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Social Connections, Trajectories of Hopelessness, and Serious Violence in Impoverished Urban Youth

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Abstract

Youth living in impoverished urban neighborhoods are at risk for becoming hopeless about their future and engaging in violent behaviors. The current study seeks to examine the longitudinal relationship between social connections, hopelessness trajectories, and subsequent violent behavior across adolescence. Our sample included 723 (49% female) African American youth living in impoverished urban neighborhoods who participated in the Mobile Youth Survey from 1998 through 2006. Using general growth mixture modeling, we found two hopelessness trajectory classes for both boys and girls during middle adolescence: a consistently *low hopelessness class* and an *increasingly hopeless class* with quadratic change. In all classes, youth who reported stronger early adolescent connections to their mothers were less hopeless at age 13. The probability of later adolescent violence with a weapon was higher for boys and was associated with the *increasingly hopeless class* for both boys and girls. Implications for new avenues of research and design of hope-based prevention interventions will be discussed.

Keywords

adolescence; hopelessness; violence; general growth mixture model

During adolescence, a hopeful sense for the future can facilitate positive development and successful transition into adulthood (Nurmi, 1991; Nurmi, Poole & Seginer, 1995). Hope is believed to emerge developmentally, but few studies have examined individual trajectories of hope or hopelessness during adolescence. Living in environments characterized by high levels of poverty and violence can have powerful negative impacts on young people's sense of hope (Lorion & Saltzman, 1993). Even within these stressful environments, positive social connections can buffer and protect young people (Resnick et al., 1997; Resnick, Ireland, & Borowsky, 2004; Wickrama & Bryant, 2003), which may allow hope to flourish and enhance positive health and social outcomes. Participation in violence is among the most negative of social outcomes for youth and society. How environmental and social factors influence the course of hopelessness during adolescence and how the development of hopelessness influences participation in violence among young people living in poverty is not known.

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As background for the current study, theory and research about the emergence and evolution of hope and hopelessness during adolescence is reviewed. Empirical findings about relationships between connections to neighborhood and connections with pro-social, nurturing adults and hope are summarized. Health and social outcomes of hopelessness, with an emphasis on involvement in violence, are addressed. The overall goals of this study were to examine trajectories of hopelessness during middle adolescence among young people from poor urban neighborhoods; and to investigate relationships between social connectedness during early adolescence, hopelessness trajectories during middle adolescence, and involvement in weapon-related violence during later adolescence among these same young people.

Hope and Hopelessness

Concepts—Hope has been defined as 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, p. 6). It reflects a belief that a personal tomorrow exists (Hinds, 1984). Hope has also been described as the interrelationship between the belief in the ability to initiate and sustain actions towards goals, and the capacity to generate routes to reach goals (Snyder, Hoza, Pelham, & Rapoff, 1997). The *Children's Hope Scale* (Snyder et al.) assesses goal related hopeful thinking and is a widely used measure for assessing the concept of hope in children and adolescence. In contrast, hopelessness is defined as having negative expectations for the future (Beck, 1974; Kazdin, French, Unis, Esveldt-Dawson & Sherick, 1983; Joiner & Wagner,1995). 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; Joiner & Wagner, 1995). Based on Beck's *Hopelessness Scale* (1974), the *Hopelessness Scale for Children* (Kazdin, Rodgers, & Colbus, 1986) and the *Brief Hopelessness Scale* (Bolland, McCallum, Lian, Bailey, & Rowan, 2001) have been designed to assess negative expectations about the future in children and adolescents. Because hope and hopelessness are two distinct concepts, an adolescent with a low hope score should not be categorized as hopeless and an adolescent with a low hopelessness score should not be referred to as hopeful.

Developmental course—As human development is a continuous process with the past influencing the future, many of the individual factors that influence the development of hope or hopelessness have a basis in the mastery of developmental tasks during infancy and childhood. Hope has been identified as one of the earliest of the basic ego qualities and a positive outcome of the earliest stage of psychosocial development (trust and mistrust) (Erickson, 1964). Meeting a child's emotional needs during very early childhood promotes the emergence of hope (Erickson). Conversely, the roots of hopelessness are formed when emotional needs are not met during early childhood.

A sense of time that includes the ability to conceptualize and believe in the future is needed before a sense of hope or hopelessness can be discerned (Siomopoulos & Inamder, 1979; Spirito, Williams, Stark, & Hart, 1988). Thus, a certain level of cognitive development must be reached in order for an individual to experience hope or hopelessness. The abstract thinking that enables consideration of the multiple dimensions of time (Wessman & Gorman, 1977; Keating, 1990) is not present in children. With the onset of formal operational thinking during early adolescence (Piaget, 1975), development of a nuanced sense of past, present and future is possible (McInerney, 2004), allowing awareness and refinement of a sense of hope or hopelessness and the capacity to assess probabilities and

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imagine the future (Cameron, Desai, Bahador, & Dremel, 1977–78; Greene, 1986; Klineberg, 1967).

Throughout adolescence, youth become increasingly focused on formation of a coherent identity (Erickson, 1964, 1968) that integrates past, present, and future selves (Keating, 1990; Wessman & Gorman, 1977). As part of identity formation, adolescents begin to make decisions about education, occupation, and social relationships (McCabe & Barnett, 2000), which are all decisions that are influenced by their time perspective (Nurmi, 1993; Nuttin, 1985). The ability for abstract thinking during this time involves the process of envisioning the possibilities and beginning to differentiate between actual and possible selves. The projection of self identity to the future is foundational for the development of a sense of hope (Greene, 1986; Nurmi, 1991).

The empirical literature on changes in hope and hopelessness during adolescence is limited. Several studies have focused on the concept of hope during adolescence (Hinds, 1988; Snyder et al., 1997), while others have assessed hopelessness (Bolland et al., 2001; Bolland, Lian, & Formichella, 2005). Hope appears to be dynamic and changes during the adolescent years. In a sample of youth ages 10–18, the reliability of *Children's Hope Scale* scores measured one year apart was moderate (r = .47; Valle et al., 2006), suggesting that change occurred in some youth. Similarly, the average level of hope increased among adolescents receiving impatient substance abuse treatment but then decreased after discharge, demonstrating that hope is not a fixed attribute (Hinds). Likewise, the concept of hopelessness appears to change during adolescence. Among youth aged 9–19 living in public housing in Huntsville AL, hopelessness was negatively correlated with age (Bolland et al., 2001). Among five cohorts of poor, urban, primarily African American youth who participated in the Mobile Youth Survey for up to six years, the average year-to-year correlation of Brief Hopelessness Scale scores was r = .34, supporting the notion of hopelessness as a developmental construct (Bolland et al., 2005). Thus, while limited, research to date suggests that the course of hope and hopelessness is dynamic and changing in response to maturation and adaptation to life events.

