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TRAJECTORIES OF SCHOOL AND COMMUNITY CONNECTEDNESS IN ADOLESCENCE BY GENDER AND DELINQUENT BEHAVIOR

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Previous studies suggest that both school and community connectedness among adolescents are associated with prosocial behaviors and positive outcomes. While delinquency is associated with lack of connectedness to school and community, little research has considered how delinquency affects this relationship for adolescents living in impoverished neighborhoods. This study estimated gendered trajectories of school and community connectedness for adolescents in impoverished neighborhoods as a function of their levels of delinquency. Results showed that delinquency was negatively correlated and that age was positively correlated with school connectedness for both genders. In contrast, community connectedness increased with age for boys, but decreased with age for girls. In addition, delinquency was negatively related to community connectedness for boys, but not for girls. These findings suggest that for adolescents in

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impoverished neighborhoods, gender-informed interventions to decrease
delinquency could have positive effects on school and community
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Connectedness, a perception of closeness, involvement, or affiliation with others, or integration into a social network (Barber & Schlutermann, 2008), has been identified as a critical human motivation or psychological need (Baumeister & Leary, 1995; Gibson, Sullivan, Jones, & Piquero, 2010). Most infants develop connectedness or attachment to their parents; absent attachment to parents or others, babies typically fail to thrive (Ainsworth & Bowlby, 1991; Hipwell et al., 2008), and stable attachment in infancy and toddlerhood is associated with positive outcomes throughout childhood, adolescence, and early adulthood (Pinquart, Feußner, & Ahnert, 2013).

Beyond individual attachments that develop in infancy and toddlerhood, children and adolescents develop connections to other individuals and their families, schools, and neighborhoods or communities (Markham et al., 2010). Bronfenbrenner's (1986) ecological model details the synergistic relationships that exist in the environment of children's lives, with family and peer interactions nested in home and school and further extended to neighborhood, government, and social networks. These relationships have been linked to psychosocial well-being, especially for adolescents (Durkheim, 1893/1997; Gibson et al., 2010). The positive social relationships that are the hallmark of connectedness may give adolescents meaning and encourage the use of coping strategies in stressful situations (Centers for Disease Control and Prevention, 2012). In contrast, lack of connectedness has been associated with negative outcomes in adolescence, including both behavioral problems (Loukas, Suzuki, & Horton, 2006; Markham et al., 2010) and mental health disorders (Shochet, Dadds, Ham, & Montague, 2006).

Adolescence is a time of developmental and environmental changes, a time when protective factors of connectedness can be important as social stressors emerge in school and neighborhood contexts. For most adolescents, the school environment changes with yearly transitions within a school from grade to grade, with the larger transitions occurring from elementary to middle school and from middle to high school. Residential mobility is common among low-income families, and these changes in community environment can be stressful for many adolescents as they move or others move into or out of their neighborhood (Gephart, 1997). As adolescents experience school and neighborhood changes, they may experience changes in related stressors and in the connectedness that can help to buffer the often-reported stress.

School Connectedness

School connectedness has been associated with several positive outcomes, including health and well-being (Jose, Ryan, & Pryor, 2012) and academic achievement (Skinner & Pitzer, 2012; Wang & Eccles, 2012). Additionally, lack of connectedness has been associated with negative behaviors and outcomes, including school failure and dropout (Archambault, Janosz, Fallu, & Pagani, 2009; Li & Lerner, 2011), substance use (Wormington, Anderson, Schneider, Tomlinson, & Brown, in press), depression (Shochet et al., 2006), delinquency (Chen, Voisin, & Jacobson, 2013; Rudasill, Reio, Stipanovic, & Taylor, 2010), and affiliation with deviant peers (Denny et al., 2011; Rudasill, Niehaus, Crockett, & Rakes, 2014).

Several influences on and outcomes of school connectedness have been explored, especially those related to academic achievement and delinquency. Children begin to feel connected to their schools when they have successful interactions with peers and teachers (Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996). When interactions are less successful, however, adolescents may disconnect from school. For example, teachers who have fewer expectations of their students may see students achieve less (Eccles & Roeser, 2011), and lack of achievement may, in turn, reduce students' feelings of connection to the school. Failure to establish and maintain a connection to school may stem from and result in delinquent behavior and association with delinquent peers (Bachman et al., 2008; Wang & Dishion, 2012).

