



# Suicidality in Black American Youth Living in Impoverished Neighborhoods: Is School Connectedness a Protective Factor?

Sara Tomek<sup>1</sup> · Shelby Burton<sup>2</sup> · Lisa M. Hooper<sup>2</sup> · Anneliese Bolland<sup>3</sup> · John Bolland<sup>3</sup>

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## Abstract

Suicidality is a significant public health issue for adolescents (Centers for Disease Control and Prevention in Leading causes of death reports, national and regional, 1999–2015, 2015). Cultural factors such as gender, race, and poverty may place some adolescents at an increased risk for suicidality. The school context has been offered as a setting that may serve as an effective prevention and intervention point for buffering suicidality. Given that adolescents spend a significant amount of time at school, school connectedness, or the sense of belonging to a school community, may be a significant and positive protective factor against social isolation. Undergirded by Joiner's (Why people die by suicide, Harvard University Press, Cambridge, 2005; The interpersonal-psychological theory of suicidal behavior: current empirical status, 2009) interpersonal theory of suicide, the current investigation explores the relation between suicidality (i.e., suicide ideations and attempts) and school connectedness. Using a large longitudinal data set ( $N = 2335$ ), results of two logistic growth models found that school connectedness serves as a strong protective factor for suicidality among Black American adolescents living in impoverished neighborhoods. Results showed that school connectedness reduced the probability of suicide ideations and attempts over time and for both females and males. Implications for theory, practice, and research are discussed.

**Keywords** School connectedness · Suicide ideation · Suicide attempts · Impoverished neighborhoods · Black American adolescents · Joiner's interpersonal theory of suicide

## Introduction

In the last decade, suicide has increased from the third to the second leading cause of death in adolescents 12–18 years old (Centers for Disease Control and Prevention [CDC], 2015). Among adolescents, 12.1% have reported lifetime prevalence rates of suicide ideation, or thinking seriously about attempting or committing suicide. Among the 12.1% who report suicide ideations, approximately four percent will make a suicide attempt (Nock et al., 2013), with an average of 40,000 attempts per year (The Parent Resource Program,

2016). As suicidal ideation and suicide attempts, or suicide behavior, in adolescents are frequent, recurring, and costly (Brent et al., 2009), the connection between adolescents' suicide behavior and life-ending outcomes makes these suicide behaviors, or suicidality, an urgent and pernicious public health issue. Similar to depression and depressive symptoms, an equally important consideration is how cultural factors may be implicated in suicidality among adolescents. Although understudied, the intersection of cultural factors such as race, gender, and poverty may place some adolescents at an even greater risk of suicidality as compared to their White American, middle-class counterparts.

Prevalence rates of suicidality in Black American adolescents appear to be lower than reported in their White American adolescents (CDC, 2015), although this finding may be partially explained by the dearth of empirical research that *specifically* focuses on suicidality in racial and ethnic minority groups in general (Brent et al., 2009; Garlow, Purselle, & Heninger, 2005; Goldston et al., 2008; Gould, Greenberg, Velting, & Shaffer, 2003), and in Black Americans in particular (Borowsky, Ireland, & Resnick, 2001; Garlow et al.,

✉ Sara Tomek  
stomek@ua.edu

<sup>1</sup> Department of Educational Studies in Psychology, Research Methodology, and Counseling, University of Alabama, Box 870231, Tuscaloosa, AL 35487, USA

<sup>2</sup> University of Louisville, 329 Woodford R. and Harriett B. Porter Building, Louisville, KY 40292, USA

<sup>3</sup> The University of Alabama, Box 870216, Tuscaloosa, AL 35487, USA

2008; Goldston et al., 2008; Joe, Clarke, Ivey, Kerr, & King, 2007). Overall, 7% of Black American adolescents have reported suicide ideations and 2% have reported a suicide attempt (Joe, Baser, Neighbors, Caldwell, & Jackson, 2009). In addition, suicide serves as the third leading cause of death for Black American adolescent males and the fourth leading cause of death for Black American adolescent females (CDC, 2015). However, when evaluating Black American adolescent females only, it appears that they report higher levels of suicide ideation when compared to their White American counterparts (Robinson, Droege, Hipwell, Stepp, & Keenan, 2016). Given the often-observed issues of racism, oppression, and discrimination coupled with the US historical framework (Buchman-Schmitt, Chiurliza, Chu, Michaels, & Joiner, 2014), it is not surprising that Black American adolescents may be viewed as a high-risk, vulnerable population (Mental Health America, 2015; U.S. Department of Health and Human Services, 2001).

In addition to race and gender, living in impoverished communities may play an important role in suicidality among Black American youth. In fact, according to the most recent U.S. Census Bureau report (2014), 26.2% of Black Americans are living in poverty. Although poverty is associated with greater risk of depression and consequently suicide behavior (Mental Health America, 2015; U.S. Department of Health and Human Services, 2001), there are greater discrepancies when considering the intersection of poverty and gender. For example, the U.S. Census Bureau (2014) reported that Black American females are at an elevated risk of living below the poverty line, with one cross-sectional study finding that females who identified as low socioeconomic status reported significantly higher suicide attempts (Dupéré, Leventhal, & Lacourse, 2009; Kim, Kim, Choi, Lee, & Park, 2016). Adolescents living in an impoverished context (e.g., neighborhood), who often cannot work or provide for a family—because of their minor status—but who are capable of cognitively understanding the meaning of being raised in impoverished neighborhoods, may view their existence as a burden on their loved ones.