Hope and Hopelessness: Social and Neighborhood Influences

As adolescents are complex and dynamic beings influenced by their own development and their interaction with their social and environmental contexts (family, school, and neighborhood), hope can be learned through social interactions and physical environments during childhood and early adolescence (Lynch, 1965; Piaget, 1932; Stotland, 1969). Neighborhoods play an important role in influencing a young person's values, expectations for normative behaviors, and expectations for the future. Neighborhood factors such as violence and poverty may limit an adolescent's ability to think about the future and inhibit the development of hope (Lorion & Saltzman, 1993). Poverty may negatively influence an adolescent's options for the future (i.e., opportunities for continuing education, access to employment opportunities), leading to feelings of hopelessness. Likewise, life within a chronically violent community is one in which trust and hope are not easily cultivated (Lorion & Saltzman). Adolescents who grow up in violent environments may believe their only option is a life of violence which, in turn, may lead to perceptions of hopelessness. Without hope, adolescents are less likely to be concerned about poor choices that may adversely affect their future.

Neighborhoods also offer features that promote the healthy development of young people, including the development of hopefulness. Positive neighborhoods offer young people the opportunity to interact with caring adults who reinforce pro-social behaviors (Resnick et al., 2004; Resnick et al., 1997). These nurturing environments and the involvement of competent and supportive adults, who value and reward pro-social behaviors and assist in

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negotiating barriers, may be linked to the development of hope among young people (Resnick et al., 1997; McGee, 1984). For girls, caring exhibited by family and other supportive adults has been associated with lower levels of hopelessness (Pharris, Resnick, & Blum, 1997). Supportive relationships with pro-social adults within and outside of family may nurture the development of hope.

Studies of change in hope or hopelessness over time suggest plausible predictors of developmental course. Using a linear mixed model with a first order autoregressive covariance structure for responses over time, Bolland et al. (2005) found that gender, disruptive factors (change in mother figure, witnessing violence, traumatic stress, and worry) and perceived pro-social connectedness (sense of community, warmth toward mother, and religiosity) predicted year-ro-year change in hopelessness among primarily African American youth living in impoverished neighborhoods. This finding suggests the utility of further analyses that describe and predict the developmental course of hopelessness, allowing for population heterogeneity in individual course (cf. Cudeck & Harring, 2007; Raudenbush, 2005). Bolland et al. (2005) examined immediate change in hopelessness subsequent to disruptive or supportive events. The impact of these factors through the subsequent course of adolescence is unknown. Thus, we are limited in our understanding of enduring consequences of variation in family and neighborhood factors.

Effects of Hopelessness

Health and social outcomes—Hopelessness has been associated with negative outcomes including violence, depression, school problems, substance abuse, risky sexual behaviors, and accidental injury (Kashani, Reid, & Rosenberg, 1989; Spirito et al., 1988; Bolland, 2003; Bolland et al., 2001; DuRant, Cadenhead, Pendergrast, & Slavens, 1994). In contrast, cross-sectional studies have linked high levels of hope during adolescence with scholastic achievement, social acceptance, feelings of self-worth, and overall psychological well-being (Gilman, Dooley, & Florell, 2006; Miller & Powers, 1988; Snyder, et al., 1997; Valle, Huebner, & Suldo, 2004). Valle et al. (2006) regarded hope as a psychological strength that moderates the relationship between stressful life events and risk behaviors. Based on this existing research highlighting associations between hopelessness and negative outcomes that includes violence, adolescents who are hopeless appear less likely to avoid circumstances that can lead to involvement in life-threatening behavior patterns.

Violence—Participation in violence is a particularly devastating and potentially life-threatening outcome of hopelessness. Violence rates peak during the adolescent years, and adolescents disproportionately suffer the consequences of violence, including imprisonment, injury, and homicide (Centers for Disease Control and Prevention [CDC], 2008, 2009; Graham & Bowling, 1995; National Adolescent Health Information Center, 2007). Members of specific demographic groups, especially males and African Americans, are at particular risk for involvement in serious forms of violence and related negative sequelae (e.g., homicide, incarceration) (CDC; Herrenkohl et al., 2000). Homicide is the leading cause of death among African American youth (CDC). 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 age 10 to 24 are 3 to 16 times higher than rates for other groups of males (National Adolescent Health Information Center).

Males experience greater levels and more serious forms of violence than females (Farrington, Langan, & Tonry, 2004; Loeber, & Stouthamer-Loeber, 1998). Gender differences in physical aggression appear to be present early and remain throughout the developmental course (Tremblay et al., 2004). However, over the past 20 years rates of delinquency and violence have increased among adolescent females (US Department of

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Justice, Office of Juvenile Justice and Delinquency [OJJ], 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, a history of sexual or physical abuse, and negative peer influences (Graves, 2007). While also relevant for boys, violence in girls may be a product of internalized feelings of emotional distress that can no longer be withheld (Graves); violence becomes a release of negative feelings and anger. Among low SES African American and Hispanic adolescents, Stueve et al. (2001) found that changes in attitudes supporting violence were more closely linked with changes in physical aggression among girls. Based on the existing research, gender differences exist in both the developmental course and in the rates of violent behaviors.

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). Both boys and girls living in disadvantaged neighborhoods are exposed to a greater number of risk factors, including exposure to family and community violence, than their peers in more advantaged neighborhoods. Girls are thought to have less exposure to community violence than boys (Kroneman, Loeber, & Hipwell, 2004). Youth living within disadvantaged neighborhoods may also experience fewer opportunities for positive relationships and pro-social role models (Brooks-Gunn, Duncan, & Aber, 1997). Youth living in poverty are at increased risk for participation in violence.

Risk and protective factors increase or decrease the likelihood that young people will engage in violence. Neighborhoods with a culture and history of adult violence have elevated rates of youth violence (Borowsky, Widome, & Resnick, 2008; Herrenkohl et al., 2000; Valois et al., 2002), whereas those characterized by cohesion and opportunities for youth to interact with caring adults who reinforce pro-social behaviors appear to confer protection (Sampon & Raudenbush, 1997; Resnick et al., 2004; Resnick et al., 1997). Parent and family connectedness protects against violence across social groups of adolescents (Brookmeyer, Henrich, & Schwab-Stone, 2005; Gorman-Smith, Henry, & Tolan, 2004; Resnick et al., 1997; Resnick et al.). Adolescents more connected to their parents were less likely to commit weapon violence over time (Henrich, 2005). In addition, high quality parent-child relationships may protect urban male adolescents who have been exposed to violence from engaging in violent behaviors (Brookmeyer et al.; Gorman-Smith et al.). In contrast, parent and family attitudes that are favorable to violence are a risk factor for youth violence (Herrenkohl et al., 2000). Positive connections to neighborhood and family can offer adolescents protection against participation in violence.