Adolescents who have adjustment problems when they enter a new school may have difficulty forming positive relationships with classmates and teachers and therefore have difficulty establishing and maintaining connections to their new school (Doumen et al., 2008). Their lack of connectedness may then lead to continued adjustment problems (Loukas, Ripperger-Suhler, & Horton, 2009) and a decline in school connectedness (Loukas, Cance, & Batnova, 2013). Thus, delinquency may be both a cause and a consequence of lack of school connectedness.

Compared with boys, girls tend to be more connected to school (Loukas, Ripperger-Suhler, & Herrera, 2012), although not all findings have been consistent. Developmental processes may explain some inconsistent findings, with age interacting with gender to affect school connectedness. For example, girls may be more connected during middle school and boys more connected during high school (Johnson, Crosnoe, & Thaden, 2006). Some studies have demonstrated faster declines in connectedness for girls (Simons-Morton & Chen, 2009), whereas others have shown similar rates for boys and girls (Wang & Dishion, 2012).

Even in instances when school connectedness is strong in elementary school, a common developmental change in middle and later adolescence is a tendency toward declining school connectedness (Kelly et al., 2012; Wang & Dishion, 2012). The unevenness of these results suggests a need to disentangle for whom school connectedness is most important and how interventions may be geared toward students who do experience a decline in connectedness (Wang & Dishion, 2012).

Studies have shown an inverse relationship between delinquency and connectedness (Chen, Voisin, & Jacobson, 2013; Loukas et al., 2009; Rudasill et al., 2010). In particular, boys who are not connected to school have been shown to be at high risk for delinquency (Frey, Ruchkin, Martin, & Schwab-Stone, 2009). Few studies, however, have explored how delinquency and school connectedness are associated across adolescence, especially for adolescents living in poverty.

Community Connectedness

The construct of community connectedness or attachment has not been well-developed, with social ties being viewed as components, correlates, causes, and consequences of community attachment (Flaherty & Brown, 2010). Terms associated with community connectedness include intergenerational closure, trust and reciprocity, social relationships, social support, social cohesion, social capital, informal social control, and commitment to community (Centers for Disease Control and Prevention, 2012; Lenzi, Vieno, Pastore, & Santinello, 2013; Sundblad & Sapp, 2011). A related construct, sense of community, has been defined as "a feeling that members have of belonging and being important to

each other, and a shared faith that member's needs will be met by the commitment to be together" (McMillan & Chavis, 1986, p. 9).

Chipuer (2001) concluded that little was known about links between adolescents' community connectedness and psychological health. That conclusion still holds, although more recent research suggests that lack of community connectedness is associated with greater violence (Stoddard, McMorris, & Sieving, 2011; Widome, Sieving, Harpin, & Hearst, 2008). Connectedness to community has been shown to be positively associated with both lack of suicide risk (Matlin, Molock, & Tebes, 2011) and feelings of protection (Kliewer et al., 2004). Because ecological theories of adolescent development suggest the importance of distal and proximal environments, the relative lack of attention to community connectedness creates a significant gap in the literature. Adding to this limitation is the dearth of investigations that consider the possible differential effects of gender on the link between important outcomes and community connectedness. In the current study, we conjecture that lower levels of community connectedness are associated with higher levels of delinquency and higher levels of community connectedness are associated with lower levels of delinquency.

The Current Study

The current study extends the research on school and community connectedness among adolescents. Specifically, we examined the trajectories of school and community connectedness for adolescents (aged 12–17 years) that were based on their levels of delinquent behaviors. Additionally, we explored gender differences in the trajectories. Because adolescents in our sample live in impoverished neighborhoods, the current study also extends knowledge about an understudied population.

METHODS

Data Sources

Data used in this study came from the Mobile Youth Survey (MYS), a longitudinal community survey of adolescent attitudes and behaviors, completed by more than 12000 participants (aged 9–19 years) between 1998 and 2011 (Bolland, 2007). Participants in the MYS were recruited from the most impoverished neighborhoods in the Mobile Metropolitan Statistical Area, including the city of Mobile and neighboring town of Prichard. The median income for the sampled neighborhoods, according to the 1990 census, was approximately $5000. More recent census information on the population of the entire region indicate that 23.4% of Mobile citizens live in poverty and 35.4% of Prichard citizens live in poverty (specific targeted neighborhood information was not available).

Participants in the MYS were recruited both passively and actively between 1998 and 2011. Although participants are relatively homogeneous (i.e., 99% Black American or mixed race and 90% qualified for reduced-cost or free lunch), demographic analyses revealed that MYS participants were representative of the adolescent population in the targeted neighborhoods (Bolland, 2012). Recruitment strategies for the MYS and information about survey administration have been discussed in detail previously (see Bolland et al., 2016, for a comprehensive discussion). Before data collection, appropriate approval from institutional review boards was obtained.