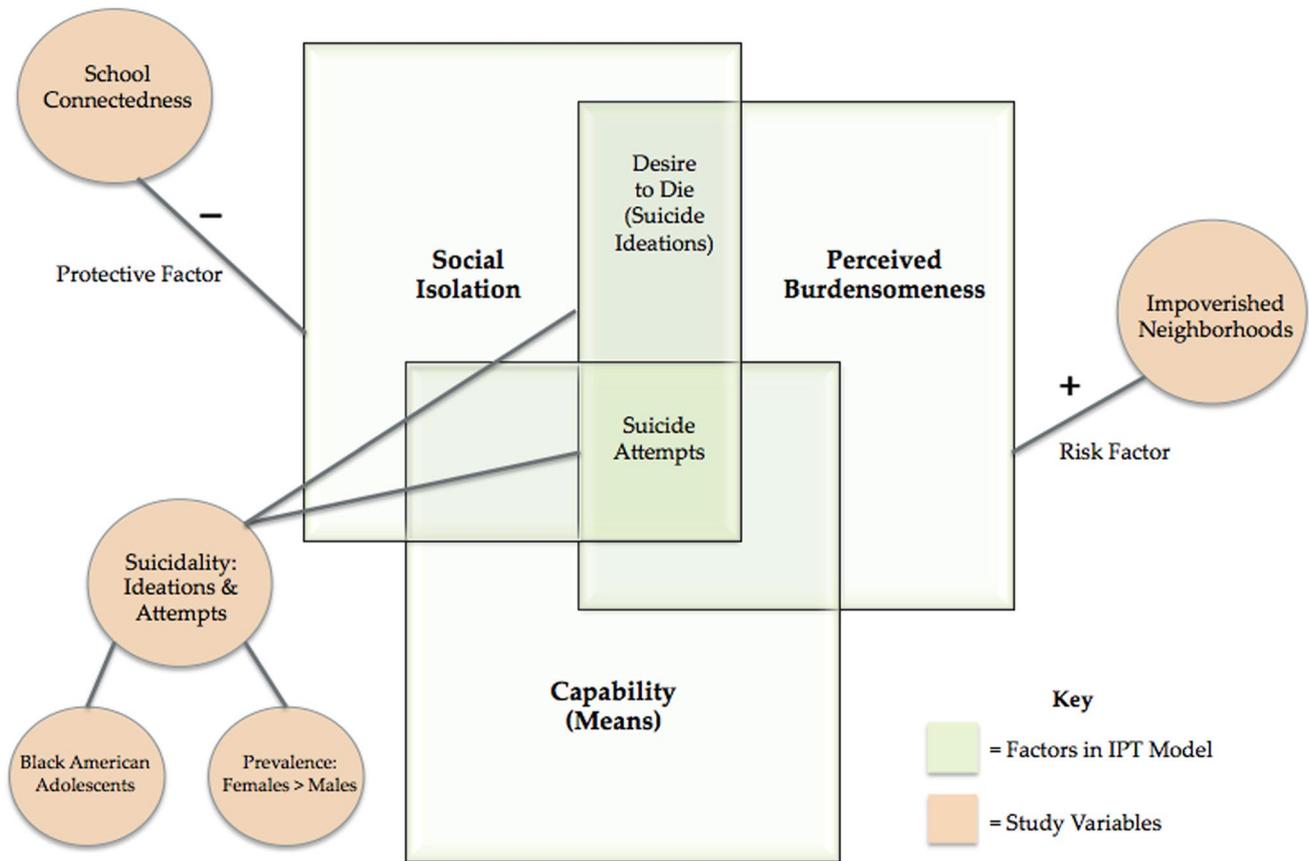
This scant but important research examining cultural factors and suicidality is derived from research that is cross-sectional in nature (Brent et al., 2009; Garlow et al., 2005; Joe et al., 2007, 2009; Nock et al., 2013). Consequently, there is a distinct need for longitudinal research that specifically investigates Black American adolescents' suicide behavior and relevant corollaries. Finally, studies that consider what accounts for prevalence rates in suicidality and how culture is implicated are important. Informed by an interpersonal psychological theory of suicide, and by the intention to fulfill select gaps in the literature, the current longitudinal investigation considers suicidality in an impoverished Black American adolescent sample. The conceptual model that guides the current investigation is illustrated in Fig. 1.

## Joiner's Interpersonal Psychological Theory of Suicide

Joiner's (2005, 2009) interpersonal psychological theory of suicide is one framework that informs the conceptualization of and explanations for suicidality in adolescents and adults. In his conceptualization of suicidality, Joiner (2005, 2009) proposes that individuals must have (a) a *desire* to die, (b) the *means* to attempt to die, and (c) feelings of perceived *burdensomeness* and *social isolation*. Joiner (2005, 2009) defined perceived burdensomeness as the misperception that an individual's entire existence is so taxing on his or her social supports (e.g., family and friends), and on society as a whole, that death is preferred over life.