At the individual level, involvement in violence during early adolescence is a potent risk factor for involvement in violence at subsequent ages (Borowsky et al., 2008; Dahlberg & Potter, 2001; Herrenkohl et al., 2000). 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 et al., 2001). Among urban adolescents living in poverty, those who were more hopeful, with a higher sense of purpose in life and less depression, werebetter able to withstand the influence of exposure to violencein the home and in the community (DuRant, Cadenhead, Pendergrast, & Slavens, 1994). Hopelessness was associated with increased risk for weapon carrying, involvement in violence, and weapon use in earlier evaluations of MYS data (Bolland, 2003; Bolland et al., 2001). Various theories have helped explain the origins of violence among urban youth living in poverty, including the process of abandonment of hope (Bolland et al., 2005); yet, few have empirically tested the role of hopelessness using longitudinal data with a focus on the experiences of individual young people over time.

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PURPOSE AND HYPOTHESES

The purpose of this study was to develop and test a longitudinal model linking social connectedness and involvement in violence during early adolescence with involvement in weapon-related violence during later adolescence via trajectories of hopelessness during middle adolescence. Ecological theory (Bronfenbrenner, 1997) and existing research (described above) inform Figure 1, the conceptual model for this study of youth living in impoverished neighborhoods. As proposed in Figure 1, positive social connections (with neighborhood and mother) and involvement in violence during early adolescence are thought to shape the course of hopelessness during middle adolescence. In turn, trajectories of hopelessness in middle adolescence explain subsequent participation in violence with a weapon during later adolescence. The model suggests a variety of increasing and decreasing change patterns with and without acceleration for individual hopelessness trajectories. The possibility of similarities in change between individuals is incorporated by proposing the existence of latent classes.

Initial analyses examine associations between measures of social connections and involvement in violence during early adolescence, change in hopelessness during middle adolescence, and rates of violence with a weapon during later adolescence. Then general growth mixture modeling (GGMM) (Muthén & Muthén, 1998–2007) is used to link social connections and violence in early adolescence and violence with a weapon in later adolescence via hopelessness trajectories during middle adolescence. Because prior research identified gender differences in predictors of youth violence (Graves 2007; Stueve et al., 2001), changes in hopelessness during adolescence (Bolland et al., 2005), and differences in rates of serious involvement in violence (CDC, 2009), analyses are completed using both boys and girls as known groups in the GGMM. A model selection approach identifies the best fitting model from a set of four proposed theoretically plausible models derived from Figure 1.

Table 1 lists key characteristics of the four competing models that are estimated and compared. Characteristics of the proposed models reflect different hypotheses about the form of change in hopelessness during middle adolescence and nature of the predictive relationships across the phases of adolescence. Our first aim was to examine changes in hopelessness during middle adolescence. We expected that adolescents' hopelessness trajectories would change during middle adolescence as youth cognitively become more self aware (self identity formation) and have increasing time perspective. Two functional forms for change in hopelessness were proposed. The linear models reflect a constant rate of growth or decline (or no change) in hopelessness during middle adolescence, whereas the quadratic models hypothesize a changing rate of change in hopelessness (positive or negative) as the transition to adulthood approaches. An increasingly rapid shift in perception for the future is implied by the quadratic form. The growth mixture model was used because similarities in change in hopelessness were anticipated and could be identified using latent classes, but the uniqueness of individual change in hopelessness was preserved by hypothesizing within-class variation; this view reflects the perspective that individual development is unique and that growth curves vary continuously in the population (Raudenbush, 2005). Our second aim was to examine the extent to which social connections and violence during early adolescence predicted to certain hopelessness trajectory groups. We hypothesized latent class-specific prediction of growth parameters because the latent hopelessness trajectory classes were expected to be qualitatively different; however, the simpler more parsimonious equal prediction model was also explored. Our final aim was to explore the association between latent hopelessness trajectory class and engagement in serious violence in later adolescent. Latent classes characterized by increasing hopelessness

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(regardless of functional form) were expected to be associated with a higher probability of violence with a weapon during later adolescence.

Findings from this study will fill critical gaps in scientific understanding of the development of hopelessness during adolescence and the roots of youth violence. By assessing change at the individual level, the study explicitly links theory about change in hopelessness, longitudinal study design, and a general growth mixture model consistent with the theory and design (cf. Collins, 2006). Understanding trajectories of hopelessness during adolescence and examining the role of hopelessness trajectories in the relationship between social connectedness and involvement in violence has potential to serve as foundation for innovative, developmentally based interventions designed to promote healthy development and prevent violence among impoverished, at-risk youth.

METHOD

The Mobile Youth Survey

Setting—This study used data from the Mobile Youth Survey (MYS), a community-based, multiple cohort study of 10 – 19 year old adolescents living in 13 extremely impoverished neighborhoods in the Mobile, Alabama metropolitan statistical area (includes the cities of Mobile and Prichard). Mobile has a population of approximately 200,000 residents. In 2000, 46.1% of Mobile's population was African American and 22.4% lived in poverty. Prichard is a city of nearly 30,000 residents. In 2000, 83.3% of Prichard's population was African American and 44.1% of residents lived in poverty. In 1990, 42% of African Americans in the MSA lived in high-poverty census tracts, placing Mobile third in the nation in this measure of concentrated poverty (Jargowsky, 1997).

The 13 neighborhoods targeted for study were homogeneous in regards to poverty rates and community composition. When selected for participation in 1998, the median household income in the neighborhoods was approximately $5,000, and 73% of the residents in these neighborhoods lived below the poverty level (based on the 1990 census). The median poverty rate in 2000 was approximately 57%, with 30.5% of residents living in extreme poverty (i.e., < 50% of the poverty level); and the median household income was less than $12,000. Ninety-five percent of residents in these neighborhoods were African American. Seven of the neighborhoods were public housing developments and six were non-public housing neighborhoods.

Sampling and recruitment—The first MYS cohort was enrolled in 1998 using both active and passive recruitment strategies. Within the targeted public housing neighborhoods, approximately one half of the apartments identified by the housing authority records as having youth residents between the ages of 10 and 18 were randomly selected for participation. In the non-public housing neighborhoods, approximately half of the houses and apartments were selected for active recruitment. Through door knocking, project staff attempted to make contact with adult caregivers in each of these active recruitment residences to obtain parental consent and to recruit adolescents to participate in the study. In addition, passive recruitment was done through posting flyers about the study and word of mouth in the targeted neighborhoods. In 1998, 1,771 youths were surveyed.