Both parental consent and child assent were collected, after which a group administration of the survey was conducted. Each item was read aloud to groups of 10 to 30

participants, and participants marked their responses in a survey booklet. Participants who required individual attention were assisted one-on-one, but most participants completed the survey independently. The survey administration procedure took approximately 1 hour and each participant received an incentive of $10 before 2005 and $15 in subsequent years (Bolland, 2016).

For the current study, a subsample of MYS participants was selected from the entire sample of MYS participants for multiple reasons. First, the current study used only data collected after 2005 because the school connectedness scale was not added to the MYS until 2006. Second, to enable estimation of trajectories, participants for this study were limited to adolescents who contributed at least two waves of MYS data. Finally, to limit the study to adolescents who had transitioned to secondary school and were still likely to be in school, participants were limited to ages between 12 and 17 years. Thus, the study sample includes 3273 participants for the school connectedness analyses and 3289 participants for the community connectedness analyses.

Measures

Gender and age. Gender (boy $= 0$, girl $= 1$) and age were self-reported on the MYS. Age was reported as date of birth and coded as age in years. Age was centered at 12 (i.e., the intercept was set to age 12) for ease of interpretation.

Delinquency. Delinquency was measured using six scales, comprising a total of 18 total items, created to assess the frequency/recency of four delinquent behaviors (i.e., carried a gun, carried a knife, pulled a gun or knife on someone, cut or shot someone), frequency/recency of arrest, and level of gang involvement. The first question in four delinquency scales asked whether the respondent had *ever* engaged in the delinquent behavior (e.g., "Have you ever carried a gun?"), with response choices of "yes" and "no." Subsequent questions in these scales asked about whether the respondent had engaged in the behavior during increasingly recent time periods (e.g., "Have you carried a gun during the past three months?" and "Have you carried a gun during the past month?"), with response choices of "no," "yes, just once," and "yes, more than once." Responses across the questions that comprise each scale were aggregated (see Bolland et al., 2007, for a discussion of this aggregation procedure). A similar process was used to aggregate questions about arrest into a recency/frequency scale.

To assess gang involvement, respondents were asked three questions ("Have you ever been involved in a gang?;" "Are you currently involved in a gang?;" and "Do you hang out with members of a gang?"); response options for all three questions were "no" and "yes." These three questions were aggregated into a 4-point scale ranging from 0 (*never having been a gang member and not hanging out with gang members*) to 3 (*current gang membership*).

The final summative delinquency scale yielded a range between 0 and 28 points, with higher values indicating greater delinquency. As this scale was created for this research, a factor analysis was conducted on the items using a principle components extraction method to determine the viability of creating a single summative score. A single factor solution accounted for 49% of the variance in the items, with an eigenvalue of 2.95, indicating that a single summative scale was appropriate. All other eigenvalues were less than 1.0. The internal reliability of these collective questions was good ($\alpha = 0.73$).

Table 1. School and Community Connectedness Items

Scale	Item
School Connectedness	I feel as if I <u>don't</u> belong at my school
School connectedness	Most students at my school like me the way I am (reverse coded)
School connectedness	It is hard for people like me to be accepted at my school
School connectedness	There's at least one teacher in my school I can talk to if I have a problem (reverse coded)
School connectedness	Most teachers at my school are interested in me (reverse coded)
School connectedness	People at my school notice when I'm good at something (reverse coded)
School connectedness	Teachers at my school are <u>not</u> interested in people like me
School connectedness	The teachers at my school respect me (reverse coded)
Community connectedness	I feel I am an important part of my neighborhood (reverse coded)
Community connectedness	If I moved away from my neighborhood, I would be sorry to leave (reverse coded)
Community connectedness	Very few of my neighbors know me
Community connectedness	I have friends in my neighborhood who know they can depend on me (reverse coded)
Community connectedness	I do not like living in my neighborhood
Community connectedness	There are people in my neighborhood, other than my family, who really care about me (reverse coded)
Community connectedness	I have friends in my neighborhood I can depend on (reverse coded)
Community connectedness	If you don't look out for yourself in my neighborhood, no one else will
Community connectedness	No one in my neighborhood takes any interest in what their neighbors are doing
Community connectedness	It is hard to make good friends in my neighborhood
Community connectedness	If I am upset about a personal problem, there are people in my neighborhood I can turn to (reverse coded)

Note. Response options: agree = 0, disagree = 1.

