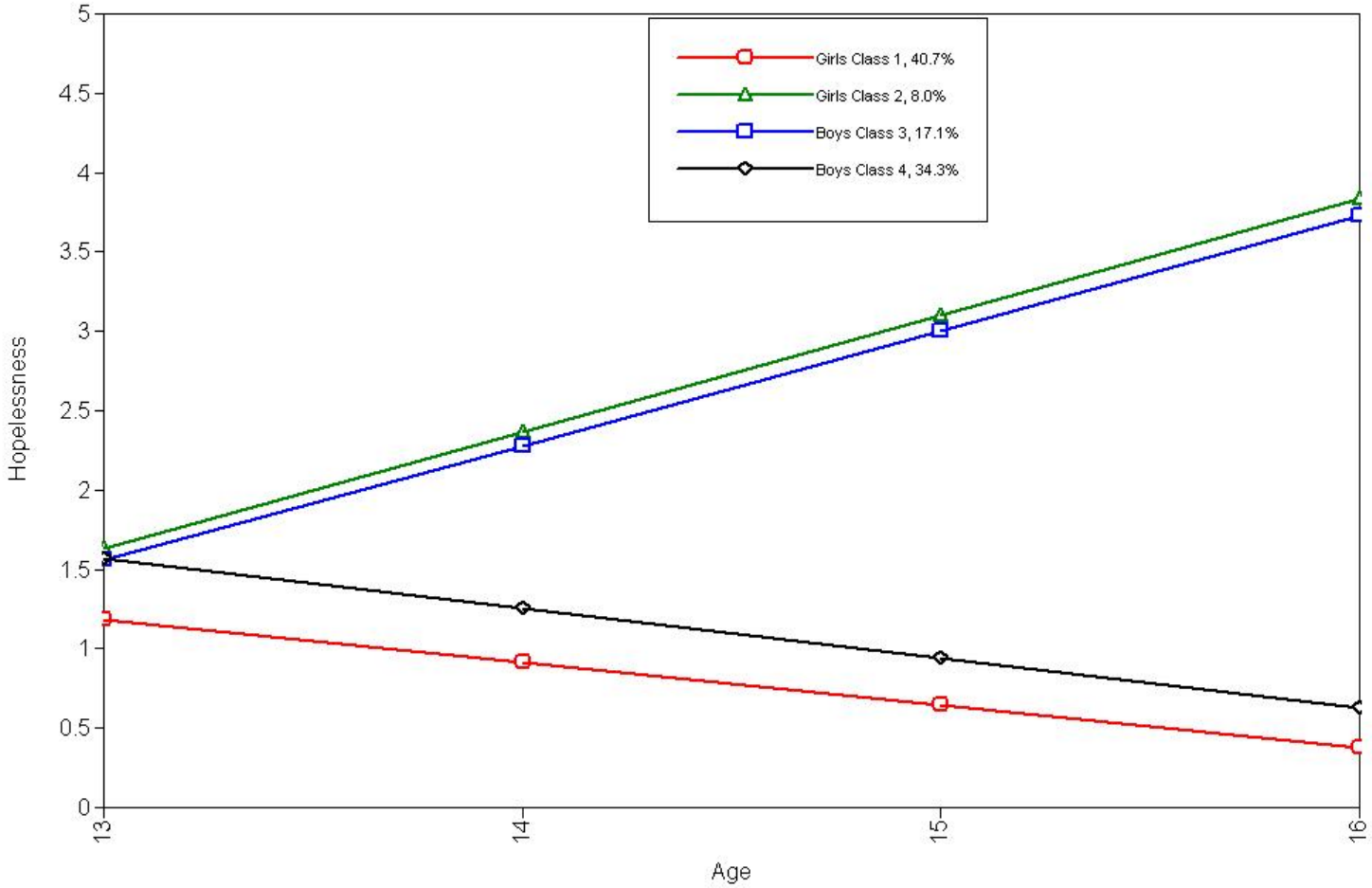

Figure 17. Final multiple group model (boys and girls) of trajectories of hopelessness over time, adjusted for the effects of the covariates.

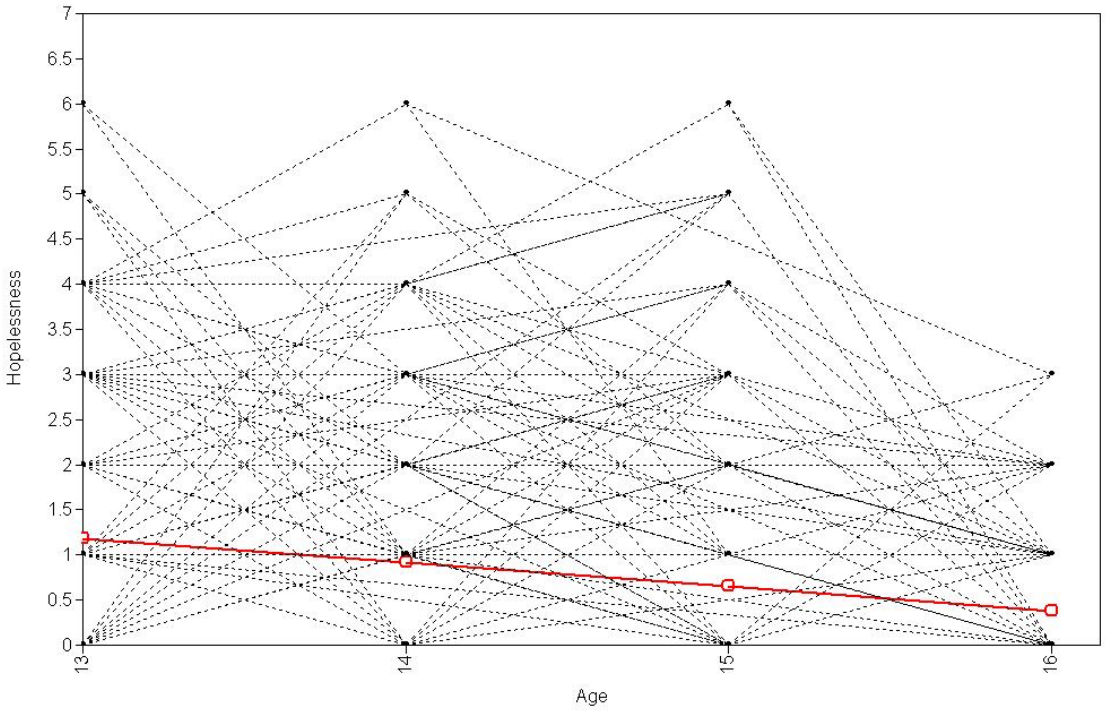

Figure 18. Observed individual values with estimated latent class means for Class 1 (Girls).

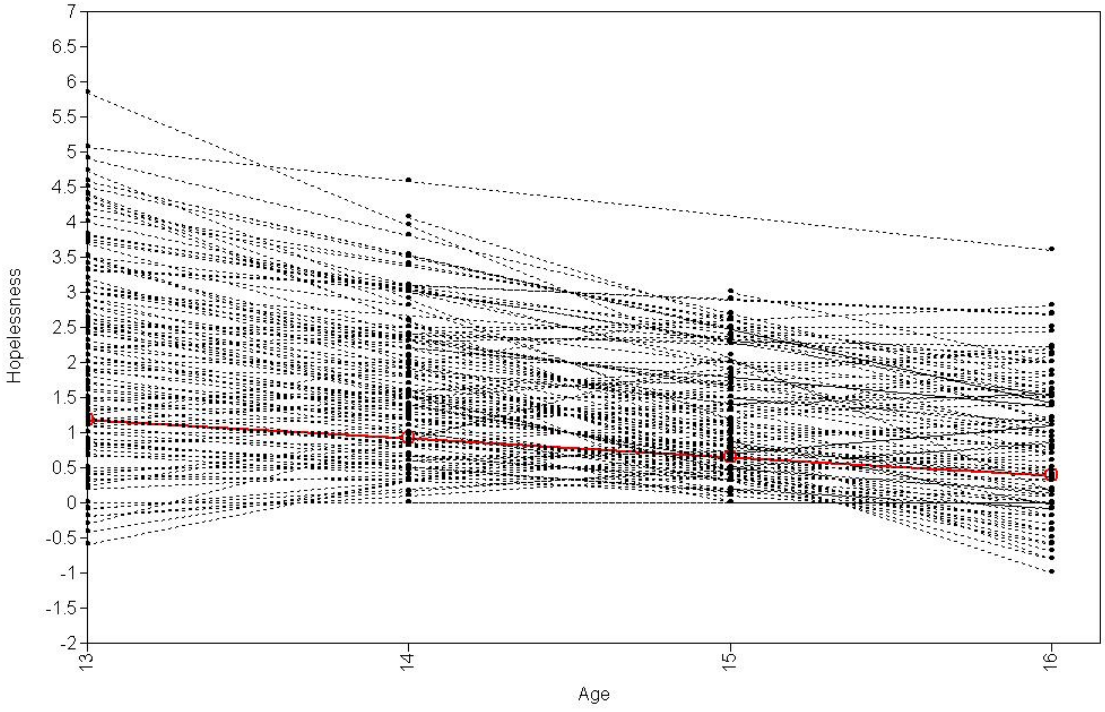

Figure 19. Fitted individual values with estimated latent class means for Class 1 (Girls).

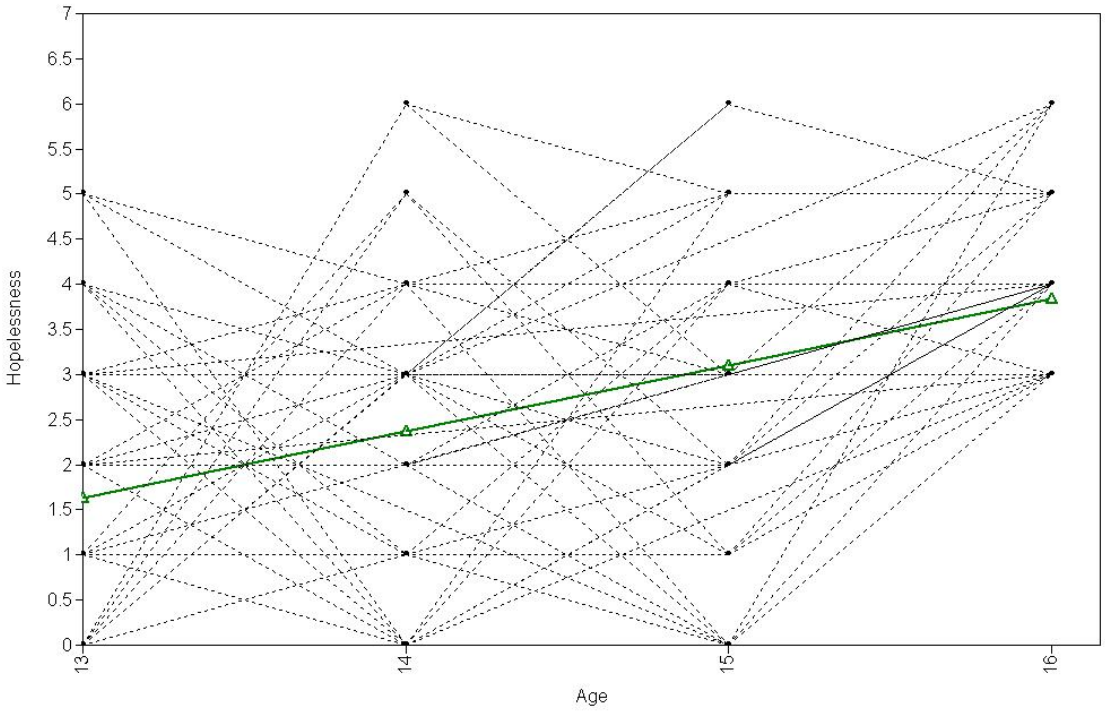

Figure 20. Observed individual values with estimated latent class means for Class 2 (Girls).

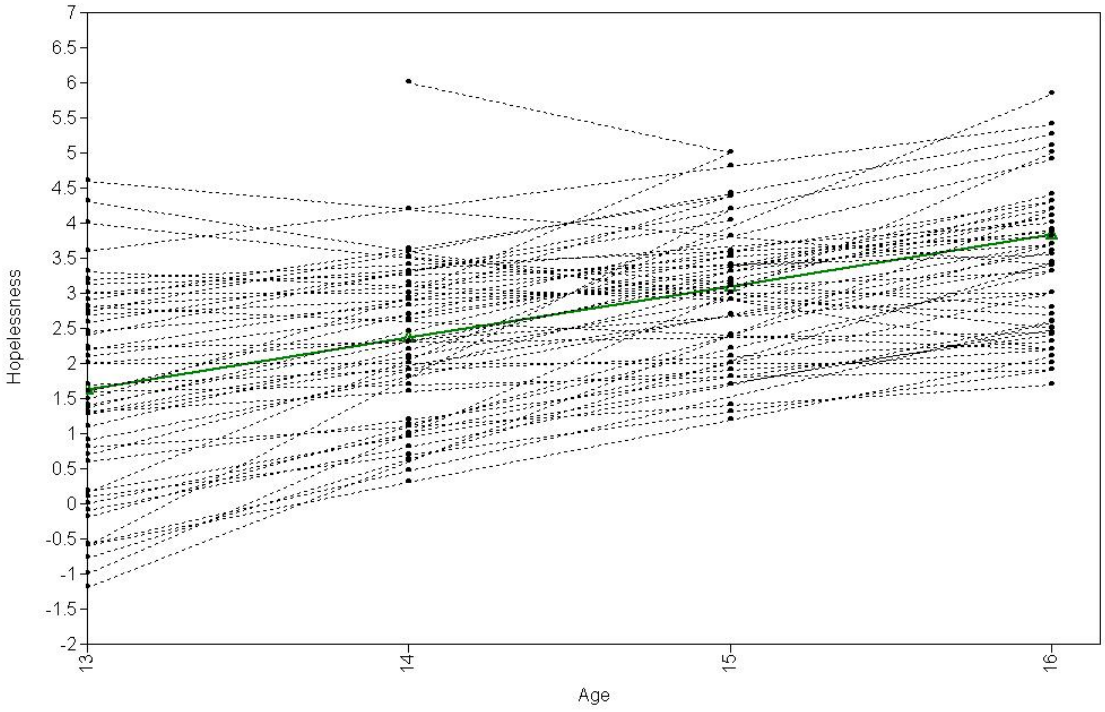

Figure 21. Fitted individual values with estimated latent class means for Class 2 (Girls).