In 1999, project staff attempted to resurvey each of the 1998 participants. In addition, a new random sample was also actively recruited. Between 2000 and 2006, similar active and passive strategies were used to recruit new cohorts of MYS participants; past participants were actively recruited to be resurveyed. Since 1999, annual cohort size ranged from 2,185 to 2,632 youth; each year approximately 30% (range 23 – 35%) of the sample were new participants. From 1998 to 2006, 7,664 youth participated in MYS. Since 1998 the active

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recruitment response rate each year has hovered around 90%, reflecting an increased awareness of and trust in the survey and the research team.

Data collection procedures—Participants completed surveys at local community centers. Personal information, parent consent, and participant assent was verified at check-in. Individuals completed surveys in a room with 10 – 20 other MYS participants. Survey questions were read aloud by trained staff with participants marking responses in their survey booklet. Those who needed individual attention were assisted one-on-one; however, most participants completed the survey independently. The paper-pencil, forced-choice survey took 60 to 90 minutes to complete. Each participating youth received $10 per year for the hour that was required to complete the paper-pencil survey.

Cohorts—The nine MYS cohorts are similar on most demographic factors except that percentage of public housing residents declined following changes in policy and availability of housing (Table 2). Each year, the sample was split evenly between males (49.4%–53.3%) and females, and the mean age ranged between 12.6 years and 13.6 years. The vast majority (between 89% and 94% each year) of the youths identified themselves as African-American, with an additional 4% to 6% identifying themselves as mixed-race or Creole and the remainder identifying as Caucasian. Each year, between 44.8% and 62.3% of respondents reported living in public housing, and between 87.3% and 93.0% reported receiving free or reduced-cost lunches. Additional descriptions of the MYS purpose, setting, and design are available elsewhere (Bolland et al., 2005; Bolland et al., 2007).

The Current Sample

The current study is based on a subsample of MYS participants. This subsample consisted of 723 adolescents (370 males, 353 females) aged 10 – 18 years who participated in the MYS five or more years between 1998 and 2006, with at least one survey completed between ages 10–12, and at least one survey completed between ages 16–18. Demographic characteristics are reported in Table 3. The proportions of males and females were approximately equal (51% male). The majority of the sample reported being African American (95%). About 75% of participants contributed 6 or more annual data points, and about 81% started participation prior to age 12. There is some overlap in participants selected for the current study and the prior report of Bolland et al. (2005). The current sample adds occasions for all participants whose responses were used in the prior analysis, deletes cases who did not participate at least five times, including once during both early and later adolescence, and adds cases from later cohorts.

Variables and Measurement

Age—Age in years and birth date were reported by participants at each measurement occasion. Participant self-reported age was used unless inconsistencies were noted. Inconsistencies in the self reported age (e.g., age decreased from one occasion to the next) were verified using birth date and correct age recalculated. Occasions of measurement were then classified into early (10–12 years of age), middle (13–16 years of age) and later (16–18 years of age) adolescent phases. Age 13 represents transition from early to middle adolescence, and age 16 represents transition from middle to later adolescence. Age ranges for our phases approximate those often used by many social scientists (Steinberg, 2008; Matjasko, Needham, Grunden, & Farb, 2010).

Age was used to select variables from the MYS database during the early and later adolescent phases. Many participants had completed multiple surveys during early and later phases, but only a single time point for measurement of variables during these phases was desired. During early adolescence, surveys from age 12 were available for 653 cases (90%);

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for those cases where it was not available, we used either age 11 data (*N* = 57; 8%) or age 10 data (*N* = 13; 2%). During later adolescence, survey data was available at age 16 for most cases (*N* = 601; 83%); for those cases where it was not available, we used either age 17 data (*N* = 101; 14%) or age 18 data (*N* = 21; 3%).

Age (centered on 13) was used as the predictor for modeling growth in hopelessness during middle adolescence. Age was centered on 13 so that intercepts in the hopelessness trajectories could be interpreted as baseline values at the start of middle adolescence. Trajectories of hopelessness during the middle adolescent phase (ages 13–16) were based on all available time points for each participant during this period.

Connection to mother during early adolescence—*Connection to mother* during early adolescence was measured with the *Warmth towards Mother* scale (Lamborn, Mounts, Steinberg, & Dornbusch, 1991), a 6-item scale that measured self-reported closeness to their mother or the person who was most like a mother. The scale includes items such as *She usually helps me if there is something I don't understand*. 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 current sample during early adolescence was α = .76.

Positive neighborhood connectedness during early adolescence—*Connectedness to neighborhood* during early adolescence was measured using 6 items from the Psychological Sense of Community Scale (Glynn, 1981). The 6-item scale measures positive connections to one's neighborhood and includes items such as *There are people in my neighborhood, other than my family, who really care about me*. 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 current sample during early adolescence was α = .72.

Physical fighting during early adolescence—Physical fighting during early adolescence consisted of a single item, *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—Violence with a weapon during early adolescence was a composite measure of 4 items assessing the overt violent behaviors of threatening someone with a weapon in the past 90 days, pulling a weapon on someone in the past 90 days, and shooting or stabbing someone in the past year. 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.

Hopelessness during middle adolescence—Hopelessness was measured using the Brief Hopelessness Scale (BHS; Bolland et al., 2001). It includes five items from Kazdin's Hopelessness Scale for Children (Kazdin, Rodgers, & Colbus, 1986), and one item developed to assess hopelessness in dangerous neighborhoods (*I don't expect to live a very long life).* All items were negatively worded *(All I see ahead of me are bad things, not good things)* and 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. For purposes of this study, BHS measures were derived from all annual MYS surveys completed by participants between the ages of 13–16 years. With

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middle adolescent data from the current sample, internal consistency reliability estimates for the BHS for ages 13–16 ranged from α = .72-.80.

Violence with a weapon during later adolescence—Measurement of violence with a weapon during later adolescence was based on responses to four overt violent behaviors of threatening someone with a weapon in the past 90 days, brandishing a weapon on someone in the past 90 days, and shooting or stabbing someone in the past year. 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.

Gender—Participant gender was assessed using a single self report item. Girls were coded as 0 and boys were coded as 1.

ANALYSIS PLAN

Characteristics of the participants and data quality indicators were summarized using descriptive statistics. Associations among social connectedness, violence, and gender variables during early adolescence were examined with correlations and t-tests. A set of theoretically plausible GGMMs were estimated using M*Plus* (Muthén & Muthén, 1998–2007) and compared using AIC, BIC, Sample Adjusted BIC, and entropy to select the best approximating model.

Missing Data

In M*Plus*, GGMMs are estimated using the maximum likelihood approach with the EM algorithm, allowing data missing at random on the repeated measures variable and dichotomous outcome (Muthén & Shedden, 1999; Muthén et al., 2002; Schafer & Graham, 2002). During middle adolescence, data for 3 of 4 timepoints was available for about 84% of the participants. Coverage gives the proportion of cases contributing to each element in the variance-covariance matrix. The minimum covariance coverage recommended for reliable model convergence is 0.10 (Muthén, 2004). Covariance coverage ranged from 0.69 to 1.00.