School connectedness. School connectedness was measured using eight MYS items (see Table 1) adapted from Goodenow (1993) to assess the student's perception of connectedness to their school. Participants were asked to either "agree" or "disagree" with each item. Responses were summed to create an additive scale (range: 0–8), in which higher scores indicate more feelings of school connectedness. Internal reliability for the adapted scale was acceptable ($\alpha = 0.62$).

Community connectedness was measured using 11 items (see Table 1) adapted from scales measuring psychological sense of community (Glynn, 1981; Perkins, Florin, Rich, & Wandersman, 1990). Participants were asked to "agree" or "disagree" with each item. Responses were summed to create an additive scale (range: 0–11), in which higher scores reflect greater feelings of community connectedness. Internal reliability for the adapted scale was acceptable ($\alpha = 0.66$).

Analysis Plan

Latent growth models of school connectedness and community connectedness were estimated following Singer and Willett's (2003) suggestions for estimating random and fixed growth effects with longitudinal data. For each outcome, an unconditional growth model and a full conditional growth model were estimated. In the growth model for each outcome, delinquency levels were added to the Level 1 portion of the model as a time-varying covariate, as both a main effect and an interaction with the centered age. Additionally, random effects were estimated for both parameters. Dichotomized gender

Table 2. Estimated Model Parameters for Delinquency Across Adolescence: School Connectedness

Model parameter	Unconditional growth (Model 1)		Reduced conditional (Model 2)	
Fixed effects	Estimate	*SE*	Estimate	*SE*
Intercept (γ_{00})	6.244**	0.035	6.262**	0.045
Gender (γ_{01})	–	–	0.357**	0.045
Delinquency (γ_{20})	–	–	−0.046**	0.003
AgeC (γ_{10})	0.024*	0.011	0.044**	0.011
Random effects	Estimate	*SE*	Estimate	*SE*
Var (Intercept, ζ_{0i})	0.870**	0.092	0.894**	0.105
Var (AgeC, ζ_{1i})	0.014	0.010	0.019*	0.011
Var (Delinq, ζ_{2i})	–	–	0.004**	0.001
Residual (ε_{ij})	2.006**	0.041	1.844**	0.043
Fit statistics	Estimate		Estimate	
Deviance	36106.0		33033.5	
AIC	36114.0		33047.5	
BIC	36138.4		33090.2	

Note. SE = standard error; Delinq = delinquency; AIC = Akaike information criterion; BIC = Bayesian information criterion.
* $p < .05$. ** $p < .01$.

was then added to each of the Level 2 models. In both analyses, the full growth model was estimated and nonsignificant parameter estimates were removed one at a time through backward elimination. All analyses were conducted using SAS PROC MIXED with an unstructured covariance matrix.

RESULTS

School Connectedness

The unconditional growth model was first estimated to look at school connectedness across age independent of any additional factors. Parameter estimates are shown in Table 2. The level of school connectedness was significantly greater than 0 at age 12, $\gamma = 6.24$, $t(3288) = 178.07$, $p < .001$, with a significant increase in school connectedness across age, $\gamma = 0.02$, $t(3172) = 2.15$, $p = .032$. Mean scores of school connectedness for the current sample were 6.24 on an 8-point scale. Gender and delinquency were next added to this model with nonsignificant parameters removed through backwards elimination. The final model with only significant parameter estimates is displayed in Table 2. This model showed a significant improvement to the fit of the data compared to the unconditional growth model, $\chi^2(2) = 3072.50$, $p < .001$.