Feelings of perceived burdensomeness may be particularly relevant to Black American individuals living in poverty. Buchman-Schmitt et al. (2014) identified both distal and proximal risk factors contributing to perceived burdensomeness in adolescence, including sex, race and ethnicity, familial factors, and psychopathology. However, Buchman-Schmitt et al. (2014) noted there is a dearth of empirical research that examines how perceived burdensomeness may be evidenced in adolescents experiencing suicide ideations and attempts. Given the empirical research (Kim et al., 2016; Mental Health America, 2015; U.S. Census Bureau, 2014; U.S. Department of Health & Human Services, 2001) and the interpersonal psychological theory of suicide (Joiner, 2005, 2009), it has been hypothesized that poverty may be perceived as having a unique and specific burdensome effect and thus serve as a risk factor for suicide behaviors in Black Americans living in impoverished neighborhoods, with females placed at the highest risk. It remains less clear whether this pattern will be replicated in a longitudinal research design that measures the combined effects of sociodemographic factors (*age, gender, race, and class*) in Black American adolescents.

Similar to the unique implications of burdensomeness, feelings of social isolation may be applicable to Black American individuals living in poverty. In conjunction with cultural factors, Joiner's (2005, 2009) interpersonal psychological theory of suicide recognizes social isolation as a critical risk factor associated with suicide behaviors, with the inverse of social isolation—social belongingness—proposed as a protective factor (Joiner, Hollar, & Van Orden, 2006). Social belongingness is the perception that one is accepted as an integral part of a social network or valued group. Relatedly, Goodenow (1993b) defined school connectedness as feelings of acceptance, respect, inclusion, and support by others in their academic environment, such as school staff, teachers, and peers. Consonant



**Fig. 1** Conceptual model of study variables adapted from Joiner's interpersonal theory (IPT) of Suicide (2005, 2009)

with Goodenow's (1993b) definition, Joiner's interpersonal theory, proposed that academic variables, peer relationships, and peer victimization all contributed to an individual's sense of belongingness (Buchman-Schmitt et al., 2014). Empirical support for Joiner's propositions was evidenced in a recent meta-analysis (Marraccini & Brier, 2017). Marraccini and Brier (2017) found that school connectedness was related to lower levels of suicidality (i.e., suicide ideations and attempts) among high-risk and female participants. These findings were consistent among racially diverse samples.

Marraccini and Brier's (2017) recent meta-analysis, and Joiner's (2005, 2009) interpersonal theory, school connectedness serves as a protective factor against suicide ideations and attempts. In addition to the positive relation between school connectedness (belongingness) and lower levels of suicidality, perceptions of belongingness within the school environment have been linked with a variety of positive psychosocial outcomes, such as feelings of safety and acceptance in the class (Furrer & Skinner, 2003), improved well-being and psychological adjustment (Van Ryzin, Gravely, & Roseth, 2009), and higher reports

of life satisfaction and positive affect (Suldo, Shaffer, & Riley, 2008). Specifically, school connectedness has been identified as a mediator in the relation between parental attachment and depressive symptomatology (Shochet, Homel, Cockshaw, & Montgomery, 2008), a significant predictor of prosocial behavior (Oldfield, Humphrey, & Hebron, 2016), and a protective factor against suicidality when quality of peer relationships is low (Kidd et al., 2006). Thus, as found in a recent meta-analysis (Marraccini & Brier, 2017) and in an additional longitudinal study (Young, Sweeting, & Ellaway, 2011), perceptions of school connectedness are often inversely related to suicide thoughts and behaviors. Taken together, findings derived from these cross-sectional studies (Marraccini & Brier, 2017; Oldfield et al., 2016; Shochet et al., 2008) point toward school connectedness as a significant, positive, and consistent protective factor in adolescents experiencing suicide ideations and attempts. It remains less clear whether this pattern exists in Black American adolescent males and females identified as living in impoverished neighborhoods, and whether it will be evidenced in a longitudinal study.

## The Current Investigation

Given the increase in suicide as a leading cause of death in adolescence (U.S. Census Bureau, 2014) and a lack of research regarding specific antecedents and outcomes among racial and ethnic minorities (Brent et al., 2009; Garlow et al., 2005; Goldston et al., 2008; Gould et al., 2003), research is needed that focuses on Black American adolescents in particular. Undergirded by Joiner's (2005, 2009) theory, the current investigation explores to what extent factors related to perceived burdensomeness and social isolation, such as poverty and school connectedness, respectively, may be related to suicidality among Black American adolescents. Joiner's theory predicts that increases in school connectedness will relieve social isolation, which in turn will decrease the propensity for suicidal behaviors. Rooted in the extant literature base and as illustrated in Fig. 1, the following research questions were examined:

- (a) To what extent is school connectedness a protective factor for suicide ideation among a Black American adolescent sample living in impoverished neighborhoods?
- (b) To what extent is school connectedness a protective factor for suicide attempts among a Black American adolescent sample living in impoverished neighborhoods?
- (c) To what extent are these bivariate relations differentiated by gender?