RESULTS

Within Phases

Early adolescence—Average levels of social connectedness, fighting, and violence with a weapon during early adolescence for boys and girls are summarized in Table 4. Results presented for early adolescence is primarily based on data collected at age 12. High levels of connectedness to mother were common among all participants, but the average was significantly higher for girls than boys. There was no difference in connectedness to neighborhood. Almost half of the sample reported getting into a physical fight in the past 90 days and 25% reported violence with a weapon. Boys reported significantly more physical fighting and violence with a weapon than girls. Correlations between social connectedness, fighting, and violence with a weapon during early adolescence are summarized separately for boys and girls in Table 5. Violence with a weapon (but not fighting) was associated with lower connectedness to mother in both groups. For boys, violence with a weapon was associated with lower levels of connectedness to neighborhood.

Middle adolescence—Average levels of hopelessness responses by age and gender are reported in Table 6. Mean hopelessness decreased with age for girls, from an average of 1.30 (range 0 – 5) at age 13 to .97 at age 16. For boys, average levels of hopelessness decreased from age 13 to age 14 (M = 1.71 to M = 1.46, respectively), then increased again at age 15 (M = 1.54) and 16 (M = 1.69).

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Later adolescence—Violence with a weapon during later adolescence was more common among boys (n =123; 33%) than girls (n= 75; 21%; χ^2 = 13.07, p < .001).

Between Phases

General growth mixture modeling—GGMM (Li, Duncan, Duncan & Acock, 2001; Muthén & Shedden, 1999) with maximum likelihood estimation was used to describe the pattern of hopelessness over time, identify latent classes based on hopelessness trajectories, and link latent classes with social connectedness and violence across adolescent phases. The hypothesized models based on the concepts and relationships summarized in Figure 1 incorporated the following temporal design features, variables, and model specifications. Hypothesized models included latent growth factors (intercept and slope coefficients, and in 2 models a quadratic coefficient) and 4 measurement time points between the ages of 13 – 16 for the continuous measure of hopelessness (y1, y2, y3, y4). The hypothesized models also included 4 covariates *x* (connection to mother, positive neighborhood connectedness, physical fighting, and violence with a weapon) measured during early adolescence; and a distal outcome *u (*violence with a weapon) measured during later adolescence.

Multiple group analysis within GGMM—Based on the literature and preliminary analysis, gender differences in involvement in violence were expected. It was also anticipated that the relationships between social connectedness, course of hopelessness over time, and violence during adolescence would vary based on gender. Gender was treated as a known group in the GGMM framework. The known groups approach is preferable to treating gender as a covariate in the models, which would impose equalities between genders that may not be valid (such as structure of classes, within-class variability, effects of covariates, and associations between class membership and distal outcomes). In this multiple group analysis, latent class membership is treated as partially known and fully informed by gender-specific growth mixture models. Partially known means that, for example, girls could be in only those classes derived from mixture models carried out for girls, but the exact latent class membership was re-estimated within the multiple group model.

Candidate models—Based on previous literature and the preliminary assessment of data by gender, four theoretically plausible multiple group models were estimated simultaneously for boys and for girls (two known groups) using M*Plus* (Muthén & Muthén, 1998–2007), and compared using AIC, BIC, Sample Adjusted BIC, and entropy to select the best model in the set. The proposed models varied in two aspects. First, individual change in hopelessness was either linear with a constant rate of change throughout middle adolescence, or quadratic with variable change that accelerated or decelerated over time. Second, the relationship between the covariate predictors was either held equal, or allowed to vary based on class membership (Table 7). Initial solutions produced negative variance estimates for intercepts and slopes (Model 1, linear change with equal covariate prediction) and slopes (Model 2, linear change with class-specific covariate prediction). To keep parameter estimates within bounds, 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 and the models were re-estimated. Model 4 (quadratic change with class-specific covariate prediction) was eliminated due to high correlations between the linear and quadratic coefficients.

Among the remaining three models, the Akaike information criteria (AIC), Bayesian information criterion (BIC), and the sample-adjusted BIC were used to select the model with the smallest combination of population misfit and sampling error. 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 indices indicate the best model (Li et al., 2001; Muthén, 2004). Model 3 (quadratic change with equal covariate prediction) was the best

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approximating model, as indicated by the lowest AIC, BIC, and sample adjusted BIC (Table 7).

Entropy, a summary measure of how well people are classified into classes, is measured on a 0 to 1 scale; entropy greater than .90 indicates more distinct groups (Acock, 2008; Muthen, 2004). Both Model 2 (linear change with class-specific covariate prediction) and Model 3 (quadratic change with equal covariate prediction) had entropy greater than .90. Based on statistical fit provided by the information criteria and entropy, Model 3 was most satisfactory. Results from Model 3, the *Final Model*, are described below. Parameter estimates are presented in Table 8.

Final Model

Change in hopelessness and latent classes—Model 3 incorporates gender-specific quadratic change in hopelessness with equal covariate prediction. Two latent classes emerged for both boys and girls: a consistently *low hopelessness class* characterized by a lower initial status of hopelessness that continues to decrease over time, and an *increasingly hopeless class* characterized by higher initial levels of hopelessness, that decrease slightly at age 14, then accelerate with time (Figure 2).

Hopelessness trajectory predictors—The relationship between connection to mother during early adolescence and hopelessness during middle adolescence was significant. Early adolescent connection to mother was negatively associated with initial level of hopelessness during middle adolescence (youth were more hopeful) ($\gamma_0 = -.11$; $p < .05$) (Table 8). There were no significant relationships between the other early adolescent covariates (neighborhood connectedness, physical fighting or weapon use) and initial levels of hopelessness. There were no significant relationships between any of the early adolescent covariates and change in hopelessness during middle adolescence (linear or quadratic coefficients).

Violence in later adolescence—Probabilities of engaging in violence with a weapon associated with class membership and gender, derived from the logit (τ_c) parameters, are shown in Table 8. Table 9 shows the odds ratios for violence in later adolescence using all gender by class comparisons. The probabilities are higher for boys than girls, and higher in increasing hopelessness classes compared to the low hopelessness classes. Predicted values of violence with a weapon during later adolescence were very different for the girls in the *increasingly hopeless class* (43%) compared to those in the *low hopeless class* (31%)(Table 10). Among boys, hopelessness class membership was less related to predicted violence; the predicted value for of *increasingly hopeless class* was 53% and 51% for *low hopeless class*.