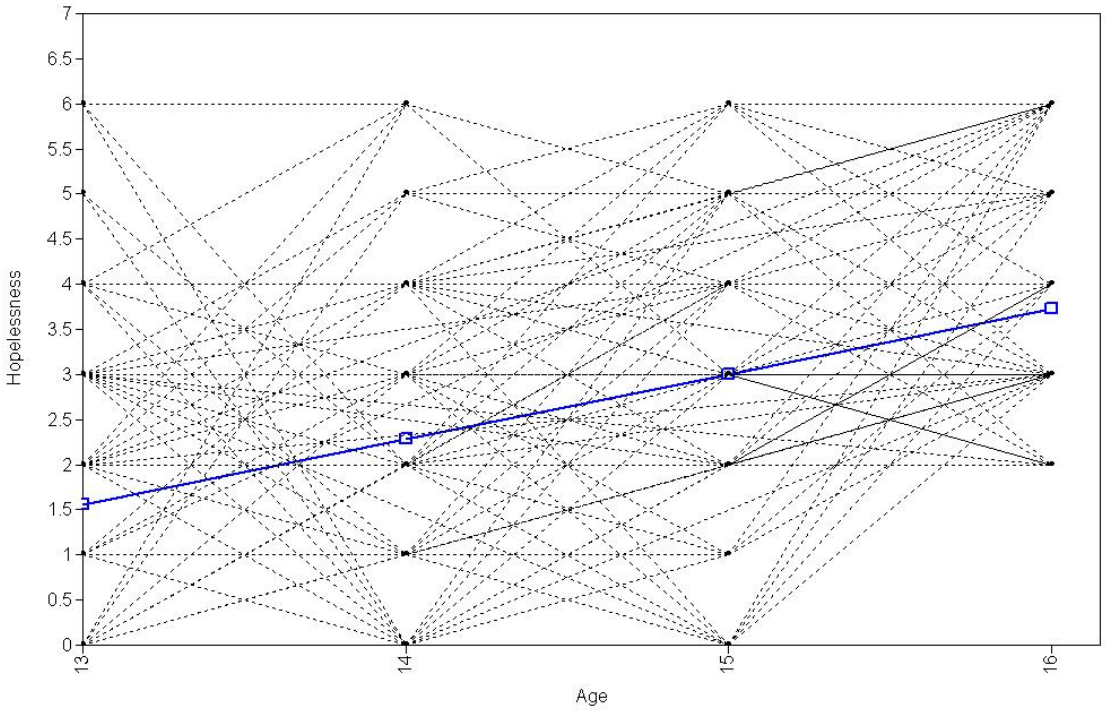

Figure 22. Observed individual values with estimated latent class means for Class 3 (Boys).

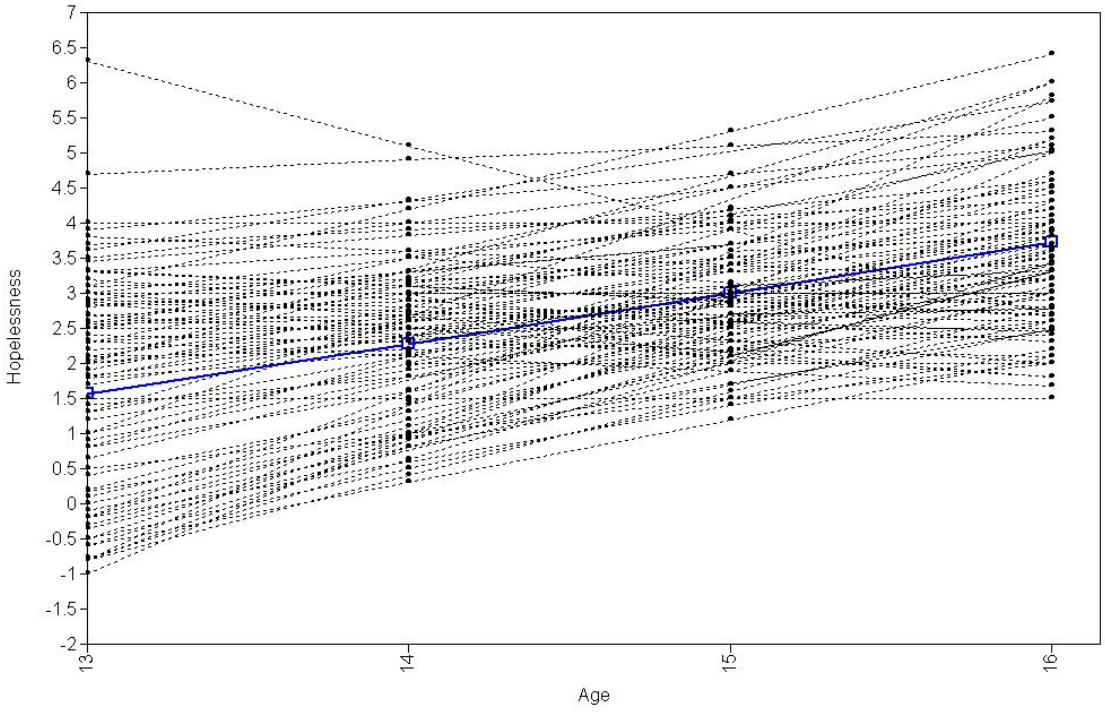

Figure 23. Fitted individual values with estimated latent class means for Class 3 (Boys).

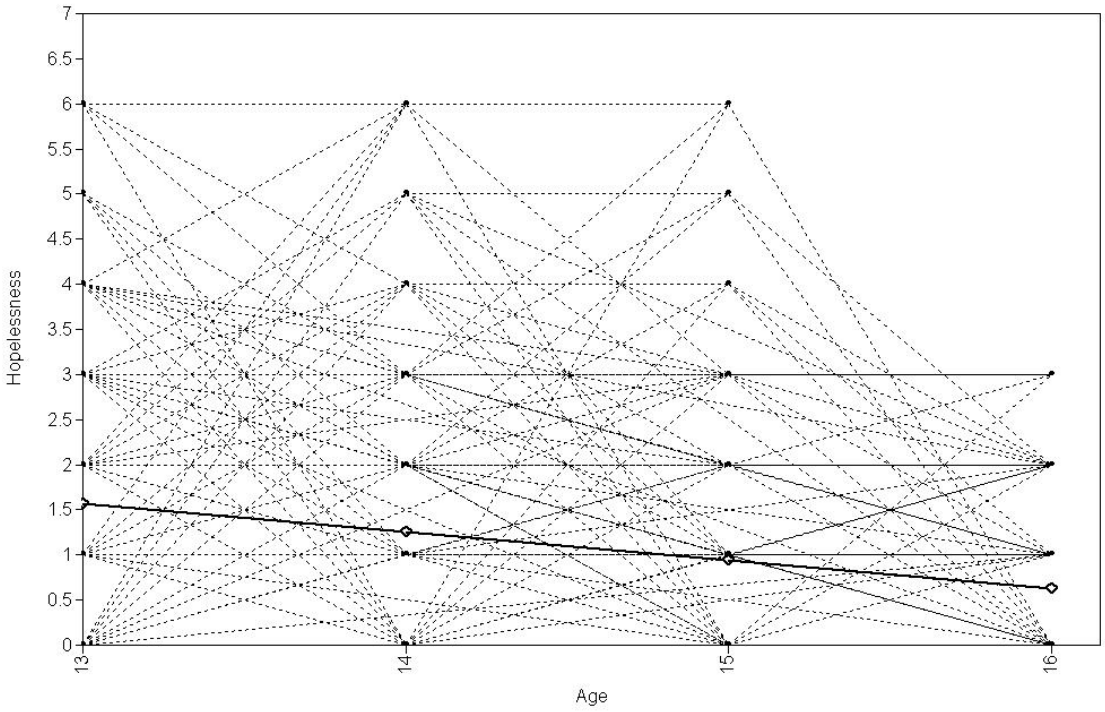

Figure 24. Observed individual values with estimated latent class means for Class 4 (Boys).

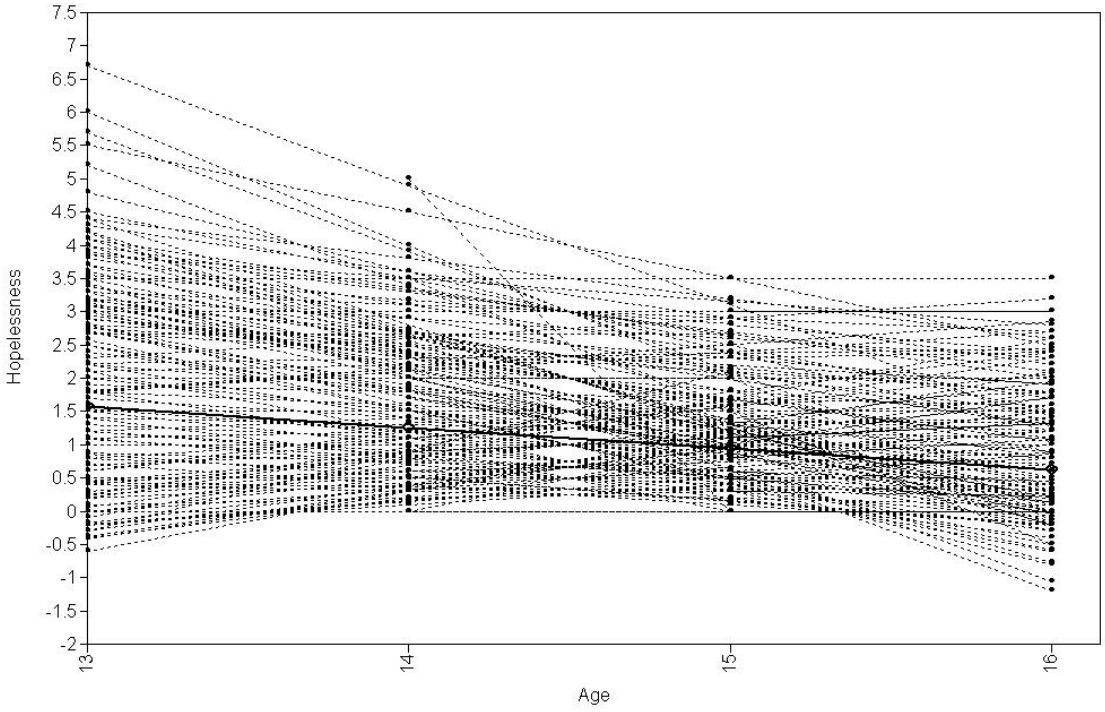

Figure 25. Fitted individual values with estimated latent class means for Class 4 (Boys).

Table 21. *Parameter Estimates for Final Model*

	Girls				Boys			
	Low Hopelessness n = 295 (41%)		Increasingly Hopeless n = 56 (8%)		Low Hopelessness n = 257 (36%)		Increasingly Hopeless n = 113 (16%)	
Parameter Estimates	Coef	(SE)	Coef	(SE)	Coef	(SE)	Coef	(SE)
α_0	1.51	(.46) *	3.91	(.87)*	2.05	(.44)*	1.27	(.72)**
α_1	-.28	(.15)**	-.014	(.35)	-.10	(.17)	1.46	(.34)*
ζ_0	.20	(.05)	.20	(.05)	.20	(.05)	.20	(.05)
ζ_1	.00	(Fixed)	.00	(Fixed)	.00	(Fixed)	.00	(Fixed)
γ_0| mother	-.10	(.09)	-.23	(.10)*	-.19	(.07)*	-.08	(.11)
γ_0| neighborhood	.01	(.05)	-.24	(.18)	.09	(.06)	.17	(.10)
γ_0 | fighting	.47	(.25)**	-2.04	(.53)*	.20	(.28)	.27	(.42)
γ_0 | weapon	.13	(.22)	.44	(.46)	.01	(.27)	-.17	(.38)
γ_1| mother	.02	(.03)	.10	(.05)**	-.02	(.03)	-.09	(.05)**
γ_1| neighborhood	-.02	(.02)	.83	(.05)	-.04	(.03)	-.05	(.05)
γ_1| fighting	-.08	(.08)	.83	(.30)*	-.04	(.10)	-.29	(.16)**
γ_1 | weapon	-.05	(.07)	-.23	(.22)	.15	(.11)	.04	(.17)
τ | violence with a weapon during later adolescence	.31		.46		.49		.58	

Note. *p < . 05; ** p < .08

Table 22. *Class Differences Weighted by Estimated Class Probabilities*

	Girls Modeled Means		**Boys Modeled Means**	
	Low Hopelessness (Class 1)	Increasingly Hopeless (Class 2)	Increasingly Hopeless (Class 3)	Low Hopelessness (Class 4)
Hope				
Age 13	1.15	2.00	2.07	1.54
Age 14	.84	2.08	1.90	1.24
Age 15	.82	2.42	2.28	1.16
Age 16	.36	3.97	3.87	.59
Connection to mother	5.12	4.81	4.96	4.77
Connection to neighborhood	4.03	3.76	4.02	3.78
Fighting during early adolescence	20%	17%	34%	28%
Violence with a weapon during early adolescence	21%	23%	44%	28%
Estimated probability of violence with a weapon during late adolescence	31%	46%	58%	49%

CHAPTER V

DISCUSSION

The purposes of the current study was to develop and test a longitudinal model linking social connectedness during early adolescence with serious violence involvement during later adolescence via trajectories of hopelessness during middle adolescence among an urban, low income group of adolescence. The study had two aims, namely (a) to describe social connections and violence involvement during early adolescence, hopelessness across middle adolescence, and violence with a weapon during late adolescence for boys and girls; and (b) to link social connections and violence in early adolescence with violence with a weapon in late adolescence via hopelessness trajectories during middle adolescence. Parameters of hopelessness trajectories during middle adolescence were estimated for boys and girls, and latent classes based on developmental patterns of hopelessness were identified as part of the analysis. General growth mixture modeling with multiple group analysis was used to simultaneously identify initial levels of hopelessness, course of hopelessness during middle adolescence, and predict class-specific distal outcome of violence with a weapon for boys and for girls and evaluated for gender differences in these models.