The average value of school connectedness at age 12 for boys with no reported delinquency was significantly greater than 0, $\gamma = 6.26$, $t(3272) = 139.77$, $p < .001$. The level of school connectedness for girls with no reported delinquency was significantly higher than that of the boys, $\gamma = 0.36$, $t(1141) = 7.99$, $p < .001$. There was a negative relationship between level of delinquency and the level of school connectedness, $\gamma = -0.04$,
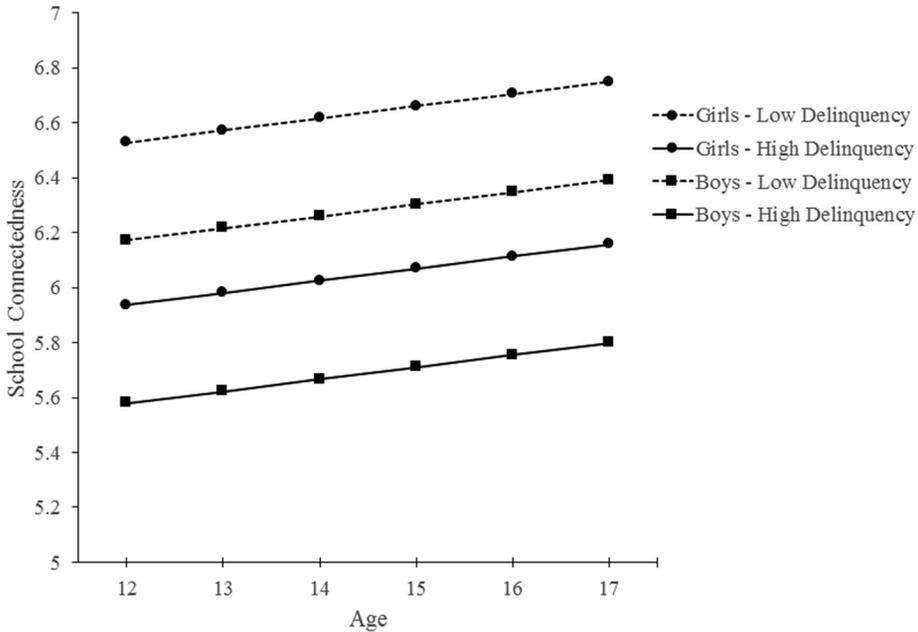
Figure 1.   Levels of school connectedness across age based on gender and delinquency.

t (1373) $= -13.39$, $p < .001$. As the level of delinquency increases for the adolescents, the level of school connectedness decreases. This relationship does not differ by gender.

The age trajectory is positive and statistically significant, $\gamma = 0.04$, $t(2935) = 3.91$, $p < .001$, with no differences based on gender or delinquency. That is, adolescents experienced parallel increases in school connectedness independent of their level of delinquency or their gender (i.e., neither the age × gender nor the age × delinquency interaction is statistically significant). Therefore, the intercept differences described above for gender and delinquency remain consistent across all of the ages.

To better visualize the estimates, trajectories are plotted in Figure 1. Overall, girls have higher levels of school connectedness. Both boys and girls show increases in school connectedness at the same rate, with differences in levels of school connectedness based on the level of delinquency of the adolescent. Lower levels of school connectedness are associated with greater levels of delinquency.

Community Connectedness

First, the unconditional growth model for community connectedness was estimated, with parameters displayed in Table 3. Community connectedness was significantly greater than 0 at age 12, $\gamma = 7.24$, $t(3288) = 145.02$, $p < .001$. Additionally, community connectedness significantly decreased with age, $\gamma = -0.04$, $t(3155) = -2.17$, $p = .030$. Mean scores for community connectedness were 7.24 on an 11-point scale, with levels decreasing as the adolescent aged.

Next, both gender and delinquency were added to the unconditional growth model, with nonsignificant parameter estimates removed using a backward elimination process.

Table 3. Estimated Model Parameters for Delinquency Across Adolescence: Community Connectedness

Model parameter	Unconditional growth (Model 1)		Reduced conditional (Model 2)	
Fixed effects	Estimate	SE	Estimate	SE
Intercept (γ_{00})	7.237**	0.050	7.321**	0.055
Delinquency (γ_{20})	–	–	−0.027**	0.005
Delinq × Gender (γ_{21})	–	–	0.027**	0.008
AgeC (γ_{10})	−0.035*	0.016	0.0564**	0.021
AgeC× Gender (γ_{11})	–	–	−0.164**	0.026
Random effects	Estimate	SE	Estimate	SE
Var (Intercept, ζ_{0i})	1.924**	0.183	2.249**	0.222
Var (AgeC, ζ_{1i})	0.080**	0.021	0.072**	0.022
Var (Delinq, ζ_{2i})	–	–	0.003**	0.001
Residual (ε_{ij})	3.809**	0.078	3.780**	0.086
Fit statistics	Estimate		Estimate	
Deviance	42572.4		39561.3	
AIC	42580.4		39575.3	
BIC	42604.8		39618.0	

Note. SE = standard error; Delinq = delinquency; AIC = Akaike information criterion; BIC = Bayesian information criterion.
*$p < .05.$ **$p < .01.$

Significant parameter estimates are displayed in Table 3. This final model had a significantly better fit compared with the unconditional growth model, $\chi^2(3) = 3011.1$, $p < .001$.