Table 10 lists the modeled means for the early adolescent covariates and hopelessness at each time point during middle adolescence weighted by the estimated class probabilities for each class in the *Final Model*. Mean hopelessness trajectories associated with each latent class are depicted in Figure 3. Mean trajectories in the *low hopelessness* classes are nearly parallel for girls and boys, with the boys' class trajectory elevated compared to girls. Mean trajectories for the *increasingly hopeless* classes for boys and girls are nearly indistinguishable.

DISCUSSION

Youth living in extreme poverty face many challenges as they move toward adulthood. Limited educational and occupational opportunity and exposure to harsh living conditions including exposure to serious violence create sobering and well-documented barriers to successful transition from adolescence to adulthood. Personal engagement in serious

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violence during later adolescence is a strong signal that the transition to adulthood is failing. Even within bleak environments, a hopeful sense for the future may emerge during adolescence to mitigate the impact of negative factors. Earlier positive social connections are possible sources of hope. We proposed a theoretical model (Figure 1) linking trajectories of hopelessness during middle adolescence with social connections and violence during early adolescence and engagement in serious violence during later adolescence. Prospective, longitudinal data provided by impoverished youth taking part in the Mobile Youth Survey (MYS) were used to explore the dynamics of hopelessness over time and evaluate model-derived hypotheses using a GGMM approach. Gender was treated as a known group in the GGMMs because a vast literature documents differences in the adolescent experiences of girls and boys.

We hypothesized that hopelessness would change during middle adolescence. We expected both uniqueness and commonality in the course of hopelessness (i.e., continuous variation in change and population heterogeneity, respectively). Results supported our hypothesis that population heterogeneity in trajectories of hopelessness exist during middle adolescence among youth living in extreme poverty. Two hopelessness trajectory classes were identified for both boys and girls: a low class and an increasing, accelerating class whose typical course was modeled with a quadratic functional form for change. Acceleration in hopelessness implies an increase in the rate of change of hopelessness and perceptions about their future as time elapses and the transition to adulthood nears. For boys, increasing hopelessness beginning at age 15 was apparent in the trend in means of hopelessness (Table 6). For girls, the GGMM analysis uncovered a subset of girls with a similar pattern but whose observed data were swamped by the greater numbers of girls with the low hopelessness pattern. Increasing and accelerating hopelessness trajectories during middle adolescence proved to be a sign of troubled development, as indicated by probabilities of subsequent engagement in serious violence.

An association between hopelessness and involvement in violence was recognized in early studies of impoverished youth, including the MYS (DuRant, Cadenhead, Pendergrast, & Slavens, 1994; Bolland, 2003; Bolland, Lian, & Formichella, 2005). For this reason, we hypothesized that violence with a weapon during later adolescence would vary by hopelessness class. Results affirmed this hypothesis. The *low hopelessness class of girls* had the lowest estimated probability of violence with a weapon during later adolescence of all groups. In comparison, *increasingly hopeless girls* had a higher probability of violence with a weapon during later adolescence. The *low hopelessness class of boys* had a notably high probability of later adolescent violence with a weapon despite having lower and decreasing hopelessness throughout middle adolescence. *Increasingly hopeless boys* had the highest estimated probability of violence with a weapon during later adolescence. Thus, female gender and trajectories of decreasing hopelessness during middle adolescence were protective against violence with a weapon during later adolescence. Our longitudinal findings extend our understanding of relationships between hopelessness and violence highlighted in earlier research: males and youth with trajectories of increasing hopelessness during middle adolescence are at increased risk of involvement in violence during later adolescence.

We hypothesized that lower or higher levels of hopelessness during middle adolescence emerged in response to positive social connections (with mother and neighborhood) and personal involvement with violence during early adolescence. Within the context of the model comparison approach we used, equal prediction of growth factors for middle adolescent hopelessness by early adolescent covariates was more reasonable than class specific prediction. Among covariates, only connection to mother was a significant predictor of hopelessness. Across classes, youth who reported stronger connections to their mothers

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during early adolescence reported less hopelessness at age 13 (the transition to middle adolescence). The study's findings suggest that connections to mothers may start an adolescent out on a better or worse course, in terms of the hopelessness experience itself, as well as its association with later violence. There was no relationship between connectedness to neighborhood and parameters of hopelessness trajectories during middle adolescence. The finding of no relationship is different from studies reporting that connectedness to neighborhoods is protective (Resnick et al., 1997; McGee, 1984) or risky (Caughy, O'Campo, & Muntaner, 2003; Wright & Fitzpatrick, 2006). More research is needed to reconcile these disparate findings.

The current analysis extends understanding of the course of hopelessness in impoverished urban youth by emphasizing the individual course and by identifying latent subgroups with similar hopelessness experiences over time. Significance of growth parameters (intercept and quadratic) and variation among individuals supports the view of hope/hopelessness as a developmental construct (Bolland et al., 2005) with salience during middle adolescence. The final GGMM model applied to MYS data employed variables and measurement points highlighting the dynamics of hopelessness during middle adolescence as a link between social connectedness (to mother) during early adolescence and violence with a weapon during later adolescence. The model is useful because it succinctly summarized the data from a statistical perspective, parameters were scientifically interpretable, and it predicted violence with a weapon, a very high risk behavior during later adolescence. These outcomes are all valuable characteristics of a high quality approximating model (Cudeck & Henly, 2003).

The MYS has been conducted annually since 1998. Over 9,000 youth have participated over the past 12 years, many of the youth completing an annual survey for up to 9 years. As such, it is now constitutes a unique research resource. Using the information in multiple ways will aid understanding and improvement of their lives. Earlier analysis of MYS data focused on the prediction of hopelessness from prior-year disruptive events using the 1998–2003 cohorts (Bolland et al., 2005) and the association between hopelessness and risky behaviors using cross-sectional data from the 1998 cohort (Bolland, 2003). Findings from these reports were instrumental to moving forward with our inquiry. Capitalizing on data provided by earlier and new cohorts since the time of the earlier reports, we were able to link the roots of hopelessness in early adolescence, the development of hopelessness over time during middle adolescence, and its consequences for involvement in violence during later adolescence at the individual level. Although there was some overlap in the data used, the questions addressed were novel, and allowed earlier findings to be extended.

Strengths and Limitations

Design issues—The models we estimated necessarily reflect choices made in the design of this study including choice of a priori cut points for the adolescent periods as well as frequency and duration of observations. Despite the common use of adolescent stages in developmental research, there is a lack of uniformity in decisions about age cut-points or other criteria indicating transition from one stage to the next. The most common cut points used by social sciences are based on typical age for academic transitions (i.e., middle school to high school; high school to college) (Steinberg, 2008). Our use of cut points based on age made the assumption that all adolescents transition between adolescent phases at the same chronologic points in time. This simplifying assumption may not be realistic, as the timing of puberty and the accompanying transition into adolescence varies widely (Ge, Natsuki, Neiderhiser, & Reiss, 2007). However, obtaining information about puberty status is beyond the scope of this study. More frequent measurement of hopelessness during middle adolescence would permit greater precision in estimating growth during this period and

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further exploration of the aptness of models with accelerating or decelerating change (Raudenbush & Bryk, 2002, pp. 202–203). Incorporating measures of hopelessness from early and later adolescence into the growth model would allow exploration of whether phase changes in hopelessness trajectories are coincident with age-based criteria for identifying adolescent developmental stages.