## Method

### Sample

The sample used in the current investigation was derived from the Mobile Youth and Poverty Study (MYPS), a 14-year longitudinal study of primarily Black American adolescents aged 10–18 living within low-income neighborhoods in Mobile, AL. One component to the MYPS is the Mobile Youth Survey (MYS), an annual survey administered to adolescents between the qualifying ages in the selected areas between the years of 1998 and 2011. The full MYS sample consists of 12,387 adolescents between the ages of 9 and 19 observed across 35,828 data points. In order to obtain the sample utilized in the analysis, a number of limitations were placed on the sample. First, the school connectedness measures were not added to the survey until 2006; therefore, all data points between the years 1998 and 2005 could not be utilized. This resulted in the removal of 19,199 observations (54%) and 4836 adolescents (39%). Next, observations collected at ages 9 and 19 were removed due to very low prevalence of observations at those ages, which removed

189 observations (1%) and 64 adolescents (1%). Adolescents were also excluded from the sample if they did not have two data points collected between the ages of 11 and 18, which resulted in a removal of 3140 observations (9%) and 3140 adolescents (25%). In addition, cases were removed that were either missing either of the targeted suicidality variables (i.e., they did not report a suicidal attempt or suicidal ideation) or were missing the school connectedness measure. This resulted in a removal of an additional 8266 data points (23%) and 2012 adolescents (16%).

The final sample used in the current investigation was sufficiently large after each of the necessary exclusions and was composed of 2335 adolescents with an identified suicide attempt or reported suicide ideation, and a total of 5034 data points. The sample included a fairly even proportion of males and females, 51% ( $n = 1179$ ) and 49% ( $n = 1156$ ), respectively. A total of 95% ( $n = 2219$ ) of the adolescents identified as Black American, with the rest identifying as mixed race. The ages of 10–18 were fairly evenly distributed across the sample, with between 7 and 16% of observations falling within each age group, with larger percentages of observations falling in the middle age ranges. In 1990, the census prior to data collection, the average household income for the targeted neighborhoods was \$6,276 (Bolland, Lian, & Formichella, 2005), with 73% of the residents living below the poverty level.

### Procedure

The MYS study is a multiple cohort design in which new cohorts are added each year and tracked thereafter. A brief procedure section appears here; for full details regarding the methodology and sampling procedures, see Bolland et al. (2013). The MYS research team identified homes where youth between the ages of 10 and 18 resided. Adolescents within 3 months of their 10 or 18th birthday were allowed to participate, yielding a sample of adolescents aged 9–19. Investigators attempted to contact each of these eligible participants and his or her parent or adult caregiver using community fliers and door-to-door visitation. Once contacted, the youth and his or her adult caregiver were informed about the purpose of the survey, and the youth was invited to participate.

Informed consent was obtained from all individual participants included in the study. Informed assent and consent were obtained from all adolescent participants and their parents or caregivers. After youth and their caregivers agreed to participate, a group administration of the survey was scheduled. The questions were read aloud to groups of 20–30 participants, and they were asked to mark their answer to each question in the survey booklet. Youth who could not complete the survey responses in a group setting were given individualized attention, although very

few adolescents required individualized attention. The study procedure was completed in approximately 1 h. Each participant received \$15 as compensation (Bolland, 2007).

## Measures

**Suicide ideation** Suicide ideation was measured by the following single-item self-report question: “In the past year, did you seriously think about killing yourself?” Dichotomous responses of “Yes” and “No” were recorded.

**Identified suicide attempt** Suicide attempt was measured by the following single-item self-report question: “Have you ever tried to kill yourself?” Dichotomous responses of “Yes” and “No” were reported by the adolescents. As this single item does not have a temporal component (i.e., it does not measure the previous year), identification of a suicide attempt was achieved when adolescents answered a “No” in the year preceding a “Yes” response. In this way, a suicide attempt in the previous year is inferred by the responses of the participants. For example, if a respondent reported a “No” response at age 11, a “No” response at age 12, then a “Yes” response at age 13, the identified suicide attempt occurred in the year between ages 12 and 13.

**School connectedness** School connectedness was measured using eight dichotomous items adapted from Goodenow’s (1993a) Psychological Sense of School Membership, which were summed to create values ranging from 0 to 8, where higher scores indicate more school belonging or school connectedness. For those in school the previous year, participants were asked to either “Agree” or “Disagree” with these items (e.g., “most students at my school like me the way I am,” and “there’s at least one teacher in my school I can talk to if I have a problem”), creating dichotomous response options. Those adolescents who did not attend school were able to check the option of “I wasn’t in school last year.” As previously state, students without a school connectedness score, or who were not in school in the previous year were excluded from analysis. Internal reliability for the adapted scale was lower than expected ( $\alpha = 0.62$ ), but still in an acceptable range given the small number of dichotomous items (Robinson, Shaver, & Wrightsman, 1991). Pairwise correlations between the items were significant in all but 2 of the 28 pairs, indicating an overall strength in relationship between the items. A principal component analysis was also conducted to confirm the validity of a single summative scale. The first eigenvalue was 2.32, and the single summative scale accounted for 30% of the variance in the items.