This study utilized data from the Mobile Youth Survey (MYS), a multiple cohort study of adolescents living in 14 neighborhoods in Mobile and Prichard, Alabama. The sample consisted of 723 adolescents who participated in 5 or more years of the Mobile

Youth Survey (MYS). Each adolescent completed at least one survey during each of the developmental stages of adolescence: early adolescence (ages 10 – 12), middle adolescence (ages 13 – 16), and later adolescence (ages 16 – 18). The sample was approximately equal in gender and the majority of the sample reported being African American (93%). All 14 neighborhoods were represented. The characteristics of the current study sample are consistent with the characteristics of the overall MYS study sample published elsewhere (Bolland et al, 2007; Bolland et al., 2005).

This chapter will summarize and discuss the results of the study. Limitations will be addressed. Recommendations for future research will be made. Implications for public health nursing practice will be proposed.

The focus of Aim 1 was to describe social connections, hopelessness, and violence involvement for this sample of boys and girls. In this sample, both boys and girls reported strong connections to their mothers and moderate positive connections to their neighborhoods during early adolescence. On average, levels of hopelessness decreased during middle adolescence. However, when examined separately by gender, boys reported higher average levels of hopelessness than girls at ages 13 – 16 and exhibited an increase in average hopelessness from age 14 to ages 15 and 16. Violence involvement was high during both early and later adolescence for this sample. Over half of boys and one-third of girls reported physical fighting during early adolescence. One-third of boys and one-fifth of girls reported involvement in violence with a weapon during later adolescence. During both early and later adolescence, the proportion of boys participating in violence was significantly higher than girls.

Aim 1 analysis also explored relationships between variables of interest across time periods. Adolescents who reported strong connections to their mother during early adolescence were less hopeless at each middle adolescent time point. For girls, physical fighting during early adolescence was associated with increased hopelessness at age 14. For the total sample, physical fighting during early adolescence was associated with increased hopelessness at ages 14 and 16. For boys, violence with a weapon during early adolescence was associated with increased hopelessness at age 16. For the full sample, violence with a weapon during early adolescence was associated with increased hopelessness at ages 14 and 16. There were no significant correlations between positive neighborhood connectedness during early adolescence and hopelessness during middle adolescence.

For boys and girls, fighting and violence with a weapon during early adolescence were significantly related to violence with a weapon during later adolescence. For boys, connection to mother during early adolescence was protective against violence with a weapon during later adolescence. Positive neighborhood connectedness during early adolescence was not associated with violence with a weapon during later adolescence.

The Hopelessness Trajectory Model

Preliminary Development

The development of the trajectory model was guided by the ecological theory of human development, knowledge of adolescent development, current research literature, and current thinking on measurement of change over time. The model incorporates the aspect of time in adolescent development, and acknowledges the role that previous experiences play in present and future behaviors and experiences and the influence of

social context on development. Of interest was the role that social context in the form of perceived social connections played in the development of hopelessness, and the role that hopelessness played in later risk behaviors such as violence.

The goal of Study Aim 2 was to empirically test the relationships proposed in the hopelessness trajectory model, thus examining links between social connections and violence in early adolescence and violence with a weapon in later adolescence via hopelessness trajectories during middle adolescence. Initial data analysis using OLS regression provided an average initial level and rate of change for hopelessness for the full sample and for boys and girls separately. Results for the full sample were similar to the hopelessness trajectory findings described by Bolland et al (2007), in which hopelessness, on average, decreased over time during middle adolescence. The results for boys and girls separately revealed differences in both the initial level of hopelessness and in the rate of change, with girls being less hopeless than boys at the beginning of middle adolescence and exhibiting hopelessness that decreased more over time.

Examination of individual data plots for a selected sample of the study population revealed a variety of hopelessness trajectories during middle adolescence. OLS regression results also showed significant variability (through large standard deviations) around the fitted initial level of hopelessness and the fitted rates of change for the full sample, and for boys and girls separately. Large intercept and slope variances suggested that the average tendency may conceal subpopulations and pointed to the possibility of distinct latent subgroups based on initial level of hopelessness and change in hopelessness during middle adolescence.

Final Model

Table 23 presents summary results from the final model, completed using general growth mixture model with multiple group analysis. The analysis revealed that a large percent of boys (41% of the full sample) and girls (34% of the full sample) belonged to *low hopelessness* classes. Youth in these groups began middle adolescence with lower hopelessness that decreased slightly during middle adolescence, similar to the "average" reported in the OLS analysis. However, the final model revealed smaller subgroups that, rather than conforming to the "average", showed increasing hopelessness during middle adolescence. Subgroups of boys (17% of the full sample) and girls (8% of the full sample) were characterized as being *increasingly hopeless*.

Early adolescent covariates. For *increasingly hopeless* girls, fighting during early adolescence and a strong connection to mother during early adolescence were associated with lower levels of hopelessness at the start of middle adolescence. While not statistically significant ($p < .08$), girls who reported stronger connections to their mothers had greater increases in hopelessness throughout middle adolescence. *Low hopelessness boys* who reported strong connections to their mothers had significantly lower levels of hopelessness at the onset of middle adolescence. No significant relationships were identified between the early adolescent covariates and hopelessness for *low hopelessness girls* or *increasingly hopeless boys*. There were no significant relationships between positive neighborhood connectedness during early adolescence and hopelessness during middle adolescence for any class.

Violence with a weapon in later adolescence. Overall, estimates of participation in violence with a weapon during later adolescence were remarkably high in this sample.

Table 23. *Final Model Summary*

Class	Class Name	Gender	Percent of Total Sample	Early Adolescent Significant Covariates		Later Adolescence	
				Initial status (I)	Rate of change (S)	Violence Threshold	Weapon Violence
1	Low hopelessness	Girls	41	NA	NA	.80	.31
2	Increasingly hopeless	Girls	8	Mother Fighting	Fighting	.15	.46
3	Increasingly hopeless	Boys	17	NA	NA	-.34	.58
4	Low hopelessness	Boys	34	Mother	NA	.06	.49

More girls in the *increasingly hopeless* group reported violence with a weapon during early adolescence (46%) than did girls in the *low hopelessness* group (31%). Participation in violence with a weapon during later adolescence was normative among young men. Almost half (49%) of low hopelessness boys reported violence with a weapon during later adolescence, and an even greater proportion of *increasingly hopeless* boys reported participating in violence with a weapon (58%). *Low hopelessness* girls were much less likely to respond affirmatively to the violence with a weapon item than *increasingly hopeless* girls (τ = .80 verses τ = .15, respectively). *Increasingly hopeless* boys were more likely to respond affirmatively to the violence with a weapon (τ = -.34) than low hopelessness boys (τ = -.06); however, boys are more likely respond *yes* to the violence with a weapon item than girls regardless of hopelessness class.

The association between fighting during early adolescence and lower levels of hopelessness at the start of middle adolescence for *increasingly hopeless* girls was surprising. For these girls, fighting may function as a coping strategy and a mechanism for dealing with stress. Similarly, Foney & Cummingham (2002) found that adolescents who reported an absence of other supportive coping mechanisms (e.g., school counselor) used maladaptive coping mechanisms such as fighting to cope with stressful circumstances. Fighting is an action and is about being agentic and effective in the world, as opposed to being a victim. It can serve as a mechanism of feeling in control of their situation. Fighting may contribute to feeling positive about their ability to protect themselves from harm and may provide higher status among their peers. It is plausible that hopelessness could be related to victimization.

In this study, adolescents who reported strong connections to mother during early adolescence were less hopeless during middle adolescence. These findings are similar to other studies examining connection to mother and hopelessness (Bolland, Lian & Formichella, 2005). However, while previous research suggested that connection to parents is protective against adolescent risk behaviors including violence with a weapon (Henrich et al., 2005; Molnar et al., 2004; Resnick et al., 1997; Resnick et al., 2004), this study did not find a significant relationship between connection to mother during early adolescence and violence with a weapon during later adolescence. One explanation may be related to the longitudinal design of the current study. A period of time elapsed between measurement of connection to mother and measurement of serious violence. This time lag may have weakened any existing association between connection to mother and violence with a weapon. Or, it may be that as time goes by connection to mother is less influential on a young person's participation in violence with a weapon. Associations may have differed if violence with a weapon had been measured at age 13 or 14.

Previous cross-sectional research has demonstrated associations between positive neighborhood connectedness and lower levels of violence among adolescents from poor urban neighborhoods (Widome et al., 2008). In the sample for this study, there were no significant correlations between positive neighborhood connectedness during early adolescence and hopelessness during middle adolescence or positive neighborhood connectedness during early adolescence and violence with a weapon in later adolescence. While connection to neighborhood is often thought of as protective, this may not always be the case. Perhaps the range of neighborhood characteristics was so narrow in the

current study that no effects were seen. Or, connections to neighborhoods with high poverty, criminal activity and violence may contribute to hopelessness during adolescence (Caughy et al., 2005; Wright et al., 2006). Feeling connected to a neighborhood with limited educational and employment opportunities is likely to contribute to feelings of hopelessness for young people.

In this sample, hopelessness appears to contribute less towards participation in violence with a weapon during later adolescence for boys than for girls. This differs from a previous cross-sectional examination of MYS participants. Bolland and colleagues (2003) found that violence behaviors (specifically weapon carrying, cutting or shooting someone, and gang membership) were significantly more prevalent in both boys and girls who reported higher levels of hopelessness. The current study differs in two important ways. First, the current study examined the relationship between hopelessness during middle adolescence and violence during later adolescence (across phases of adolescence development). Relationships that are significant at a single measurement point may not necessarily be significant when examined over time. Second, violence with a weapon was measured differently between the two studies. The current study operationalized violence with a weapon by creating a dichotomous measure of four weapon-related items. Bolland and colleagues examined violence items separately. Little is known about the relationship between hopelessness and violence within a time period or between time periods or if differences exist based on gender. This study suggests that interventions targeting hopelessness may be more helpful for females than for males.

Re-assessment of Statistical Assumptions

The statistical modeling method for this study, general growth mixture modeling (GGMM), falls under the larger scope of group based modeling of individual trajectories. Group based modeling assumes that there may be clusters or groupings of distinctive developmental trajectories that themselves may reflect distinctive etiologies (Nagin & Tremblay, 2005a). The groups may not be literally distinct "real" entities but rather serve as a statistical approximation to a more complex underlying reality. In this study, the assumption was that distinct groups of adolescents would exist based on their trajectory of hopelessness during middle adolescence, as well as influenced by the covariate predictors of social connections and violent behavior in early adolescence. As these are not "real" groups, it is assumed that these statistically approximated groups would provide insight into behaviors of actual groups of young people.

By using growth mixture modeling, this study used a person–centered focus to represent heterogeneity in developmental trajectories as it takes unobserved differences in change into account. A categorical latent variable is used to represent the latent classes with each latent class corresponding to a subpopulation that has its own set of change parameters values. The categories describe groups of individuals who are homogeneous within a given category and are heterogeneous across categories.

Hierarchical modeling and latent curve modeling are similar in that they also model individual heterogeneity, but assume that the population distribution of trajectories varies continuously across individuals and in a fashion that can ultimately be explained by a particular multivariate distribution of population parameters. In other words, they assume

that all individuals in the sample belong to a single population. Growth mixture modeling estimates the mean growth curve for each class and captures individual variation around these growth curves by the estimation of growth factor variances for each class. This is different from latent class growth analysis (LCGA) as LCGA estimates a mean growth curve for each class but no individual variation around the mean growth curve is allowed (Muthén & Muthén, 2000).

This study used a group-based statistical modeling approach to determine latent classes. There are benefits of using the group-based modeling approach to determining class membership verses creating subjective classification rules (Nagin & Trembley, 2005b). General growth mixture modeling is capable of identifying qualitatively distinct developmental progressions that are not readily identifiable using ad hoc, pre-determined classification rules. Using a formal statistical structure offers the ability to distinguish chance variation across individuals from real differences and for calibrating whether individual change is real or only random variation in behavior (Nagin & Tremblay, 2005a).

It is important to recognize that GGMM is estimating class membership by replacing the grouping variable with a probability of class membership with each class contributing to the parameter estimates of each latent class commensurate with its probability of membership to that class (Muthén & Muthén, 2004). Because group membership is unobserved, the proportion of participants in each latent class is unknown and must be estimated along with the other parameters in the model. GGMM creates trajectory groups as a way of summarizing behaviors and characteristics of a group of individuals that

follow approximately the same pattern of change over time. No individual's observed trajectory will exactly match the latent group average. This can be seen when plotting both the observed individual values and the estimated latent class mean (see Figures 18 – 25 in Chapter 4).