Adolescents included in this analysis completed surveys on 5 or more occasions during early, middle and later adolescence. This level of participation represents intensive involvement in a research study and may reflect commitment to the endeavor or particular responsiveness to the money incentives that were offered. However, our sample reflected the overall MYS sample in both demographic characteristics and levels of hopelessness (Bolland et al., 2005).

Generalizibility—This analysis was based on data collected through an observational, longitudinal study of adolescents from impoverished neighborhoods in an urban area in the American South. The adolescents in this study were primarily African American, living in predominately African American neighborhoods between 1998 and 2006. Even with understanding the characteristics of the sample, additional data are needed to determine the generalizibility of these results. Factors of race, culture, geography, SES, history, and cohort are part of a young person's social context and may influence the way participants perceive and respond to relationships, hope for the future, and violence. Events taking place during the data collection period may have influenced responses. 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 (Wu et al., 2010). Replication is needed to determine whether relationships examined in this study vary by ethnicity and culture, socioeconomic status, and period in historical time.

Predicting hopelessness and violence—To provide a more complete picture of adolescents' social contexts, additional aspects (e.g., witnessing violence at home or in the community, peer norms, and school connectedness) should be modeled. Specific factors or turning point events that trigger abrupt change in otherwise smooth trajectories of hopelessness should be explored. Understanding triggers of hopelessness may help to identify specific developmental points or events for targeted interventions. In addition, the identification of specific events that modify hopelessness trajectories, potentially increasing the chance a young person moves from non-violence to violence, or from physical fighting to more serious violence with a weapon could aid in developing more time-specific, developmentally appropriate interventions.

Peers and school were not included in our model but are also important to understanding internal states such as hopelessness as well as overt behaviors during adolescence (De Goede, Branje, Delsing, & Meeus, 2009; Fleming, Catalano, Haggerty, & Abbott, 2010). The importance of social influences through peer networks increases during adolescence and can offer either pro-social or negative influences. Youth who socialize with peers who are engaged in violent behaviors are more likely to engage in violent behaviors themselves, whereas associating with peers who disapprove of delinquent behavior inhibits participation in violence (Dahlberg & Potter, 2001; Herrenkohl et al., 2000; Valois, et al., 2002). School is an important aspect in the lives of adolescence, as much of their time is spent in school. School can play an important part in protecting adolescents from participating in serious violence (Resnick et al., 1997; Resnick et al., 2004). Young people who report feeling connected to school were less likely to participate in violence and other risk behaviors. 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

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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). These research findings can be used to extend the theoretical model for hopelessness trajectories (Figure 1).

Practical applications

Youth violence is a complex problem and interventions at the individual, family, school, and community levels have been used to try to prevent its' occurrence. Our findings suggest that hope-based interventions have potential. Hope is fundamental to finding answers for some of the fundamental questions of adolescence ('who am I' and 'what will I be') and in finding a sense of purpose in life. Within families, schools and other youth-oriented groups, individual –level interventions need to be designed to instill a sense of hope and empowerment in youth. At the group level, interventions should aim to develop group cohesion, pro-social norms, and collective efficacy, focusing on the ability of youth to act effectively in their community, and in identifying and developing a sense of hope, meaning, and purpose.

Conclusion

This study contributes to the understanding of developmental trajectories of hopelessness during middle adolescence, early adolescent factors that shape those trajectories, and how those trajectories impact involvement in weapon-related violence during later adolescence among urban youth living in poverty. Connections to their mother during early adolescence positioned middle adolescents for subsequent hopelessness course during middle adolescence. Violence was more prevalent in youth who reported trajectories of increasing hopelessness; and regardless of hopelessness trajectory, boys reported higher levels of violence than girls. As with the current study, much of the research examining youth living in impoverished neighborhoods has focused on negative outcomes, like the development of hopelessness. Future research should measure and examine the development of hope and a sense of purpose as protective factors against involvement in at risk behavior.

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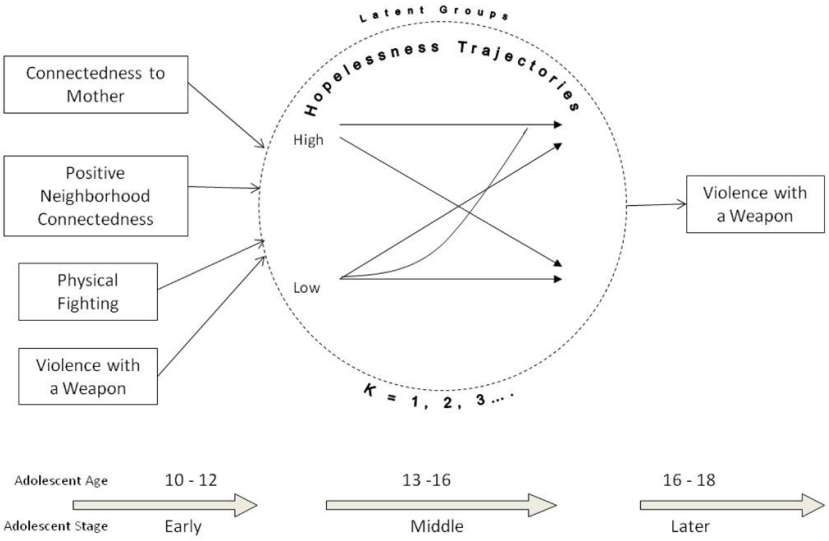

Figure 1.
Theoretical Hope/Hopelessness Trajectory Model

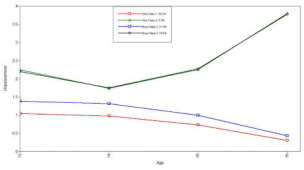

Figure 2.
Final multiple group model of mean trajectories for hopelessness classes over time, adjusted for the effects of the covariates: low hopelessness girls (Class 1); increasingly hopeless girls (Class 2); low hopelessness boys (Class 3) and increasingly hopeless boys (Class 4).

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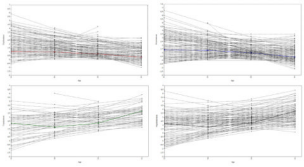

Figure 3.
Individual values with estimated latent class means for each latent class: Low hopelessness girls (upper left); increasingly hopeless girls (lower left); low hopelessness boys (upper right) and increasingly hopeless boys (lower right).