**Age and gender** The actual age in years of the adolescent was used, ranging from 11 to 18, and centered at 11 for ease of model parameter interpretability. Gender was included as a dichotomous variable (0 = male and 1 = female).

## Analysis Plan

The study modeled two dichotomous variables—the propensity to experience a suicide ideation or to have an identified suicide attempt—across all ages of the adolescent. In our model of suicide ideations, it is important to remember that our sample was limited to all subjects reporting at least one suicide ideation; therefore, we are modeling the propensity of a suicide ideation to occur at a particular age. Similarly, in our second analysis, our sample was limited to all participants reporting an identified suicide attempt, in order to model the propensity for a suicide attempt, meaning the propensity for adolescents to attempt suicide at a particular age. Additionally, all measures were collected longitudinally (ages 11 through 18). Given the nature of our research questions and our data, a logistic growth model was used for the analyses. The traditional form of the logit transformation in regression is as follows:

$$\pi_{ij} = \frac{\exp(\alpha + \beta x_{ij})}{1 + \exp(\alpha + \beta x_{ij})}$$

Next, the hierarchical portion of the model was added. The model shown below is the logistic unconditional growth model, with age as the slope parameter to indicate change over time. Due to the small sample size, the random effects for the intercept and the slope were not able to be estimated. Only the residual variance was estimated for each model. The unconditional growth model is as follows, using Singer and Willett’s (2003) notation:

$$\text{logit}(\pi_{ij}) = \alpha_{0i} + \beta_{1j} \text{TIME}_{ij} + \varepsilon_{ij}$$

$$\alpha_{0i} = \gamma_{00}$$

$$\beta_{1i} = \gamma_{10}$$

where  $i$  = subject,  $j$  = time.

After fitting the unconditional growth model, school connectedness was added to the level 1 portion of the model as a time-varying covariate and gender was added to the level 2 model as a time invariant covariate, with both entered as main effects and interaction terms. The final full model parameterization is as follows:

$$\begin{aligned} \text{logit}(\pi_{ij}) = & \alpha_{0i} + \beta_{1j} \text{TIME}_{ij} \\ & + \beta_{2j} \text{SCHOOL CONNECTEDNESS}_{ij} \\ & + \beta_{3j} \text{TIME}_{ij} * \text{SCHOOL CONNECTEDNESS}_{ij} \\ & + \varepsilon_{ij} \end{aligned}$$

$$\alpha_{0i} = \gamma_{00} + \gamma_{01} \text{GENDER}_i$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} \text{GENDER}_i$$

$$\beta_{2i} = \gamma_{20} + \gamma_{21} \text{GENDER}_i$$

$$\beta_{3i} = \gamma_{30} + \gamma_{31} \text{ GENDER}_i$$

This model was used for both sets of analyses: (a) once with suicide ideations as the response variable, and (b) once with identified suicide attempt as the response variable. All assumptions for logistic growth models were met, including the linear nature of the propensity of suicidality. The full factorial model was initially fit, with nonsignificant parameters removed in a backward selection procedure. All analyses were conducted using Proc Glimmix in SAS software, version 9.3 using full information maximum likelihood.

## Results

### Suicide Ideations

Overall, 11% ( $n = 554$ ) of the observations were identified as a positive suicide ideation in the previous year.

The unconditional growth model found that the probability of a suicide ideation was constant across all ages,  $\gamma = -0.008$ ,  $\text{OR} = 1.01$ ,  $t(1524) = -1.26$ ,  $p = 0.798$ . In the full model, while the probability of a suicide ideation was also relatively constant across all ages,  $\gamma = 0.002$ ,  $\text{OR} = 1.00$ ,  $t(2334) = 0.05$ ,  $p = 0.959$ , the probability of a suicide ideation was significantly affected by both gender and school connectedness. Females had significantly higher probabilities of suicide ideations,  $\gamma = 0.672$ ,  $\text{OR} = 1.96$ ,  $t(1084) = 6.02$ ,  $p < 0.001$ . Females were almost twice as likely to report a suicide ideation as compared to males. This effect was consistent across all ages. Additionally, the probability of a suicide ideation was significantly lower when school connectedness was higher,  $\gamma = -0.25$ ,  $\text{OR} = 0.78$ ,  $t(1549) = -9.09$ ,  $p < 0.001$ . For each increase in school connectedness, the adolescent's odd of reporting a suicide ideation reduced by 22%. Again, this effect was consistent over time. Example