Missing Data

Participants were selected based on the inclusion and exclusion criteria outlined in the *Methods* section which included participating in the MYS for 5 or more occasions between 1998 and 2006. All participants completed at least one survey during early adolescence (ages 10 – 12) and one survey during later adolescence (ages 16 – 18). A single measure was then created for each of the early adolescent covariates and the later adolescent outcome variable; missing data for the early adolescent and later adolescent covariates was minimized. Scores for the social connections, hopelessness, and violence with a weapon variables were based on an individual's available items. All participants had at least one hopelessness measure between the ages of 13 – 16, with over 80% of the sample having 3 or 4 time points during middle adolescence. GGMM is capable of estimating trajectories based on available data. Due to the selection of participants, there was limited data missing for this subsample of MYS participants.

Attrition for MYS is discussed in Appendix A and needs to be considered as the current study is based on a subsample of the larger MYS sample. Attrition from MYS, particularly during later adolescence could point to missingness due to the inability to participate in the survey due to employment, or to the other extreme of incarceration or

death due to the very outcome we were assessing, weapon-related violence. Issues of attrition and generalizability will be addressed in *Limitations*.

Limitations

Model Specification

The residual variance in slope parameters within latent classes was fixed at 0 to facilitate convergence to a proper solution with parameter estimates within bounds of permissible values. This restriction implied that intraindividual variation over time (change) was adequately modeled by the slope estimate for class and that individual deviation from the class mean was random error. However, intercepts were free to vary within class.

Measurement

Measurement limitations reflect, in part, limitations of a secondary data analysis. Observed variables for the current study were limited to those used in the MYS study. Keeping in mind the proposed model, variables were selected from the MYS. Two scales were selected to examine social connections: the warmth towards mother and the psychological sense of community. The psychological sense of community scale is an 11-item scale of both positively and negatively worded items about psychological connectedness to neighborhood. In an initial exploratory analysis, the 11-item scale showed low internal consistency reliability, so this study used the six positively worded items to measure neighborhood connectedness. The 6-item Brief Hopelessness Scale, contained in the MYS, was selected to measure the concept of hopelessness.

Research suggests that the greatest predictor of future violence is previous violence, so two measures of early adolescent violence were selected: a single item measuring physical fighting and four items that were combined in a dichotomous variable measuring violence with a weapon. The outcome of interest was the perpetration of serious violence, measured as violence with a weapon. Four items were selected (threatening with a weapon; brandishing a weapon; cut or stab someone; and shot someone) and combined into a single dichotomous variable measuring recent participation in violence with a weapon.

A second concern related to measurement error is reliability of the measures. In classical test theory, reliability refers to the extent to which a score is free from random error (McDowell, 2006). The reliability indicates the precision around an individual's true score that is the same for all score levels (Sitjsma, 2009). Reliability for the two social connection scales (connection to mother and neighborhood connectedness) and the Brief Hopelessness Scale in the current study were between .72 - .80. These levels were consistent with levels reported in previous studies (Bolland et al., 2007; Bolland et al., 2005). While there is variability in an acceptable level (McDowell, 2006; Aneshensel, 2002), it is important to recognize that an $\alpha = .80$ indicates that an estimated 20% of the observed variance is due to random measurement error. Such error limits the precision with which structural model parameters can be estimated.

Another concern regards use of the hopelessness instrumentation to measure individual change. Internal consistency reliability does not necessarily provide information about inferring true change at the individual level (Collins, 1991). Overall,

the Brief Hopelessness Scale worked well for measuring change in the current study. Participants answered the items at all ages and showed variation over time. Patterns were interpretable.

External Validity and Generalizability

This analysis was based on data collected through an observational, longitudinal study of adolescents from 14 impoverished neighborhoods in an urban area in the South. The adolescents in this study were primarily African American, living in neighborhoods that were also predominately African American. As described in Appendix A, this study was based on adolescents living in poor families within extremely poor neighborhoods. This study was based on data collected between 1998 and 2006. Even with understanding the characteristics of the sample, caution should be used in generalizing these findings to other populations due to the observational nature and the limited geographical area of this study.

Factors of race, culture, geography, SES, history, and cohort influence all aspects of this study, as they are part of a young person's social context and influence the way they perceive and respond to relationships, hope for the future, and violence. Events taking place during this time period may have influenced the study cohorts' connections to mother and neighborhood, hopelessness, and involvement in violence. If measured today, recent events such as the election of the first African American President of the United States may influence an adolescent's hope or hopelessness and result in different findings.

Adolescents included in this analysis may also differ from other MYS participants who completed a survey less than 5 times, those who did not complete a MYS survey during early adolescence or during later adolescence, or those who live in the MYS neighborhoods but never participated in MYS.

Alternative Explanations

This analysis examined relationships between social connections and participation in violence during early adolescence, hopelessness during middle adolescence, and violence with a weapon during later adolescence. Alternatives exist for various aspects of the model including choice of predictors of violence and hopelessness, modeling trajectories of hopelessness, definitions of the violence outcome, and cut points for early, middle and later adolescence.

Predictors of Violence and Hopelessness

As outlined in Table 1 of the literature review, there are many risk and protective factors related to involvement in serious violent behavior at all levels of Brofenbrenner's (1979, 2005) ecological model. This study focused on individual-level predictors of violence involvement during early adolescence and hopelessness during middle adolescence, and microsystem factors of perceived connection to mother and neighborhood connectedness. While Table 1 provides an extensive list of factors to consider when examining the problem of youth violence, the microsystems associated with additional settings of peers, school, faith-communities, and neighborhoods are discussed below.

Role of peers across settings. The importance of social influences through peer networks increases during adolescence. Peers can either be pro-social or offer negative influences. Youth who socialize with peers who are engaged in violent behaviors are more likely to engage in violent behaviors themselves (Herrenkohl et al., 2000; Valois, et al., 2002). On the other hand, associating with peers who disapprove of delinquent behavior has been shown to inhibit participation in violence (Valois).

School. School is an important aspect in the life's of young people, as for most adolescents, much of their time is spent in school. School may play an important part in protecting young people from participating in serious violence. Young people who report feeling connected to school were less likely to participate in violence and other risk behaviors (Resnick et al., 2004; Resnick et al., 1997). Schools also offer the opportunity for connections to other caring adults (teachers and school personnel). Children and adolescent who perform poorly at school (academically), have a low degree of commitment to school, and have problems with truancy and suspension are at risk for violence. School transitions, in particular multiple transitions over a short period of time, have also been associated with increased violence (Valois, et al, 2002).

Faith-community. On a micro-system level, involvement in faith community (e.g., social aspect of 'church') is another mechanism for developing close relationships with caring adults who may recognize, value and reward prosocial behavior (Wright & Fitzpatrick, 2006). Faith communities also offer opportunities for young people to contribute. At an individual level, a personal sense of religiosity or spirituality has been identified as protective against violence involvement (Resnick et al., 2004).

Community. In addition to a sense of neighborhood connectedness, factors such as community-level resources and witnessing violence in the community can influence a young person's level of hopelessness and violent behaviors. Community-level resources have been shown to protect young people from violence involvement including engaging in violence with a weapon (Molnar et al., 2008; Sampson et al., 1997). Witnessing community violence has been identified as a strong risk factor for engaging in violent behaviors (Herrenkohl et al., 2000) and contributes to a sense of hopelessness (Bolland et al., 2005).

Trajectories of Hopelessness

In this study, GGMM identified 2 distinct hopelessness trajectory classes for boys and for girls. GGMM did reveal subgroups that were different from the "average". However, in this sample, modeling revealed fewer latent classes than proposed in the hope/hopelessness trajectory model. It is possible that for this sample only two types of classes exist, a class with increasing hopelessness and a class with lower levels of hopelessness during middle adolescence. However, this finding may be related to choices made in statistical modeling, such as the frequency and duration of observations or the selection of linear and quadratic functional forms of change. More frequent observations or a longer duration of observations may be needed to see additional patterns and model their parameters. An alternative would be to model trajectories of hopelessness in GGMM using an exponential function (Curran & Hussong, 2003; Singer & Willett, 2003). An exponential function is used to model change that tends toward some asymptote. Models using an exponential function are based on the premise that future

increases or decreases are proportional to prior increases or decreases. This premise fits with the propositions made by the hope/hopelessness trajectory model.

As discussed in the review of the literature, it is during adolescence that individuals cognitively become increasingly capable of abstract thinking and self reflection, and are in the process of forming coherent identity that requires the integration of past, present, and future selves (Erickson, 1968; Erickson, 1964; Keating, 1990; Marcia, 1980; Piaget, 1975; Wessman & Gorman, 1977). These advances in time perspective and identity development are important for the ability to think about the future (Greene, 1986; Lessing, 1972; Nurmi, 1991). With advances in cognition during middle adolescence, a larger portion of the adolescents in this study are described by the *low hopelessness* latent class. However, there were latent subgroups of boys and girls that reported increases in hopelessness during middle adolescence (*increasingly hopeless* classes).

Violence

In this study, the outcome of violence with a weapon was measured by a single dichotomous outcome combining four weapon-related items. This decision may impact the findings and interpretation of the study results. Measuring violence as a dichotomous (*yes* or *no)* outcome does not describe the intensity or frequency of violence in this sample. By combining the four weapon-related violence items into a single measure the specific behaviors measured by those items are lost. The use of the dichotomous, combined measure of violence with a weapon merely offers a glimpse into this samples involvement in serious violence. Alternative measurement options include examining

each weapon-related violence item separately (Bolland et al., 2005; Bolland et al., 2007; Molnar et al., 2004) or using a scale that measures frequency of weapon-related behaviors (DASH/CDC, 2003).

Adolescent Phases (Time)

This study used a priori cut points for adolescent periods or points of transition between the phases of adolescence. By using predetermined cut points based on chronological age, the assumption is made that all adolescence transition between adolescent phases at the same age (chronologic point in time). This may not be the case for all adolescents. In fact, it could be argued that transitions between phases of adolescence is, in itself, a latent variable that reflects physical, cognitive, emotional, social, and spiritual status at the individual level. An alternative approach could be to create a latent variable capturing aspects of adolescent development to determine transition between phases.

Implications

Findings from this study have implications both for future research and for interventions with adolescents targeted at preventing and reducing youth violence.

Recommendations for Research

Study findings raise questions for further research in a number of areas. As with other observations studies, generalizabilty of the study findings is limited thus there is a need to replicate this study with other cohorts of adolescents. The influence of social connections on the development of hope/hopelessness, the trajectories of hope/hopelessness during adolescence and its influence on serious violent behavior may

vary by culture, socioeconomic status, and period in historical time. Other aspects of adolescents' social contexts should also be included in the model to provide a more complete picture such as witnessing violence at home or in the community, the influence of peers, and school connectedness.

This study examined the relationships between social connections, hopelessness and violence at specific age points during the developmental period of adolescence. Of interested would be specific factors or turning point events that trigger changes in hopelessness. General growth mixture modeling can be used to explore for such turning point events (Nagin & Tremblay, 2005). Understanding triggers of hopelessness may help to identify specific developmental points or events for targeted interventions. The same methodology could also be used to examine events that move a young person from non-violence to violence or physical fighting to more serious violence with a weapon. Again, understanding these important events could aid in developing more time-specific, developmentally appropriate interventions.

A concept related to hope is youth purpose. Youth purpose has been defined as a "stable and generalized intention to accomplish something that is at once meaningful to the self and of consequence to the world beyond the self" (Damon, Menon, & Bronk, 2003). It is a desire to make a difference in the world and contribute to matters larger than the self. This sense of purpose in youth is thought to lead to a number of desired outcomes (pro-social behavior, moral commitment, achievement, and high self-esteem). Youth purpose is similar to hope in that it requires the ability to think about the future. Little research has been done to specifically examine purpose as a protective factor

against hopelessness, violence or other risk behaviors. Research is needed to explore the relationship between purpose and hope, and how together they may influence behaviors during adolescence. Understanding these relationships may help to guide development of interventions based on promoting hope and youth purpose as a mechanism for violence prevention.

Implications for Public Health Nursing Practice

Youth violence is a complex public health problem requiring primary, secondary, and tertiary prevention efforts at the individual, microsystem, exosystem and macrosystem levels. Through programmatic and policy interventions, public health nurses can contribute to initiatives that promote adolescent health and well-being and prevent and reduce youth violence at individual adolescent, family, schools, health services and communities levels.

At the individual level, public health nurses can screen adolescents for protective factors such as sources of support, connection to family and other caring adults. Screening should include an assessment of the young person's feeling "hopefulness" about their future and opportunities they envision for themselves. Incorporating the promotion of protective factors is critical in interactions with young people. Within a variety of settings, public health nurses can assess adolescents for risk behaviors such as violence perpetration. Health education and referrals to appropriate resources with in the school and community can also be provided.

At the level of the family, public health nursing interventions traditionally have focused on the early years of life through programs such as nurse home visitation.

However, parents of adolescents continue to need parenting education and support. Interventions could include education and support of parents and families regarding normal adolescent development, strategies for promoting strong family connectedness, communication skills, limit setting, nonviolent discipline strategies, and appropriate parental monitoring.

In school settings, public health nurses often work in the role of school nurse or collaborate with the school nurses and other school personal. In either role, nurses can promote and support a non-violent school culture. In collaboration with teachers and counselors, interventions at the adolescent level include teaching emotional understanding and communication, self-regulation skills, problem solving skills and pro-social friendship skills. Nurses can assist with incorporating programs that promote peaceful conflict resolution. School nurses, along with other school personnel, can be caring adult role models of pro-social behavior. The school health office can be a safe place for students to come with their concerns. School nurses can promote a non-violent school climate through working with school administrators and school board members to promote policies enforcing classroom and school rules around violence and bullying.

In health services settings including clinics, public health nurses with expertise in adolescent health can provide training to other health care professionals on how to develop responsive adolescent health services – settings that are accessible, acceptable, appropriate, effective and equitable for all adolescents and families (NRC/IOM, 2009). Public health nurses with adolescent experience can also teach other health care professionals how to identify and intervene with young people at risk for violence.