The level of community connectedness for adolescents with no reported delinquency was significantly greater than 0 at age 12, $\gamma = 7.32$, $t(3272) = 132.05$, $p < .001$. This effect did not differ by gender, but the association of delinquency with community connectedness did differ by gender. For boys, a significant negative relationship was found between community connectedness and delinquency, $\gamma = -0.03$, $t(1367) = -5.08$, $p < .001$. Boys with higher levels of delinquency reported lower levels of community connectedness. Levels of community connectedness in girls, however, did not differ based on levels of delinquency, $\gamma = 0.027$, $t(1137) = 3.27$, $p = .001$. Although boys showed a negative relationship, the relationship for girls was significantly different and equates to no association between levels of community connectedness and delinquency. These relationships were consistent across time.

Level of community connectedness for boys significantly increased with age, $\gamma = 0.06$, $t(2923) = 2.63$, $p = .009$. Girls, however, reported a significant decrease in their level of community connectedness across age, $\gamma = -0.16$, $t(1137) = -6.38$, $p < .001$. To further visualize these effects, the trajectories are plotted in Figure 2. All girls in the sample show a decrease in community connectedness with age, with no effect of delinquency on their trajectories. Boys, however, show an increase in their community connectedness with age, with higher levels of delinquency relating to lower levels of community connectedness.

DISCUSSION

Recognition of need to belong has informed research into the causes, correlates, and consequences of school connectedness—and, to a lesser degree, community
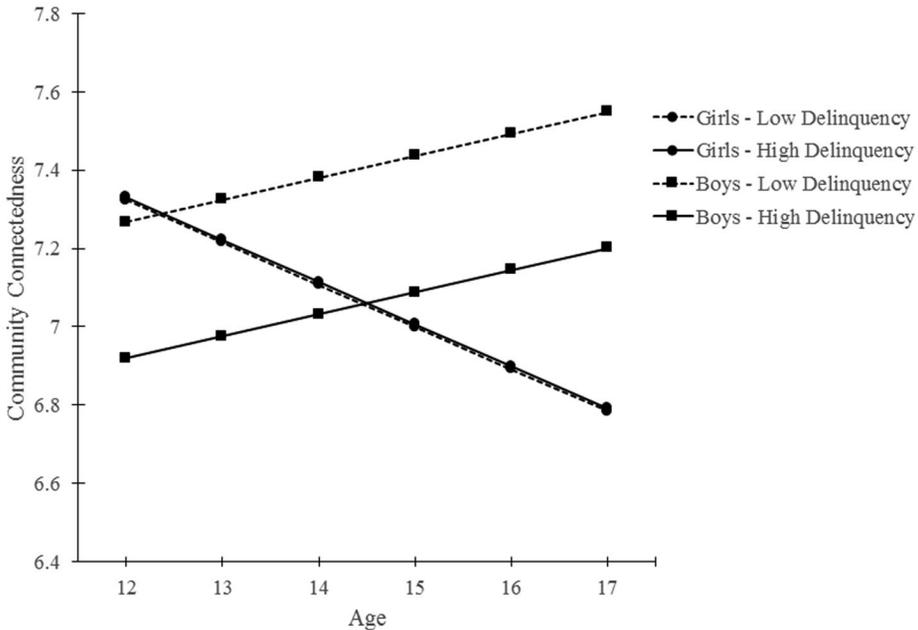
Figure 2. Levels of community connectedness across age based on gender and delinquency.
Note. The trajectories for Girls – Low Delinquency and Girls – High Delinquency are not numerically identical, but they are visually identical.

connectedness—for adolescents. The current study estimated gendered trajectories of school and community connectedness for adolescents in impoverished neighborhoods based on their levels of delinquency.

Several findings evidenced in the current study are worth highlighting: (a) the level of school connectedness reported by both males and females was high, with girls reporting higher levels of school connectedness than boys; (b) the trajectories of school connectedness increased with age, irrespective of gender and level of delinquency, although school connectedness and delinquency are inversely related; (c) girls and boys differed in their community connectedness trajectories, with community connectedness increasing as a function of age for boys, but decreasing as a function of age for girls; (d) community connectedness and delinquency were inversely related; and (e) for boys with low levels of delinquency, the increase in community connectedness with age was pronounced, while for girls, the decrease in community connectedness with age was not associated with levels of delinquency.

School Connectedness

Adolescents in our sample reported relatively high levels of school connectedness, with girls consistently reporting higher levels than boys. This finding reflects results reported by other studies across ages, races, ethnicities, and countries (Kelly et al., 2012; Loukas & Cance, 2013; Wang & Fredricks, 2014; Wentzel, Battle, Russell, & Looney, 2010). Our study, along with that of Wang and Fredricks, suggests that race and socioeconomic status may have little relevance to the relative degrees of school connectedness reported by male and female adolescents.