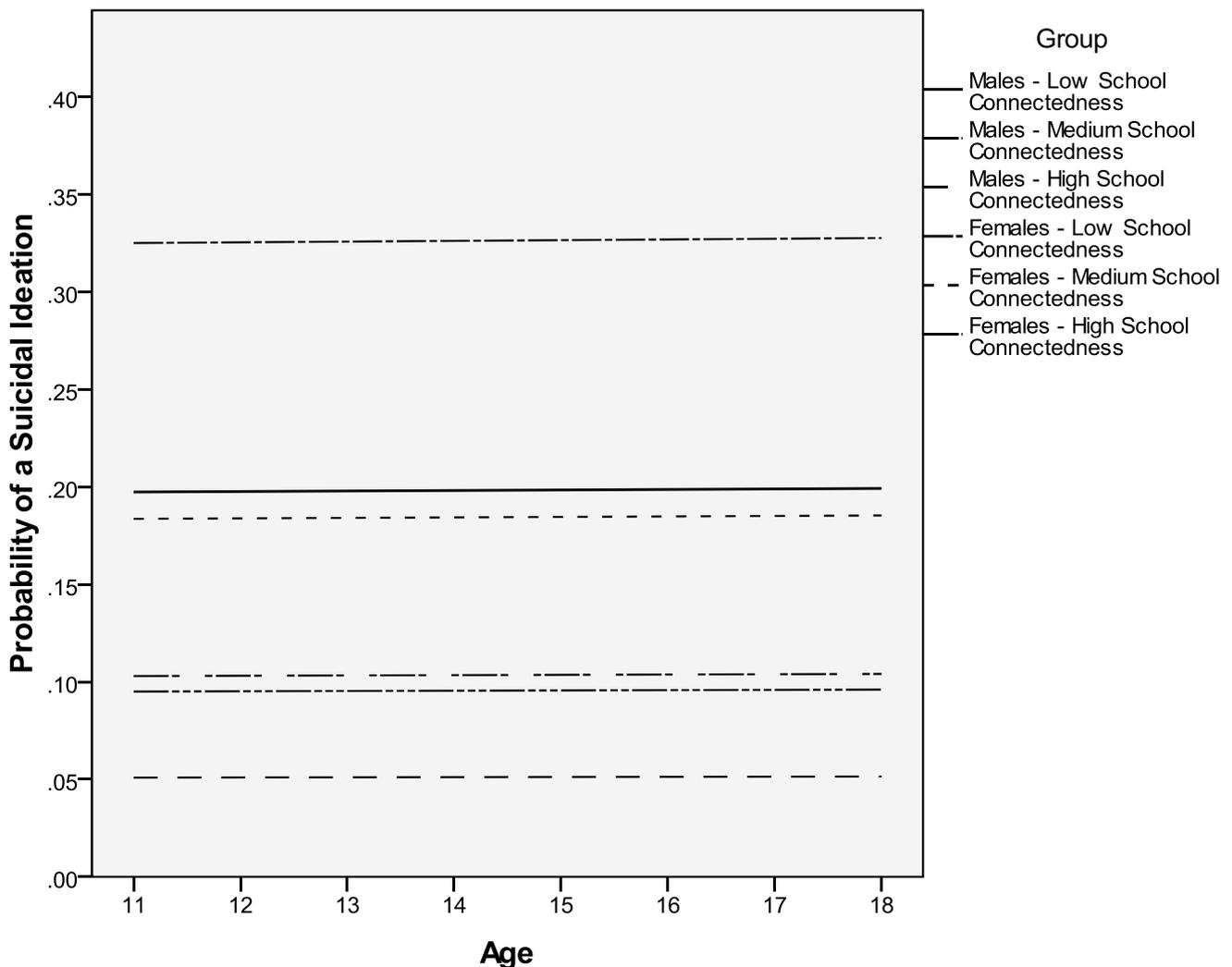


Fig. 2 Example trajectories of the probability of a suicide ideation based on gender and level of school connectedness

trajectories of the probability of a suicide ideation for both genders with low (i.e., 1), medium (i.e., 4), and high (i.e., 7) levels of school connectedness are displayed in Fig. 2. Low, medium, and high values were determined using the median of the range of the scale, which is a value of 4, then equally distant values above and below. Of note, there was a considerable difference in the probability of a suicide ideation for those with low versus high levels of school connectedness. For males with low versus high levels of school connectedness, the probability drops from approximately 20% to approximately 5%. For females with low versus high connectedness, the probability drops from approximately 33% to approximately 10%. The presence of higher levels of school connectedness significantly reduced the probability of suicide ideations for both genders.

### Suicide Attempt

Overall, 9% ( $n = 453$ ) of the observations were identified as containing an identified suicide attempt. The unconditional growth model was estimated, and results indicated that the probability of a suicide attempt was fairly constant across all ages,  $\gamma = 0.05$ ,  $OR = 1.05$ ,  $t(1525) = 1.38$ ,  $p = 0.168$ . In the full growth model, the probability of a suicide attempt was also found to be consistent across all ages,  $\gamma = 0.04$ ,  $OR = 1.04$ ,  $t(1514) = 1.18$ ,  $p = 0.240$ . However, the main effects of gender and school connectedness were significant. Females had a higher probability of a suicide attempt as compared to males,  $\gamma = 0.50$ ,  $OR = 1.65$ ,  $t(399) = 4.05$ ,  $p < 0.001$ . Females had 65% greater odds of having an identified suicide attempt. Additionally, higher levels of school connectedness also decreased the likelihood of reporting a suicide attempt,  $\gamma = -0.17$ ,  $OR = 0.84$ ,  $t(716) = -5.25$ ,