Public health nurses can collaborate with neighborhood organizations, community leaders, and faith organizations to promote cohesive community environments, a factor that has been linked with reduced levels of youth violence. Public health nurses can provide leadership in developing community-based programs that promote healthy youth development for young people, including the development of safe places for youth to congregate and opportunities for youth to contribute within their community (Roth & Brooks-Gunn, 2003). Participation in community level interventions, including policy interventions, to address distal factors such as employment, housing, neighborhood drug availability to improve the well-being of youth is also critical. Public health nurses should work with community officials/leaders on policies that support a culture of non-violence.

Crossing all prevention and intervention levels, public health nurses can play a key role in evaluation. It is important to evaluate whether programs and policies are having a desired effects. There is also a need to link research on youth violence to the development of prevention and intervention programs.

Conclusion

This study contributes to current understanding of developmental trajectories of hopelessness during middle adolescence, early adolescent factors that shape those trajectories, and how those trajectories impact serious violence involvement during later adolescence. Using general growth mixture modeling, this study revealed two latent trajectory classes of hopelessness for both boys and girls. *Increasingly hopeless girls*, those who demonstrate increasing levels of hopelessness during their middle adolescent years, were more likely to be fighting during early adolescence and participated in more

weapon-related violence than their low hopelessness peers during later adolescence. While *increasingly hopeless boys* were also more likely to participate in weapon-related violence during later adolescence than their *low hopelessness* peers, serious violence involvement during later adolescence was disturbingly prevalent in both of these groups. The influence of connection to mother, neighborhood connectedness and previous violence varied based on class membership, with early adolescent connection to mother associated with lower initial levels of hopelessness at age 13 for *increasingly hopeless girls and low hopeless boys.* Participation in fighting during early adolescence was associated with lower levels of hopelessness at age 13 for *increasingly hopeless girls*. While more research is needed, this study suggests that interventions focused on reducing hopelessness may be more beneficial for girls than for boys.

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APPENDIX A

Mobile Youth Survey

Purpose, Design and Setting

The MYS is a community-based, multiple cohort study of 10-19 year old adolescents living in extremely impoverished neighborhoods in the Mobile, Alabama metropolitan statistical area (MSA) (includes the cities of Mobile and Prichard). Mobile, a city of approximately 200,000 residents, 46.1% of whom are African American, is located on the Gulf Coast. One quarter of Mobile residents (22.4%) live at or below federal poverty level. Prichard, a city of approximately 30,000 residents, 83% of whom are African American, was the nation's poorest city in 2000 with 44.1% of its population living in poverty. MYS participants are from 13 neighborhoods with the lowest median household income (1990 Census). Seven of the neighborhoods are public housing developments; the other six are non-public housing neighborhoods. Five of the neighborhoods are located in Prichard; eight are located in Mobile. The neighborhoods are overwhelmingly African American (95%) and have poverty rates between 31.5% and 81.4%. The median household income in 1999 was roughly $12,000.

The overall purpose of the MYS is to (a) study the etiology of risk behaviors among adolescents living in extreme poverty; (b) study how contextual factors (e.g., families, schools, neighborhoods) affect both the etiology of risk behaviors as well as the behaviors themselves; and (c) establish a community laboratory where residents partner with scientists in the research process from problem identification to application of findings from interventions studies.

A number of publications describe the background, design, and key findings of MYS to date (Bolland, 2003; Bolland et al., 2005; Bolland et al., 2007). These sources were used to write this summary. Full citations are available in the *Reference* section.

Sampling and Recruitment

The first MYS cohort was enrolled in 1998 using both active and passive recruitment strategies. Within the targeted neighborhoods, approximately one half of the households with youth ages10–19 were randomly selected for recruitment contact. Through door knocking, project staff actively attempted to make contact with a primary caregiver to explain the study and obtain parental consent for participation of adolescents living in the households. A time was scheduled for adolescents to take the survey at a local community center. Passive recruitment was done through posting flyers about the study in the targeted neighborhoods. If an interested adolescent contacted the project, a project staff person went to the home and followed the same procedure used for active recruitment. The response rate in 1998 was from 60 – 70% of all youth in the 13 targeted neighborhoods.

Annually from 1999-2006, active and passive strategies were used to recruit new cohorts of MYS participants. Each year, all (19 years or younger) young people who had previously participated in a MYS survey were actively recruited to be resurveyed, even if they had moved to a new address in the MYS sampling area. There have been no significant differences between participants recruited from active recruitment households and passive recruitment households. Estimates of annual survey response rates range

from 59-82% of eligible youth. Enrollment rates have increased over time reflecting an increased awareness and trust in the survey and research team (Bolland).

Aging Out, Attrition, and Recapture

The annual MYS sample size varies. Participants are eligible to take part through age 19 (Bolland, 2007). Some attrition is inevitable, despite considerable effort devoted to participant follow-up. Most attrition in the MYS is due to relocation. In 1999, the Mobile Housing Board demolished a large number of public housing units and relocated residents into Section VIII housing. The Prichard Housing Authority followed suit in 2003. Attrition rate rose in the two years following these large-scale demolitions of public housing units.

A substantial number of non-respondents on any one occasion are temporarily misplaced to follow-up, and rejoin the study at a later point. For example, 34% of participants who dropped out between 1998 and 1999 returned to the study during subsequent years. The percent varies from year to year and for different subgroups of the over 7,500 youth who have taken part to date.

Data Collection Procedures

Participants completed surveys at local community centers. Personal information and parent consent was verified at check-in. Individuals completed surveys in a room with 10 – 20 other MYS participants. An assent statement was read aloud and participants were asked to print their name, address, birth date, and survey date on the cover page. The cover page was removed and collected by project staff. Survey questions were read aloud by trained staff with participants marking responses in their surveys. The

survey took 60 to 90 minutes to complete. Monetary incentives were disbursed following survey completion. Between 1998 and 2004, youth received $10 for their participation. In 2005, the incentive increased to $15. Participants who were unable to attend a group survey administration were given the opportunity to take the survey in their homes. Participants who had moved out of the target neighborhoods were re-surveyed in their homes.

Survey Instrument

The MYS is a paper-pencil, forced-choice survey (see Appendix B). The instrument used from 1998 through 2004 contained 294 questions about risk-taking behaviors and attitudes, family and neighborhood characteristics, and feelings about self and others. A revision used since 2005 includes additional questions about identity style, ego strength, intimate relationships, connectedness to school and friends. Most questions were adapted from existing instruments and adjusted to reflect local dialect and street vernacular among targeted youth.

APPENDIX B

Youth Survey

YOUTH SURVEY
2000

We are conducting a study of young people living in Mobile and Prichard, and you have been selected to be one of the participants in this study. Thank you for agreeing to participate. During the next hour-and-a-half, we will ask you to answer questions about yourself. These include questions about your:

- neighborhood
- hopes for the future
- educational experiences
- drug and alcohol use
- relationships with others
- sexual behavior
- health
- fighting

After you have completed the survey, we will pay you $10.00 for your time. We know that some of the questions are very personal; and if you would prefer not to answer any of these questions, that is okay.

We will not share your answers with anyone, so you do not have to worry that anything you say will get you or anyone else in trouble.

****

I agree to participate in this study.

_____
Your Name (Please Print)

_____
Your Street Address

_____
Today's Date

_____
Month Day Year
Your Birthday

PLEASE TEAR OFF THIS PAGE AND WE WILL COLLECT IT

PLEASE DO NOT WRITE IN THIS AREA

5490

YOUTH SURVEY
2000

The questions we will be asking you today deal with things that are important to young people as they grow up and become adults. Some questions ask about what you know; others ask your opinion on things; and others ask about things you may or may not have done.

Some of these questions ask about very personal things that you may consider private. Please work by yourself, and do not talk with others while you are answering. It is important that you answer as many questions as you can, as honestly as you can. There is always an answer that lets you tell us when you have not done things, as well as when you have done them. Knowing what you haven't done is just as important as knowing what you have done. All of your answers will be completely confidential–no one from your school or home will ever see your answers.

If you have any questions as we are going through this, please raise your hand and we will help you. Do you have any questions before we begin?

****

FOR EACH QUESTION, ANSWER BY FILLING IN THE CIRCLE TO THE LEFT OF YOUR ANSWER CHOICE.

EXAMPLE

1. What grade are you in now?
   - Ⓐ . . 4th grade
   - Ⓑ . . 5th grade
   - Ⓒ . . 6th grade
   - ● . . 7th grade

5490

BACKGROUND INFORMATION

First, we would like some information about you, so we can describe the kinds of people who answer this survey.

1. How old are you now?

   Ⓐ . . 9 Ⓒ . . 11 Ⓔ . . 13 Ⓖ . . 15 Ⓘ . . 17 Ⓚ . . 19
   Ⓑ . . 10 Ⓓ . . 12 Ⓕ . . 14 Ⓗ . . 16 Ⓙ . . 18

2. Are you male or female (a boy or a girl)? Ⓐ . . Male (boy) Ⓑ . . Female (girl)

3. Compared to others your age, do you think you look younger, about the same age, or older?

   Ⓐ . . Younger Ⓑ . . About the same Ⓒ . . Older

4. Did you go to school last year? Ⓐ . . No Ⓑ . . Yes

5. What grade in school will you be in next year?

   Ⓐ . . I am not in school Ⓔ . . 7th Ⓘ . . 11th
   Ⓑ . . 4th or lower Ⓕ . . 8th Ⓙ . . 12th
   Ⓒ . . 5th Ⓖ . . 9th Ⓚ . . College or technical school
   Ⓓ . . 6th Ⓗ . . 10th

6. Do you receive free or reduced cost lunch at school?

   Ⓐ . . I don't go to school Ⓓ . . No
   Ⓑ . . Yes, I receive free lunches Ⓔ . . I don't know
   Ⓒ . . Yes, I receive reduced cost lunches

7. Do you <u>want to</u> finish high school?

   Ⓐ . . I have graduated from high school Ⓒ . . Maybe
   Ⓑ . . No Ⓓ . . Yes

8. Do you <u>think you will</u> finish high school?

   Ⓐ . . I have graduated from high school Ⓒ . . Maybe
   Ⓑ . . No Ⓓ . . Yes

9. Do you <u>want to</u> go to college? Ⓐ . . No Ⓑ . . Maybe Ⓒ . . Yes

10. Do you <u>think you will</u> go to college? Ⓐ . . No Ⓑ . . Maybe Ⓒ . . Yes

11. How good are your grades compared to other students in your school?

    Ⓐ . . I am not in school Ⓓ . . Better
    Ⓑ . . Worse Ⓔ . . One of the best
    Ⓒ . . About the same

12. How much do you worry about getting good grades?

    Ⓐ . . I am not in school Ⓒ . . Some
    Ⓑ . . Not at all Ⓓ . . Very much

5490

13. Have you ever been suspended from school? Ⓐ . . No Ⓑ . . Yes

14. During the past year (12 months), were you suspended from school?
Ⓐ . . No Ⓑ . . Yes

15. Have you ever been expelled from school? Ⓐ . . No Ⓑ . . Yes

16. During the past year (12 months), were you expelled from school?
Ⓐ . . No Ⓑ . . Yes

17. About how often do you go to church, worship services, or other religious activities?
Ⓐ . . Never
Ⓑ . . Once in a while
Ⓒ . . About once a month
Ⓓ . . About 2 or 3 times a month
Ⓔ . . Once a week or more

18. How important is religion to you?
Ⓐ . . Not important Ⓑ . . Somewhat important Ⓒ . . Very important

19. How often do you read or study a Holy Book (such as The Bible)?
Ⓐ . . Never
Ⓑ . . Once in a while
Ⓒ . . About once a month
Ⓓ . . About 2 or 3 times a month
Ⓔ . . Once a week or more

20. How long have you lived in your neighborhood?
Ⓐ . . Less than one year
Ⓑ . . About one year
Ⓒ . . About two years
Ⓓ . . About three years
Ⓔ . . About four years
Ⓕ . . Five years or longer

21. Have you ever been arrested? Ⓐ . . No Ⓑ . . Yes

22. During the past year (12 months), were you arrested? Ⓐ . . No Ⓑ . . Yes

23. During the past year (12 months), was anyone who lives in your apartment arrested? Don't include yourself.
Ⓐ . . No Ⓑ . . Yes

The last questions in this section ask about how you describe yourself.

24. Are you black/African American? Ⓐ . . No Ⓑ . . Yes

25. Are you white? Ⓐ . . No Ⓑ . . Yes

26. Are you Hispanic/Latino? Ⓐ . . No Ⓑ . . Yes

27. Are you mixed race and/or Creole? Ⓐ . . No Ⓑ . . Yes

FAMILY

People live in different kinds of families. Some kids live with their mother or their father. Others live with people who are like a mother or a father to them.

28. What person is most like a mother to you? (MARK ONLY ONE ANSWER.)

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . My mother
Ⓒ . . My stepmother
Ⓓ . . My grandmother
Ⓔ . . My aunt
Ⓕ . . My foster mother
Ⓖ . . My father's girlfriend
Ⓗ . . My older sister
Ⓘ . . Some other person

29. How often do you live with the person who is most like a mother to you?

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . All of the time
Ⓒ . . Most of the time
Ⓓ . . Some of the time
Ⓔ . . None of the time

Please tell us about this person who is most like a mother to you.

30. I can usually count on her to help me out if I have some kind of problem.

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . Agree
Ⓒ . . Disagree

31. She usually keeps pushing me to do my best in whatever I do.

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . Agree
Ⓒ . . Disagree

32. We do fun things together.

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . Agree
Ⓒ . . Disagree

33. She usually helps me if there is something I don't understand.

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . Agree
Ⓒ . . Disagree

34. When she wants me to do something, she usually explains the reasons why.

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . Agree
Ⓒ . . Disagree

35. She spends time just talking with me.

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . Agree
Ⓒ . . Disagree

Now we would like to know some things about the person who is most like a father to you.