The increase in school connectedness with age reported by adolescents in our sample, however, is inconsistent with previous research that has demonstrated declines in school connectedness during middle school (Simons-Morton & Chen, 2009; Wang & Dishion, 2012; Way, Reddy, & Rhodes, 2007) and high school (DeWit, Karioja, Rye, & Shain, 2011). Although these studies comprised socioeconomic and racially and ethnically diverse populations, few, if any, focused on Black American or low-income populations.

Church and colleagues (2012) found trajectories of increasing self-worth in their analysis of an MYS sample, in contrast to another study (Fredriksen, Rhodes, Reddy, & Way, 2004) that found a negative trajectory of self-esteem in a sample comprising primarily European American (82%), nonimpoverished (23% were eligible for free or reduced-price lunch) middle school adolescents. Taken together, these results suggest developmental patterns for Black American adolescents living in impoverished neighborhoods may have unique characteristics. Although differences in the age range of the samples, the measures of school connectedness, or unmeasured variables could account for the differences in trajectories. Further investigation into racial, ethnic, and socioeconomic effects on developmental trajectories could be useful.

Consistent with previous research (with both diverse samples and predominantly European American samples) that has demonstrated an inverse relationship between school connectedness and problem behaviors (Bower, Carroll, & Ashman, 2012; Denny et al., 2011; Loukas et al., 2009; Rudasill et al., 2010) and delinquency (Chen et al., 2013; Wang & Fredricks, 2014), school connectedness and delinquency were inversely related in our sample. Our findings are also consistent with those from another study of the same population, which demonstrated an inverse association between school delinquency measured with school records and school connectedness with the measure used in the current study (Hitchcock, 2013). It appears that the inverse association between school connectedness and delinquency is not affected by socioeconomic status or race.

Community Connectedness

Adolescents in our sample reported a moderate level of community connectedness, with levels decreasing, on average, across adolescence. Given that parent–child relationships tend to decline as adolescents mature (Sampson, Morenoff, & Raudenbush, 2005), are given increased autonomy (Gutman & Eccles, 2007), spend less time at home (Li et al., 2011), and become increasingly embedded in the social networks of their neighborhoods, this decline is surprising. The effects of neighborhood factors on the behavior of adolescents tend to increase with age (Kroneman, Loeber, & Hipwell, 2004); this suggests the potential benefit of continuing to examine trajectories of neighborhood connectedness and how they may be affected by neighborhood characteristics.

Gender differences may help to explain the overall decline in community connectedness with age, given that community connectedness decreased for girls, whereas it increased for boys. In adolescence, compared to boys, girls tend to be monitored more by both their parents and nonkin adults in the neighborhood (Browning, Leventhal, & Brooks-Gunn, 2005; Fagan, Van Horn, Hawkins, & Arthur, 2007; Mrug & Windle, 2009), which may make them feel less positive about their neighborhoods as they develop and desire greater autonomy. Further, boys tend to spend more time outside the home (Fagan & Wright, 2012), which could lead to a growing sense of connectedness with their neighborhood.

Community connectedness and delinquency were inversely associated for both boys and girls in our sample. This association is consistent with other research that has found

inverse associations among community connectedness and various measures of antisocial behavior, violence perpetration, and delinquency (Hitchcock, 2013; Stoddard et al., 2011; Widome et al., 2008). The association between community connectedness and delinquency became more complex in the current study when age and gender were considered. For boys who reported low levels of delinquent behaviors, the increase in community connectedness with age was especially pronounced, whereas for girls, the decrease in community connectedness with age was not associated with levels of delinquency. This is clearly an area where more investigation is warranted.

One possible direction for further inquiry may explore peer relationships, memberships in select groups, and immersion in select environments. For example, and as previously mentioned, relationships with deviant peers has been shown to influence delinquency (Keijsers et al., 2012), with a greater influence for boys than for girls (Piquero et al., 2005). In boys especially, association with deviant peers may be related to gang involvement (Jaggers et al., 2013). Adolescents may not perceive their association with gangs to be an aspect of community connectedness, and so boys with low levels of delinquency may report increasing community connectedness, whereas those with higher levels of delinquency may view their gang involvement as more important than other associations with their community and, therefore, may not demonstrate increasing connection to their community to the same degree.