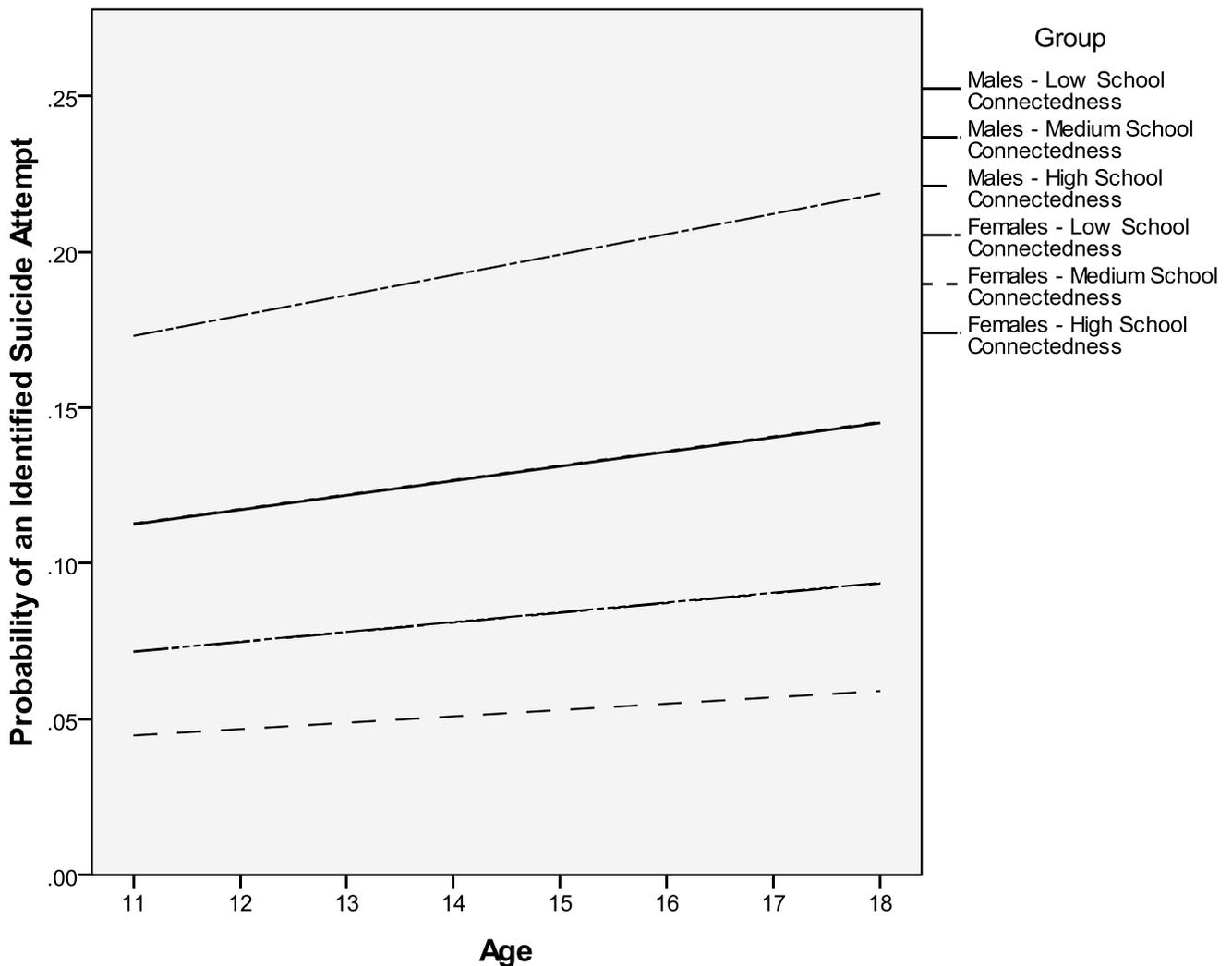


Fig. 3 Example trajectories of the probability of a suicide attempt based on gender and level of school connectedness. Note Male low and female medium lines overlap; male medium and female high lines overlap

$p < 0.001$ . Each increase in school connectedness resulted in a 16% reduction in the odds of a suicide attempt. Both of these effects were also consistent over time. Example trajectories of the probability of a suicide attempt for both genders with low (i.e., 1), medium (i.e., 4), and high (i.e., 7) levels of school connectedness are displayed in Fig. 3. For both genders, the probability of an identified suicide attempt was significantly lower when the youth has a higher level of school connectedness. Comparing low versus high levels of school connectedness at age 18, males had a 9% lower probability of an identified suicide attempt (15 vs. 6%) and females had a 13% lower probability of an identified suicide attempt (22 vs. 9%) when school connectedness was at a high level. Both females and males showed significant reductions in the probability of a suicide attempt in the presence of high levels of school connectedness.