36. What person is most like a father to you? (MARK ONLY ONE ANSWER.)

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . My father
Ⓒ . . My stepfather
Ⓓ . . My grandfather
Ⓔ . . My uncle
Ⓕ . . My foster father
Ⓖ . . My mother's boyfriend
Ⓗ . . My older brother
Ⓘ . . Some other person

37. How often do you live with the person who is most like a father to you?

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . All of the time
Ⓒ . . Most of the time
Ⓓ . . Some of the time
Ⓔ . . None of the time

Please tell us about this person who is most like a father to you.

38. I can usually count on him to help me out if I have some kind of problem.

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . Agree
Ⓒ . . Disagree

39. He usually keeps pushing me to do my best in whatever I do.

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . Agree
Ⓒ . . Disagree

40. We do fun things together.

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . Agree
Ⓒ . . Disagree

41. He usually helps me if there is something I don't understand.

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . Agree
Ⓒ . . Disagree

42. When he wants me to do something, he usually explains the reasons why.

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . Agree
Ⓒ . . Disagree

43. He spends time just talking with me.

Ⓐ . . I don't have anyone who is like a father to me
Ⓑ . . Agree
Ⓒ . . Disagree

44. Think about the person who is most like a mother to you and the person who is most like a father to you. Do they live in the same house or apartment?

Ⓐ . . I don't have anyone who is like a mother to me
Ⓑ . . I don't have anyone who is like a father to me
Ⓒ . . All of the time
Ⓓ . . Most of the time
Ⓔ . . Some of the time
Ⓕ . . None of the time

Sometimes children do things that they are not allowed to do, or that their family doesn't like. Please tell us what your family does when <u>you</u> do something that you are not allowed to do or that they don't like.

	No	Yes
45. They take my privileges away or ground me.	Ⓐ	Ⓑ
46. They give me extra chores or work to do around the house.	Ⓐ	Ⓑ
47. They yell at me or scold me.	Ⓐ	Ⓑ
48. They calmly discuss what happened with me.	Ⓐ	Ⓑ
49. They slap me or spank me or hit me.	Ⓐ	Ⓑ

Some families have rules about what children are allowed to do, and about what they are not allowed to do.

	No	Yes
50. Does your family have rules about when you do homework?	Ⓐ	Ⓑ
51. Does your family have rules about dating?	Ⓐ	Ⓑ
52. Does your family have rules about drinking alcohol?	Ⓐ	Ⓑ
53. Does your family have rules about using drugs?	Ⓐ	Ⓑ
54. Does your family have rules about fighting and hitting other people?	Ⓐ	Ⓑ
55. Are you allowed to stay out as late as you want on school nights?	Ⓐ	Ⓑ
56. Are you allowed to stay out after dark on school nights?	Ⓐ	Ⓑ
57. Are you allowed to stay out as late as you want on weekend nights?	Ⓐ	Ⓑ
58. Are you allowed to stay out after dark on weekend nights?	Ⓐ	Ⓑ

In the following questions, we want to know how much your mother or father—or the person who is most like a mother or father to you—knows about what you do.

	No	Yes
59. Does your mother or father know who you hang out with?	Ⓐ	Ⓑ
60. Does your mother or father know exactly where you are most afternoons (after school) and during the day on weekends and during the summer?	Ⓐ	Ⓑ

61. How much does your mother or father <u>really</u> know about what you do most afternoons (after school) and during the day on weekends and during the summer?

Ⓐ . . They don't know
Ⓑ . . They know a little
Ⓒ . . They know a lot

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62. How much does your mother or father <u>really</u> know about where you go at night?

Ⓐ . . I don't go out at night
Ⓑ . . They don't know
Ⓒ . . They know a little
Ⓓ . . They know a lot

63. Does your mother or father <u>try</u> to find out how you spend your time?

Ⓐ . . They don't try
Ⓑ . . They try a little
Ⓒ . . They try a lot

64. How much does your mother or father <u>really</u> know about how you spend your time?

Ⓐ . . They don't know
Ⓑ . . They know a little
Ⓒ . . They know a lot

The last questions in this section ask about how you spend your time <u>during the school year</u>.

65. How many hours each week are you involved in organized sports, clubs, or other after-school activities? (Do not count "pick-up" games or hanging out with friends.)

Ⓐ . . None; I'm not in any of these activities
Ⓑ . . 1 to 5 hours each week
Ⓒ . . 6 to 10 hours each week
Ⓓ . . More than 10 hours each week

66. How many hours each week do you work at a paid job?

Ⓐ . . None; I don't have a job
Ⓑ . . 1 to 5 hours each week
Ⓒ . . 6 to 10 hours each week
Ⓓ . . 11 to 20 hours each week
Ⓔ . . More than 20 hours each week

67. How many hours each week do you work at home doing chores (like cooking and cleaning) or babysitting family members?

Ⓐ . . None; I don't do any work at home
Ⓑ . . 1 to 5 hours each week
Ⓒ . . 6 to 10 hours each week
Ⓓ . . More than 10 hours each week

68. How many hours each week do you spend doing homework (school assignments to be done outside school hours)?

Ⓐ . . None; I'm not in school
Ⓑ . . None; I don't study outside school hours
Ⓒ . . 1 to 5 hours each week
Ⓓ . . 6 to 10 hours each week
Ⓔ . . More than 10 hours each week

69. How many hours each week do you spend hanging out with your friends?

Ⓐ . . None; I don't hang out with friends
Ⓑ . . 1 to 5 hours each week
Ⓒ . . 6 to 10 hours each week
Ⓓ . . 11 to 20 hours each week
Ⓔ . . More than 20 hours each week

70. How many hours each week do you hang out alone at home? (Don't count time when you are asleep at night.)

Ⓐ . . None; I don't hang out alone at home
Ⓑ . . 1 to 5 hours each week
Ⓒ . . 6 to 10 hours each week
Ⓓ . . 11 to 20 hours each week
Ⓔ . . More than 20 hours each week

FEELINGS ABOUT YOURSELF AND OTHERS

Young people often face challenges that they worry about. Some of these challenges of growing up are listed below. We would like to find out how much you worry about each of these.

71. How much do you worry about being pressured into doing something dangerous by your friends?
Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

72. How much do you worry about not fitting in with other kids in the neighborhood or at school?
Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

73. How much do you worry that your family has enough money to get by?
Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

74. How much do you worry that you might not get a good job when you get older?
Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

75. How much do you worry about getting along with people of other races?
Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

76. When you are worried about something, do you have somebody you can talk with about it?
Ⓐ . . All the time Ⓒ . . Some of the time
Ⓑ . . Most of the time Ⓓ . . Never

Please agree or disagree with each of the following statements.

	Agree	Disagree
77. Most people <u>can</u> be trusted.	Ⓐ	Ⓑ
78. Many people are friendly only because they want something from you.	Ⓐ	Ⓑ
79. Most people don't really care what happens to other people.	Ⓐ	Ⓑ
80. The future is too uncertain for a person to plan ahead.	Ⓐ	Ⓑ
81. What happens in life is largely a matter of luck or chance.	Ⓐ	Ⓑ
82. A person has to live pretty much for today and let tomorrow take care of itself.	Ⓐ	Ⓑ
83. No matter how hard I study and how much I try in school, I don't think I will get a very good job when I get older.	Ⓐ	Ⓑ
84. All I see ahead of me are bad things, not good things.	Ⓐ	Ⓑ
85. There's no use in really trying to get something I want because I probably won't get it.	Ⓐ	Ⓑ
86. I might as well give up because I can't make things better for myself.	Ⓐ	Ⓑ
87. I don't have good luck now and there's no reason to think I will when I get older.	Ⓐ	Ⓑ

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		Agree	Disagree
88.	I never get what I want, so it's dumb to want anything.	Ⓐ	Ⓑ
89.	I don't expect to live a very long life.	Ⓐ	Ⓑ
90.	I don't have much influence over the things that happen to me.	Ⓐ	Ⓑ
91.	The world is too complicated for me to understand.	Ⓐ	Ⓑ
92.	I often blame others for my mistakes.	Ⓐ	Ⓑ
93.	I care about how well I do at school or work.	Ⓐ	Ⓑ
94.	I am able to lie easily and skillfully.	Ⓐ	Ⓑ
95.	I feel bad or guilty when I do something wrong.	Ⓐ	Ⓑ
96.	I sometimes act charming and nice to get things I want.	Ⓐ	Ⓑ
97.	I care about the feelings of others.	Ⓐ	Ⓑ
98.	I usually hide my feelings or emotions from others.	Ⓐ	Ⓑ
99.	I get angry when I am corrected or punished.	Ⓐ	Ⓑ
100.	When I am an adult, I expect to have a good job that I like and that will pay enough for me to live on.	Ⓐ	Ⓑ
101.	When I am an adult, I expect to have good friends I can talk to and do things with.	Ⓐ	Ⓑ
102.	When I am an adult, I expect to find a marriage partner who is right for me.	Ⓐ	Ⓑ
103.	When I am an adult, I expect to have a long and happy marriage.	Ⓐ	Ⓑ
104.	When I am an adult, I expect to spend time in jail or prison.	Ⓐ	Ⓑ

Please tell us in the following questions how you feel when bad things happen to a friend or family member.

105. I have gotten very upset when I found out that a friend or family member had something very bad happen to them.

Ⓐ . . Yes Ⓑ . . No

106. I have bad dreams about the bad things that have happened to a family member or friend.

Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

107. I have trouble sleeping at night when bad things happen to a family member or friend.

Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

108. I think I would feel better if I could talk to someone about the bad things that happen to a family member or friend.

Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

109. When bad things happen to a family member or friend, it feels like they are happening to me.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

110. I think about bad things that have happened to a family member or friend, even when I don't want to.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

111. After bad things happen to a family member or friend, I feel uncomfortable being with them because it reminds me of the bad things that happened.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

112. When someone hurts a family member or a friend, I want to help them get even.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

113. I worry that bad things might happen to a family member or friend.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

114. I get angry for no reason.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

115. I get startled easily.
Ⓐ . . Almost never Ⓑ . . Sometimes Ⓒ . . Very often

Now we are interested in how you think about yourself. For each of the following questions, please indicate which of the two statements that are listed is most like you.

116. Ⓐ . . I am usually unhappy with myself.
Ⓑ . . I am usually happy with myself.

117. Ⓐ . . I sometimes do things I know I shouldn't do.
Ⓑ . . I hardly ever do things I know I shouldn't do.

118. Ⓐ . . I usually don't like the way I behave.
Ⓑ . . I usually like the way I behave.

119. Ⓐ . . I like the kind of person I am.
Ⓑ . . I don't like the kind of person I am.

120. Ⓐ . . I usually get into trouble because of the things I do.
Ⓑ . . I usually don't do things that get me into trouble.

121. Ⓐ . . I usually make good decisions.
Ⓑ . . I usually don't make good decisions.

122. Ⓐ . . I usually behave myself very well.
Ⓑ . . I often find it hard to behave myself.

123. Ⓐ . . I am not happy with the way I do a lot of things.
Ⓑ . . The way I do things is fine.

124. Ⓐ . . I don't like the way I am leading my life.
Ⓑ . . I like the way I am leading my life.

Sometimes when the pressures of life get to be too much and people can't see any way out, they may think about killing themselves.

125. In the past year (12 months), did you seriously think about killing yourself?
Ⓐ . . No Ⓑ . . Yes

126. Have you ever tried to kill yourself?
Ⓐ . . No Ⓑ . . Yes

127. Have any of your friends ever tried to kill themselves?
Ⓐ . . No Ⓑ . . Yes

SAFETY AND FIGHTING

In this section, we would like to ask you about times you may have been in fights and what you do to protect yourself in your neighborhood and at school. Even if you have never been in fights, each question has an answer you can mark.

In the next two questions, "unsafe" means you feel in danger of being hurt, attacked, robbed, or beaten up.

128. How much of the time do you feel unsafe in your neighborhood?
Ⓐ . . Never
Ⓑ . . Sometimes
Ⓒ . . Most of the time, but not all the time
Ⓓ . . All the time

129. How much of the time do you feel unsafe at school?
Ⓐ . . I don't go to school
Ⓑ . . Never
Ⓒ . . Sometimes
Ⓓ . . Most of the time, but not all the time
Ⓔ . . All the time

The following questions ask about fighting and weapons. These questions are about things you may have done, seen, or had happen to you. Some of these questions ask whether you have ever done something, like fighting. Other questions ask whether you have done it during the last year. Still others ask whether you have done it more recently, during the past three months, or during the last month, or during the last week. Although these questions sound similar, they are different. Make sure to pay attention to the time frame.

130. Have you ever been in a physical fight (a fight with hitting, kicking, or pushing)?
Ⓐ . . No Ⓑ . . Yes

131. In the past 3 months (90 days), were you in a physical fight?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

132. In the past month (30 days), were you in a physical fight?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

133. Have you ever tried to get other kids to fight each other?
Ⓐ . . No Ⓑ . . Yes

134. In the past year (12 months), did you try to get other kids to fight each other?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

135. In the past month (30 days), did you try to get other kids to fight each other?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

136. Have you ever tried to stop other kids from fighting each other?
Ⓐ . . No Ⓑ . . Yes

137. In the past year (12 months), did you try to stop other kids from fighting each other?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

138. In the past month (30 days), did you try to stop other kids from fighting each other?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

139. Do you have a quick temper?
Ⓐ . . All of the time Ⓒ . . Some of the time
Ⓑ . . Most of the time Ⓓ . . None of the time

The next questions ask you about what you do when you get angry.