Strengths and Limitations

Strengths of this study include its longitudinal nature with annual waves of data collection, the sample size, the range of ages evidenced in the sample, and its focus on an understudied population. We were able to model intra-individual variability across as many as six annual observation points per participant, 12 to 17 years of age, using each participant as his or her own control. As a result, we can be more confident that trajectories truly reflect developmental factors. Additionally, unlike many studies of adolescents that take place in school settings, our study was conducted during the summers. Our sample, therefore, includes adolescents who were not in school for a number of reasons; it also avoids the possibility that the school setting influenced responses. Because school connectedness was treated as missing for adolescents who had dropped out of school, this strength affects the findings only for community connectedness.

Although large, representative, national samples have many strengths, they also have the limitation of incomplete contextual information (Eccles & Roeser, 2011). Of significance, our study cannot draw any conclusions related to causal links between delinquency and types of connectedness. Our data set is representative of racial Black American who live in impoverished neighborhoods. Because of the homogeneity of this population, unmeasured variable bias (e.g., unmeasured or poorly measured socioeconomic status) is reduced; this, in turn, improves the internal validity of our conclusions and provides guidance regarding the boundaries of the external validity.

Similarly, although there are advantages of including multiple variables in an analysis and disadvantages of limiting the variables studied, we selected only a few variables to study in this well-specified population so that we could draw conclusions that have a clear bearing on interventions. It could be informative to explore associations among several types of connectedness and several types of prosocial and antisocial behaviors and outcomes, for example. On the other hand, it is more practical to design interventions geared toward a more specific group, for example, Black American adolescents living in poverty who exhibit low levels of connectedness to their communities. Future research

efforts should also focus on disentangling the gender effects seen in the current study. Specifically, the role of gender socialization should be examined in the context of school and community connectedness.

Finally, the model that we tested specified connectedness as the outcome variable, predicted by delinquency. The nature of the data allows only relational inferences, yet there is an implicit assumption in the statistical model we developed that delinquency affects connectedness. Although a theoretical case is made for the direction of this relationship, similar cases have been made for a relationship moving in the opposite direction or even bidirectionally. It would be difficult (if not impossible) to design an analysis that definitively determines the direction of the relationship between delinquency and connectedness, at least with the data at hand. However, this is an important issue, and further research should be directed toward its resolution.

Implications

The current study has added to the knowledge base in the area of connectedness by focusing on an understudied population: Black American adolescents living in extreme poverty. Our study has the added advantage of multiple waves of data and a relatively large sample size. Additionally, because delinquency is an important variable that has been associated with connectedness, we focused on the associations among connectedness and delinquency across age and by gender.

The strongest determinants of adolescent health and well-being are structural factors such as national wealth, income inequality, and access to education, which suggests the most effective interventions for adolescents at risk are structural changes that increase access to quality education and to employment with a living wage (Viner et al., 2012). Still, more proximal factors such as positive, supportive families, peers, schools, and neighborhoods can help adolescents make a positive transition to adulthood (Viner et al., 2012). In our sample of Black American adolescents living in extreme poverty, school connectedness increased across age, but it remained lowest for boys, especially delinquent boys. Community connectedness increased for boys, especially those with low levels of delinquency, but decreased for girls. These findings suggest that gender-informed interventions focused on increasing connectedness to positive influences or decreasing delinquency could have positive effects on both phenomena.

As described by Kerig and Schindler (2013), gender-responsive interventions provide unique strategies that are buttressed by what is known about girls and the interpersonal relationships they often form and the unique developmental process (e.g., gender role socialization) they often experience. Gender-responsive interventions may include a consideration of family functioning, adversity, trauma, and other mental health problems that may relate to delinquency among girls in particular (see Kerig & Schindler), although more research on the efficacy and effectiveness of these recommendations are needed. Thus, more research is needed to determine the need for and effect of gender-focused interventions.

Conclusion

While feelings of connectedness are typically correlated with prosocial behaviors and other positive outcomes, the relationship between delinquency and connectedness has not been thoroughly examined in adolescents who live in impoverished neighborhoods. In this study, we extend the existing literature by examining this relationship in a sample

of adolescents living in impoverished neighborhoods. Results suggest a complex interaction among gender, age, and delinquency in predicting feelings of connectedness, and that these relationships differ for school and community connectedness. Other research suggests that increased feelings of connectedness are protective against adolescent risk behaviors. This study suggests that, at least for adolescents living in poverty, programs to increase feelings of connectedness should be designed based on age, gender, level of delinquency, and type of connectedness to be enhanced.

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