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Table 1

Characteristics of Proposed Multiple Group Models.

	Middle Adolescence			Transition Early to Middle Adolescence	Transition Middle to Later Adolescence
Model	**Gender as Moderator**	**Hopelessness Form for Change**	**Hopelessness Trajectories Within Class Variation**	**Prediction of Trajectory Parameters from Covariates**	**Prediction of Violence from Hopelessness Trajectory Class**
1	Yes	Linear	Yes	Equal	Exploratory
2	Yes	Linear	Yes	Class Specific	Exploratory
3	Yes	Quadratic	Yes	Equal	Exploratory
4	Yes	Quadratic	Yes	Class Specific	Exploratory

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Table 2

Demographic Characteristics of MYS Cohorts

	Cohort								
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Mean age	13.6	13.2	12.6	12.8	12.6	12.5	12.3	12.8	12.8
Percent male	51.0	53.4	52.4	49.5	51.3	52.3	49.4	53.5	50.4
Percent African American	94.9	93.7	94.6	94.3	92.2	94.4	95.1	93.8	93.0
Percent living in public housing	62.2	57.1	55.0	44.8	50.1	50.5	47.4	31.9	26.2
Percent receiving free or reduced cost lunch	93.0	91.5	92.6	90.6	87.1	91.4	91.1	90.5	88.0

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Table 3

Characteristics of the Sample

	Total *n* (%)	**Girls *n* (%)**	**Boys *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 (95.4)	342 (92.4)
Mixed Race or Creole	30 (4.1)	12 (3.4)	18 (4.9)
Other	12 (2.6)	4 (1.4)	7 (1.9)
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)
Changed neighborhoods (yes)	345 (47.8)	171 (48.4)	174 (47.0)

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Table 4

Gender Differences in Social Connectedness, Fighting, and Violence with a Weapon during Early Adolescence

		N	Mean	SD	Range	t	p
Connectedness to Mother	Total	723	4.95	1.45	0–6		
	Female	353	5.07	1.34		2.25	.01
	Male	370	4.83	1.53			
Connectedness to Neighborhood	Total	723	3.93	1.68	0–6		
	Female	352	3.99	1.70		1.08	.14
	Male	370	3.86	1.66			
Fighting	Total	720	.43	.50	0–1		
	Females	351	.34	.47		−4.99	.001
	Males	369	.52	.50			
Violence with a Weapon	Total	722	.25	.43	0–1		
	Females	352	.19	.39		−3.36	.001
	Males	370	.30	.46			

Note. Internal consistency reliability for Connectedness to Mother was α = .76 and for Connectedness to Neighborhood was α = .72.

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Table 5

Correlations among Early Adolescent Variables

	CM	CN	Fighting	Violence with a Weapon
CM	1.00	.12*	.03	−.12*
CN	.15*	1.00	−.01	−.11*
Fighting	−.09	.02	1.00	.19*
Violence with a Weapon	−.22*	−.02	.15*	1.00

Note. Correlations among boys are above diagonal, girls are below.

CM = connectedness to mother. CN = connectedness to neighborhood.

*$p < .05$

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Table 6

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	Total	.72	.76	.76	.80

Note. The top half of the table reflects number of participants by age and gender.

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Table 7

Comparison of Statistical Indices 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;

***Eliminated, latent variable covariance matrix (psi) not positive definite due to high correlations between the slope and quadratic coefficient.

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Table 8

Parameter Estimates and Class Differences Weighted by Estimated Class Probabilities for Final Model.

	Girls		Boys		Shared Coefficients	
	Low Hopelessness ***n*** **= 295 (41%)**	**Increasingly Hopeless** ***n*** **= 56 (8%)**	**Low Hopelessness** ***n*** **= 257 (36%)**	**Increasingly Hopeless** ***n*** **= 113 (16%)**		
Parameter	**Estimate (SE)**	**Estimate (SE)**	**Estimate (SE)**	**Estimate (SE)**	**Parameter**	**Estimate (SE)**
α_0	1.39 (.27)***	2.58 (.38)***	1.72 (.28)***	2.50 (.29)***	γ_0| mother	−.11 (.05)*
α_1	.26 (.48)	−.80 (.62)	.27 (.46)	−.78 (.51)	γ_0| neighborhood	.05 (.04)
α_2	−.16 (.15)	.45 (.19)*	−.19 (.15)	.45 (.17)**	γ_0 | fighting	.10 (.16)
ζ_0	.60 (.43)	.60 (.43)	.60 (.43)	.59 (.43)	γ_0 | weapon	−.04 (.16)
ζ_1	.64 (.64)	.64 (.64)	.64 (.64)	.64 (.64)	γ_1| mother	−.06 (.08)
ζ_2	.10 (.05)	.10 (.05)	.10 (.05)	.10 (.05)	γ_1| neighborhood	.004 (.05)
τ |	.79	.26	−.04	−.13	γ_1| fighting	.11 (.23)
					γ_1 | weapon	.10 (.24)
					γ_2| mother	.02 (.03)
					γ_2| neighborhood	−.007 (.02)
					γ_2| fighting	−.05 (.07)
					γ_2 | weapon	−.05 (.07)

Note.

* $p < .05$;

** $p < .01$;

*** $p < .001$

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Table 9

Estimated Odds Ratios Comparing Violence with a Weapon in Later Adolescence by Latent Class.

Comparison	OR	*p* value
Low hopelessness girls vs. increasingly hopeless girls	.59	.002
Low hopelessness girls vs. low hopelessness boys	.44	.001
Low hopelessness girls vs. increasingly hopeless boys	.40	.001
Increasingly hopeless girls vs. low hopelessness boys	.74	.002
Increasingly hopeless girls vs. increasingly hopeless boys	.68	.003
Low hopelessness boys vs. increasingly hopeless boys	.92	.001

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Table 10

Sample Statistics Weighted by Estimated Class Probabilities (Modeled Means).

Variables	Girls		Boys	
	Low Hopelessness (Class 1)	Increasingly Hopeless (Class 2)	Low Hopelessness (Class 3)	Increasingly Hopeless (Class 4)
Hope				
Age 13	1.08	2.16	1.43	2.17
Age 14	.85	1.88	1.21	1.87
Age 15	.85	2.09	1.14	2.16
Age 16	.30	3.81	.42	3.78
Connection to mother	5.11	4.89	5.01	4.55
Connection to neighborhood	4.05	3.74	3.85	3.87
Fighting during early adolescence	18%	22%	28%	33%
Violence with a weapon during early adolescence	20%	28%	23%	50%
Estimated probability of violence with a weapon during late adolescence	31%	43%	51%	53%