140. When I get angry, I get into fights.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

141. When I get angry, I talk about it with other people.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

142. When I get angry, I yell a lot.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

143. When I get angry, I get crazy or loco.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

144. When I get angry, I keep thinking about it for a long time.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

145. When I get angry, I figure out what to do about it by myself.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

146. When I get angry, I get busy doing something else to take my mind off it.
Ⓐ . . Often true for me Ⓑ . . Sometimes true for me Ⓒ . . Almost never true for me

147. When I get angry, I talk about it with other people to see if I can find a way to make things better.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

148. When I get angry, I talk about it with other people so I can understand if I did something to make the problem happen.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

149. When I get angry, I talk about it with people so that I can handle the problem better next time.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

150. When I get angry, I talk about it with other people because it makes me feel better when I can complain to somebody.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

151. When I get angry at another person, I talk with them to try to understand how they feel.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

152. When I get angry at another person, I talk with them about it so that we will not get so angry next time.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

153. When I get angry at another person, I talk with them so that we come out feeling good.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

154. After I talk with another person about something they said or did that made me mad, I understand them better.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

155. After I talk with another person about something they said or did that made me mad, I feel better about them.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

156. After I talk with people about something that made me mad, I feel that I'm getting closer to fixing the problem.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

157. After I talk with people about something that made me mad, things don't look as bad as I thought they did.
Ⓐ . . Mostly true for me Ⓑ . . Mostly not true for me

The next questions are about weapons you might have carried, used, or had used against you.

158. Have you ever carried a knife or razor?
Ⓐ . . No Ⓑ . . Yes

159. In the past 3 months (90 days), did you carry a knife or razor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

160. In the past month (30 days), did you carry a knife or razor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

161. In the past week (7 days), did you carry a knife or razor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

162. Have you ever carried a gun?
Ⓐ . . No Ⓑ . . Yes

163. In the past 3 months (90 days), did you carry a gun?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

164. In the past month (30 days), did you carry a gun?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

165. In the past week (7 days), did you carry a gun?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

166. Have you ever seen someone being cut, stabbed, or shot?
Ⓐ . . No Ⓑ . . Yes

167. In the past 3 months (90 days), did you see someone being cut, stabbed, or shot?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

168. Has someone ever pulled a knife or gun on you?
Ⓐ . . No Ⓑ . . Yes

169. In the past 3 months (90 days), did someone pull a knife or a gun on you?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

170. Has someone ever cut or stabbed you bad enough that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes

171. In the past year (12 months), did someone cut or stab you bad enough that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

172. Has someone ever shot a gun at you?
Ⓐ . . No Ⓑ . . Yes

173. In the past year (12 months), did someone shoot a gun at you?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

174. Have you ever told someone you were going to cut, stab, or shoot them?
Ⓐ . . No Ⓑ . . Yes

175. In the past 3 months (90 days), did you tell someone you were going to cut, stab, or shoot them?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

176. In the past month (30 days), did you tell someone you were going to cut, stab, or shoot them?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

177. Have you ever pulled a knife or a gun on someone else?
Ⓐ . . No Ⓑ . . Yes

178. In the past 3 months (90 days), did you pull a knife or a gun on someone else?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

179. In the past month (30 days), did you pull a knife or a gun on someone else?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

180. Have you ever cut or stabbed someone else?
Ⓐ . . No Ⓑ . . Yes

181. In the past year (12 months), did you cut or stab someone else?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

182. Have you ever shot a gun at someone else?
Ⓐ . . No Ⓑ . . Yes

183. In the past year (12 months), did you shoot a gun at someone else?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

184. Has a friend or anyone in your family ever been shot or stabbed?
Ⓐ . . No Ⓑ . . Yes

185. In the past year (12 months), was a friend or anyone in your family shot or stabbed?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

186. Do you or anyone you live with keep a gun in your apartment for protection?
Ⓐ . . No Ⓑ . . Yes

The following section asks you what you think about fighting and carrying weapons. Please agree or disagree with each statement.

	Agree	Disagree
187. It is not possible to avoid fights in my neighborhood.	Ⓐ	Ⓑ
188. If you don't carry a knife or gun in my neighborhood, something bad might happen to you.	Ⓐ	Ⓑ
189. Kids who are in a gang get respect from other kids in my neighborhood.	Ⓐ	Ⓑ
190. When I get mad, I usually don't care who gets hurt.	Ⓐ	Ⓑ
191. Carrying a weapon lets other kids know that they shouldn't mess with you.	Ⓐ	Ⓑ
192. If someone else starts a fight with me, I am going to finish it.	Ⓐ	Ⓑ
193. Hitting someone really knocks some sense into them.	Ⓐ	Ⓑ
194. When you are in an argument, you should stand your ground to get what you want.	Ⓐ	Ⓑ

195. How much do you worry about gangs in your neighborhood?
Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

196. Have you ever been involved in a gang? Ⓐ . . No Ⓑ . . Yes

197. Are you currently involved in a gang? Ⓐ . . No Ⓑ . . Yes

198. Do you hang out with members of a gang? Ⓐ . . No Ⓑ . . Yes

DRUG AND ALCOHOL USE

The next questions are about cigarettes, alcohol, and other drugs. Some people have used cigarettes, alcohol, and drugs and some have not. Even if you have not, there are still answers for you to mark.

199. Have you ever smoked a cigarette?
Ⓐ . . No Ⓑ . . Yes

200. In the past month (30 days), did you smoke cigarettes?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

The next few questions are about drinking alcohol. By alcohol we mean beer, wine, wine coolers, malt liquor, and hard liquor. When you answer these questions, don't count time when you just took a few sips of alcohol.

201. Have you ever drunk alcohol?
Ⓐ . . No Ⓑ . . Yes

202. In the past month (30 days), did you drink alcohol?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

203. In the past week (7 days), did you drink alcohol?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

204. When you drink alcohol, how much do you drink?
Ⓐ . . I have never drunk alcohol
Ⓑ . . Hardly any
Ⓒ . . A little - Just enough to feel it
Ⓓ . . A lot - Enough to get drunk

205. Have you ever used crack or cocaine (rock)?
Ⓐ . . No Ⓑ . . Yes

206. In the past year (12 months), did you use crack or cocaine?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

207. Have you ever used marijuana (chronic, blunts, grass, herb, reefer)?
Ⓐ . . No Ⓑ . . Yes

208. In the past year (12 months), did you use marijuana?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

209. In the past month (30 days), did you use marijuana?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

210. Have you ever gotten drunk on alcohol or high on drugs?
Ⓐ . . No Ⓑ . . Yes

211. In the past year (12 months), did you get drunk on alcohol or high on drugs?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

212. In the past month (30 days), did you get drunk on alcohol or high on drugs?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

213. In the past week (7 days), did you get drunk on alcohol or high on drugs?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

214. In the past 3 months (90 days), did you go to school or work while you were drunk on alcohol or high on drugs?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

215. In the past 3 months (90 days), did you get into fights with other people while you were drunk on alcohol or high on drugs?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

216. In the past month (30 days), did you ride with a driver who had been drinking alcohol or using drugs? (Smoking cigarettes doesn't count.)

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

217. Smoking crack is not dangerous if you only try it once.

Ⓐ . . Agree Ⓑ . . Disagree

218. Drinking alcohol is not harmful as long as you don't get drunk.

Ⓐ . . Agree Ⓑ . . Disagree

RELATIONSHIPS AND SEXUALITY

Sex and sexuality can be things that are hard to talk about with other people. We know that you may feel uncomfortable with some of these questions, but we hope you will give us as honest an answer as you can to every question. Remember, you can choose not to answer any questions you feel particularly uncomfortable about.

219. Would you be able to have an honest and open discussion about sex with your mother or father?

Ⓐ . . No Ⓑ . . Yes

220. Have you ever had an honest and open discussion about sex with your mother or father?

Ⓐ . . No Ⓑ . . Yes

221. Was the sex education you received in school worthwhile?

Ⓐ . . I have not had sex education in school
Ⓑ . . No
Ⓒ . . Yes

Some people have had sexual intercourse and others have not. Whether or not you have done this, there is an answer for you for each of the following questions.

222. Have you ever had sexual intercourse? "Sexual intercourse" means having sex with the male's penis inside the female's vagina. This is sometimes called "going all the way."

Ⓐ . . No Ⓑ . . Yes

223. In the past 3 months (90 days), did you have sexual intercourse?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

224. In the past month (30 days), did you have sexual intercourse?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

225. In the past week (7 days), did you have sexual intercourse?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

226. How old were you when you first had sexual intercourse?

Ⓐ . . I have never had sexual intercourse
Ⓑ . . 9 years old or younger
Ⓒ . . 10 years old
Ⓓ . . 11 years old
Ⓔ . . 12 years old
Ⓕ . . 13 years old
Ⓖ . . 14 years old
Ⓗ . . 15 years old
Ⓘ . . 16 years old
Ⓙ . . 17 years old
Ⓚ . . 18 years old

The following questions ask how you feel about having sex and your own sexuality.

227. How much do you worry about whether you are 'straight' or 'gay'?

Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

228. How much do you worry that you might get AIDS?

Ⓐ . . Not at all Ⓑ . . Some Ⓒ . . Very much

229. If a boy my age has sexual intercourse, he proves that he is a man.

Ⓐ . . Agree Ⓑ . . Disagree

230. If a girl my age has sexual intercourse, she proves that she is a woman.

Ⓐ . . Agree Ⓑ . . Disagree

The next section asks about ways you have protected yourself while having sexual intercourse. Whether or not you have had sexual intercourse, there is an answer to each question for you.

231. In the past 3 months (90 days), how much of the time did you or your sexual partner use a condom (rubber) when you had sexual intercourse?

Ⓐ . . I did not have sexual intercourse during the past 3 months
Ⓑ . . None of the time
Ⓒ . . Less than half the time
Ⓓ . . About half the time
Ⓔ . . Most of the time
Ⓕ . . Always

232. In the past 3 months (90 days), how much of the time did you or your sexual partner use any form of birth control (such as condoms, birth control pills, or spermicides) when you had sexual intercourse?

Ⓐ . . I did not have sexual intercourse during the past 3 months
Ⓑ . . None of the time
Ⓒ . . Less than half the time
Ⓓ . . About half the time
Ⓔ . . Most of the time
Ⓕ . . Always

233. The last time you had sexual intercourse, were you or your sexual partner using birth control pills?

Ⓐ . . I have never had sexual intercourse
Ⓑ . . No
Ⓒ . . Yes
Ⓓ . . I don't know

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234. The last time you had sexual intercourse, did you or your sexual partner use a condom (rubber)?

Ⓐ . . I have never had sexual intercourse
Ⓑ . . No
Ⓒ . . Yes
Ⓓ . . I don't know

235. The last time you had sexual intercourse, did you or your sexual partner use spermicide (foam, jelly, or cream)?

Ⓐ . . I have never had sexual intercourse
Ⓑ . . No
Ⓒ . . Yes
Ⓓ . . I don't know

236. In the past year (12 months), did you get pregnant or did you get someone else pregnant?

Ⓐ . . Yes Ⓑ . . No Ⓒ . . I don't know

237. Do you have any children?

Ⓐ . . Yes Ⓑ . . No Ⓒ . . I don't know

238. How would you feel if you got pregnant or if you got someone else pregnant during the next year?

Ⓐ . . I would be happy
Ⓑ . . I wouldn't care one way or the other
Ⓒ . . I would be angry or unhappy

239. How do you think your mother or father would feel if you got pregnant or if you got someone else pregnant during the next year?

Ⓐ . . They would be happy
Ⓑ . . They wouldn't care one way or the other
Ⓒ . . They would be angry or unhappy

240. Are you currently trying to get pregnant or to get someone else pregnant?

Ⓐ . . No Ⓑ . . Yes

241. Have you ever had sexual intercourse with someone when they really didn't want to?

Ⓐ . . No Ⓑ . . Yes

242. In the past 3 months (90 days), did you have sexual intercourse with someone when they really didn't want to?

Ⓐ . . No Ⓑ . . Yes

243. Has anyone about your age ever made you have sexual intercourse when you really didn't want to?

Ⓐ . . No Ⓑ . . Yes

244. In the past 3 months (90 days), did anyone about your age make you have sexual intercourse when you really didn't want to?

Ⓐ . . No Ⓑ . . Yes

245. In the past 3 months (90 days), did you have sexual intercourse while you were drunk on alcohol or high on drugs?

Ⓐ . . No Ⓑ . . Yes

246. In the past year (12 months), how many different sexual partners have you had?

Ⓐ . . 0 Ⓒ . . 2 Ⓔ . . 4
Ⓑ . . 1 Ⓓ . . 3 Ⓕ . . 5 or more

247. Have you ever been told by a doctor or nurse that you had a sexually transmitted disease (sexual infection, STD) like syphilis, gonorrhea, chlamydia, or genital warts? (Sometimes that is called "getting burned.")

Ⓐ . . No Ⓑ . . Yes

248. In the past year, were you told by a doctor or nurse that you had a sexually transmitted disease (sexual infection, STD) like syphilis, gonorrhea, chlamydia, or genital warts?

Ⓐ . . No Ⓑ . . Yes

FEELINGS ABOUT YOUR NEIGHBORHOOD AND YOUR FRIENDS

Please agree or disagree with each of the following statements about your neighborhood.

	Agree	Disagree
249. I feel I am an important part of my neighborhood.	Ⓐ	Ⓑ
250. If I moved away from my neighborhood, I would be sorry to leave.	Ⓐ	Ⓑ
251. Very few of my neighbors know me.	Ⓐ	Ⓑ
252. I have friends in my neighborhood who know they can depend on me.	Ⓐ	Ⓑ
253. I do not like living in my neighborhood.	Ⓐ	Ⓑ
254. There are people in my neighborhood, other than my family, who really care about me.	Ⓐ	Ⓑ
255. I have friends in my neighborhood I can depend on.	Ⓐ	Ⓑ
256. If you don't look out for yourself in my neighborhood, no one else will.	Ⓐ	Ⓑ
257. No one in my neighborhood takes any interest in what their neighbors are doing.	Ⓐ	Ⓑ
258. It is hard to make good friends in my neighborhood.	Ⓐ	Ⓑ
259. If I am upset about a personal problem, there are people in my neighborhood I can turn to.	Ⓐ	Ⓑ

The following questions ask about what your friends think.

260. How much does it bother you if your friends think you are a punk?

Ⓐ . . It bothers me a lot Ⓒ . . It bothers me a little
Ⓑ . . It bothers me some Ⓓ . . It doesn't bother me at all

261. How important is it to do things your friends think are cool?

Ⓐ . . It is very important Ⓒ . . It is only a little important
Ⓑ . . It is somewhat important Ⓓ . . It is not important at all

262. How many of your friends think you are a punk if you don't drink alcohol?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

263. How many of your friends think you are a punk if you don't use drugs?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

264. How many of your friends think you are a punk if you don't carry a weapon?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

265. How many of your friends think you are a punk if you don't want to fight when you are insulted or dissed or called out?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

266. How many of your friends think you are a punk if you do well in school?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

267. How many of your friends think you are a punk if you don't have sex?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

268. How many of your friends think it's cool if you don't drink alcohol?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

269. How many of your friends think it's cool if you don't use drugs?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

270. How many of your friends think it's cool if you don't carry a weapon?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

271. How many of your friends think it's cool if you don't want to fight when you are insulted or dissed or called out?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

272. How many of your friends think it's cool if you do well in school?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

273. How many of your friends think it's cool if you don't have sex?
Ⓐ . . Most of them Ⓑ . . Some of them Ⓒ . . Almost none of them

INJURY AND ILLNESS

We are also interested in any accidents or illnesses you have had.

274. Since you turned nine, were you in a car, truck, or motorcycle accident?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

275. During the past year (12 months), were you in a car, truck, or motorcycle accident?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

276. Since you turned nine, were you hurt badly enough in a car, truck, or motorcycle accident that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

277. During the past year (12 months), were you hurt badly enough in a car, truck, or motorcycle accident that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

278. Since you turned nine, were you burned badly enough that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

279. During the past year (12 months), did you get burned badly enough that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

280. Since you turned nine, did you fall and hurt yourself badly enough that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

281. During the past year (12 months), did you fall and hurt yourself badly enough that you had to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

282. Since you turned nine, did you accidentally cut yourself or did someone else cut you accidentally and you were hurt badly enough that you had to get stitches?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

283. During the past year (12 months), did you accidentally cut yourself or did someone else accidentally cut you and you were hurt badly enough that you had to get stitches?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

284. Since you turned nine, did you get shot with a gun and have to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

285. During the past year (12 months), did you get shot with a gun and have to see a doctor?
Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

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286. Since you turned nine, were you hurt in a fight badly enough that you had to see a doctor?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

287. During the past year (12 months), were you hurt in a fight badly enough that you had to see a doctor?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

288. Since you turned nine, did you break any bones?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

289. During the past year (12 months), did you break any bones?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

290. Since you turned nine, did you spend any nights in a hospital (where you were the patient)?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

291. During the past year (12 months), did you spend any nights in a hospital (where you were the patient)?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

292. Since you turned nine, did you have to go to the hospital emergency room because you were injured?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

293. During the past year (12 months), did you have to go to the hospital emergency room because you were injured?

Ⓐ . . No Ⓑ . . Yes, just once Ⓒ . . Yes, more than once

294. Do you wear a seatbelt when you ride in a car or truck?

Ⓐ . . All the time
Ⓑ . . Most of the time
Ⓒ . . Some of the time
Ⓓ . . Never

THANK YOU

APPENDIX C

MYS Consent Form

MOBILE YOUTH SURVEY
CONSENT FORM

Title of Research: Mobile Youth Study

Investigator: John M. Bolland

Sponsor: University of Alabama at Birmingham; National Institute for Drug Abuse; Centers for Disease Control

For Minors (persons under 19 years of age) participating in this study, the use of the term "You" refers to "You or Your Child" and addresses both the participant and the parent or legally authorized representative.

Explanation of Procedures: Since 1998, we have been conducting the Mobile Youth Survey (MYS) with adolescents living in low and mixed-income neighborhoods in Mobile and Prichard. If you agree for your child to participate, he or she will spend an hour and a half answering questions about a number of challenges that young people face as they grow up, including their neighborhood; their relationships; their hopes for the future; their educational experiences; their sexual behavior; their health; their drug and alcohol use; and their experience with fighting and violence. The survey will be conducted in a community center in or near your neighborhood, or in your home. We are asking you to agree to allow your child to participate in the MYS each year until he or she turns 19. If your contact information changes and we are unable to contact you for surveys each year, we will get your contact information from the Mobile County Public School System. If at any point in the future you wish to withdraw your consent, please just let us know.

Compensation: We will pay your child $15 for his or her time.

Risks and Discomforts: Some of the questions are very personal, and some people may be uncomfortable answering some them. If your child feels particularly uncomfortable about any question, it is okay for him or her to skip that question.

Benefits: Although the research we are conducting will not directly benefit you, it will provide us with a better understanding of how children grow through adolescence and into adulthood in challenging situations. This will help us design better programs in the future. It will also help us evaluate programs that are currently being conducted in Mobile County.

Participant Initials _____

Alternatives: Your participation in this research is voluntary.

Withdrawal Without Prejudice: You may choose to withdraw from the study at any point without prejudice against further services that you may receive at this institution.

Confidentiality: All information we obtain during this study will be treated confidentially: That is, only people associated with the research team will even know that your child participated in the study, let alone his or her answers to our questions, without your prior approval. In other words, nothing we find out during these evaluation interviews will get you or your child in trouble. What your child tells us, and all of the other information we obtain, is covered under a Federal Certificate of Confidentiality, which has been issued to this project by the US Department of Health and Human Services (DHHS). It protects us from being forced, even under a court order or subpoena, to identify your child as a participant in this project or tell anyone how he or she answered the questions. Of course, if something your child tells us or we witness during the conduct of this research leads us to believe that he or she or anyone else is in immediate danger of serious physical injury, we will take appropriate steps to prevent this. And DHHS may see your information if it audits us. The Certificate of Confidentiality does not imply DHHS approval or disapproval of this project. The University of Alabama at Birmingham Institutional Review Board and the funding agency retain the right to review the data collected in this study to ensure that it is being conducted in an appropriate manner. The data from the study may also be shared with researchers from other universities who are working with us.

Questions: If you have any questions, please feel free to call John Bolland at (205) 975-7149. Or if you would like to talk with someone in Mobile, you can call us at 690-7394. If you have questions about your rights as a research participant, you may contact Ms. Sheila Moore, Director of the Office of the Institutional Review Board for Human Use (IRB). Ms. Moore may be reached at (205) 934-3789 or 1-800-822-8816, press the option for an operator/attendant and ask for extension 4-3789 between the hours of 8:00 a.m. and 5:00 p.m. CT, Monday through Friday.

Legal Rights: You are not waiving any of your legal rights by signing this consent form.

Signatures:

You are making a decision whether or not to have your child participate in this study. Your signature indicates that you have read (or been read) the information provided above and decided to allow your child to participate. You will receive a copy of this form.

_____
Name of participant

_____ _____
Signature of parent, guardian, or caregiver Date

Relationship to child: Parent ☐ Guardian ☐ Caregiver ☐

(If caregiver, caregiver authorization form must be completed)

_____ _____
Signature of person obtaining consent (if other than the investigator) Date

Participation in MYS: Worksheet

Name of Parent/Legally-Authorized Representative/Caregiver _____ Date _____

Address of Parent/Legally-Authorized Representative/Caregiver _____ Telephone Number _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Name of consented participant _____ Birthdate _____ Sch. Date _____ Sch. Time _____

Caregiver Authorization Document

Name of Research Participant: _____

Name of Caregiver: _____

Relationship of Caregiver to Research Participant:

_____

_____

_____

How long has research participant been staying with caregiver? _____

_____

How often does research participant stay with caregiver? _____

_____

Is caregiver responsible for determining whether research participant attends school on any given day?

_____

Is caregiver responsible for determining whether research participant takes medication, including over-the-counter medication?

_____

Is caregiver responsible for determining whether research participant seeks medical care when necessary?

_____

Signature of Person Obtaining Consent: _____

Date: _____

APPENDIX D

Institutional Review Board Approval

From: irb@umn.edu
Sent: Wednesday, July 16, 2008 3:31 PM
To: stod0015@umn.edu
Subject: 0807E39903 - PI Stoddard - IRB - Exempt Study Notification

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #4 EXISTING DATA; RECORDS REVIEW; PATHOLOGICAL SPECIMENS.

Study Number: 0807E39903
Principal Investigator: Sarah Stoddard
Title(s):
Social Connections, Trajectories of Hopelessness, and Violent Behavior in Urban African American Youth

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This e-mail confirmation is your official University of Minnesota RSPP notification of exemption from full committee review. You will not receive a hard copy or letter.
This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.
The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

APPENDIX E

M*plus* Code for Multiple Group Analysis

Model 1. Linear change, covariates equal across latent classes.

```
TITLE:
    4 class multiple group linear model with predictors and distal outcome;
    covariates equal across latent class.

DATA:
    File is c:\data\dissertation.dat;

VARIABLE:
     names are pid gender mother nhpos nhheg hope13 hope14 hope15 hope16
    weapon eviol efight;
    Missing are all (-9999);
    Usevariable are hope13 hope14 hope15 hope16 mother nhpos weapon eviol
    efight;
    Categorical = weapon;
    Classes = gender (2) c (2);
    Knownclass = gender (gender = 0 gender = 1)

Analysis:
    Type = mixture;
    Starts = 500 20;
    Algorithm = integration EM;

Model:
    %overall%
     i s | hope13@0 hope14@1 hope15@2 hope16@3;
    i  s on mother nhpos efight eviol;
    c on gender mother nhpos efight eviol;
    i@0;
    s@0;

Output:
    Sampstat tech1 tech4 tech7;

Plot:
    Type is plot3;
    Series = hope13 hope14 hope15 hope16 (*);
```

Note: intercept and slope variance fixed at 0 due to negative intercept and slope residual variance.

Model 2. Linear change, covariates latent class specific.

```
TITLE:
    4 class multiple group linear model with predictors and distal outcome;
    Covariates are latent class specific (vary by class).

DATA:
    File is c:\data\dissertation.dat;

VARIABLE:
     names are pid gender mother nhpos nhheg hope13 hope14 hope15 hope16
    weapon eviol efight;
    Missing are all (-9999);
    Usevariable are hope13 hope14 hope15 hope16 mother nhpos weapon eviol
    efight;
    Categorical = weapon;
    Classes = gender (2) c (2);
    Knownclass = gender (gender = 0 gender = 1)

Analysis:
    Type = mixture;
    Starts = 500 20;
    Algorithm = integration EM;

Model:
    %overall%
     i  s | hope13@0 hope14@1 hope15@2 hope16@3;
    s@0;
    c on gender mother nhpos efight eviol;
    %gender#1.c#1%
    i  s on mother nhpos efight eviol;
    %gender#1.c#2%
    i  s on mother nhpos efight eviol;
    %gender#2.c#1%
    i  s on mother nhpos efight eviol;
    %gender#2.c#2%
    i  s on mother nhpos efight eviol;

Output:
    Sampstat tech1 tech4 tech7;

Plot:
    Type is plot3;
    Series = hope13 hope14 hope15 hope16 (*);
```

Note: Slope variance fixed at 0 due to negative slope variance.

Model 3. Quadratic change, covariates equal across latent classes.

```
TITLE:
    4 class multiple group quadratic model with predictors and distal outcome;
    covariates equal across latent class.

DATA:
    File is c:\data\dissertation.dat;

VARIABLE:
     names are pid gender mother nhpos nhheg hope13 hope14 hope15 hope16
    weapon eviol efight;
    Missing are all (-9999);
    Usevariable are hope13 hope14 hope15 hope16 mother nhpos weapon eviol
    efight;
    Categorical = weapon;
    Classes = gender (2) c (2);
    Knownclass = gender (gender = 0 gender = 1)

Analysis:
    Type = mixture;
    Starts = 2000 20;
    Algorithm = integration EM;

Model:
    %overall%
     i  s  q| hope13@0 hope14@1 hope15@2 hope16@3;
    i  s q on mother nhpos efight eviol;
    c on gender mother nhpos efight eviol;


Output:
    Sampstat tech1 tech4 tech7;

Plot:
    Type is plot3;
    Series = hope13 hope14 hope15 hope16 (*);
```

Model 4. Quadratic change, covariates latent class specific.

```
TITLE:
    4 class multiple group linear model with predictors and distal outcome;
    Covariates are latent class specific (vary by class).

DATA:
    File is c:\data\dissertation.dat;

VARIABLE:
     names are pid gender mother nhpos nhheg hope13 hope14 hope15 hope16
    weapon eviol efight;
    Missing are all (-9999);
    Usevariable are hope13 hope14 hope15 hope16 mother nhpos weapon eviol
    efight;
    Categorical = weapon;
    Classes = gender (2) c (2);
    Knownclass = gender (gender = 0 gender = 1)

Analysis:
    Type = mixture;
    Starts = 500 20;
    Algorithm = integration EM;

Model:
    %overall%
     i  s  q| hope13@0 hope14@1 hope15@2 hope16@3;
    c on gender mother nhpos efight eviol;
    %gender#1.c#1%
    i  s q on mother nhpos efight eviol;
    %gender#1.c#2%
    i  s q on mother nhpos efight eviol;
    %gender#2.c#1%
    i  s q on mother nhpos efight eviol;
    %gender#2.c#2%
    i  s q on mother nhpos efight eviol;

Output:
    Sampstat tech1 tech4 tech7;

Plot:
    Type is plot3;
    Series = hope13 hope14 hope15 hope16 (*);
```