## Discussion

The purpose of the current investigation was to examine patterns of suicide ideations and attempts in Black American adolescent females and males living in impoverished neighborhoods in the southern region of the USA. The purpose of the study was to determine whether school connectedness would serve as a protective factor for Black American adolescents in relation to both suicide ideations and attempts. Moreover, would there be gender differences in the reporting of suicide ideations and attempts. Because of the recent increases in suicide as a leading cause of death in adolescence (U.S. Census Bureau, 2014) and lack of research that considers the extent to which these patterns pertain to racial minorities (Brent et al., 2009; Garlow et al., 2005; Goldston et al., 2008; Gould et al., 2003), the current investigation fills a gap in the literature. Findings from the current investigation point toward three main findings worth noting.

First, we found that prevalence rates of suicide ideations and attempts were higher in this sample compared to the national average and one recent study (see Joe et al., 2009). Specifically, Joe et al. (2009) found that 7% of Black American adolescents reported ideations and 2% of Black Americans reported an attempt, whereas the current investigation found that 11% of our sample comprised of Black American adolescents reported experiencing ideations and 9% reported an attempt. One explanation that may account for the difference in findings is that the current sample consisted mainly of those who identified as living in impoverished neighborhoods. Although participants were similar in both studies in that they were both composed of Black American adolescents, our participants had an average household income of \$6276 with approximately 73% categorized as significantly below the poverty level, as compared to Joe et al.'s (2009) sample which reported a median family income of \$28,000.

Thus, participants in Joe et al.'s 2009 sample were making approximately quadruple the amount of money as compared to the current investigation's participants.

With relevance to Joiner's (2005, 2009) interpersonal theory of suicide and perceived burdensomeness, our findings offer an alternative distal risk factor in adolescence (Buchman-Schmitt et al., 2014). In Buchman-Schmitt and colleagues' (2014) review, they suggested that the empirical literature focused on perceived burdensomeness in adolescent populations remains scant, possibly because adolescents—given their minor status—have fewer responsibilities than adults. Nevertheless, consistent with the literature positing a relationship between poverty and suicidality (Dupéré et al., 2009; Kim et al., 2016; Mental Health America, 2015; U.S. Department of Health and Human Services, 2001), the findings from our investigation are consonant with the idea that Black American adolescents identified as living in impoverished neighborhoods may be at an increased risk for suicide ideations and attempts, thus supporting the premise that poverty may be a form of perceived burdensomeness for this age group.

Second, school connectedness served as a protective factor for self-reported suicide ideations and attempts in Black American adolescent males and females, a pattern that was evidenced over time. Consonant with the interpersonal theory of suicide (Joiner, 2005, 2009), our findings buttress the idea that school connectedness can serve as a protective factor in the form of social belongingness (Furrer & Skinner, 2003; Oldfield et al., 2016; Shochet et al., 2008; Suldo et al., 2008; Van Ryzin et al., 2009) for mental health outcomes, such as suicidality (Kidd et al., 2006; Marraccini & Brier, 2017; Young et al., 2011). Importantly, as current literature on this topic relies mainly on cross-sectional studies (Furrer & Skinner, 2003; Marraccini & Brier, 2017; Oldfield et al., 2016; Shochet et al., 2008; Suldo et al., 2008), the current investigation further extends our understanding that the role of school connectedness as a protective factor endures over time. In line with Goodenow's (1993b) definition of school connectedness as feelings of acceptance, respect, inclusion, and support by others in their academic environment via school staff, teachers, and peers, future reviews building on previous work (Buchman-Schmitt et al., 2014; Joiner et al., 2006) and empirical research may want to explore school connectedness as a protective factor against suicide ideations and attempts and may want to eventually evaluate factors that continue to make an impact over time.

Third, Black American adolescent females reported significantly more suicide ideations and attempts in comparison to their male counterparts, which was also evidenced across adolescence. Although this finding supports previous literature suggesting that Black American females are at greater risk for suicide ideations and attempts due to being more heavily represented below the poverty line (Dupéré et al.,

2009; Kim et al., 2016; Mental Health America, 2015; U.S. Census Bureau, 2014; U.S. Department of Health & Human Services, 2001), as the sample equally represented males and females living in impoverished neighborhoods, it remains unclear why this pattern still exists. Future studies may aim to examine how Black American adolescents may be modeling a trend reflected in the greater population: females often report increased ideations and attempts (Molock, Puri, Matlin, & Barksdale, 2006), while males complete suicide more often (American Association of Suicidology, 2014). However, our findings uniquely contribute to the literature by investigating beyond single demographic and cultural factors, such as solely female (Dupéré et al., 2009; Kim et al., 2016) or Black American populations (U.S. Census Bureau, 2014), and instead focusing on the intersectionality of gender, race, age, and class. Moreover, despite the substantive cognitive development that occurs in adolescence (Cole et al., 2008), it is important to note these findings were maintained over time.

### Strengths and Limitations

As with all research, the current investigation has strengths and limitations worth considering. Regarding strengths, the present study was the first to utilize a longitudinal design in evaluating the relation between school connectedness and suicide behaviors and ideations. We recommend that future studies continue to evaluate how other risk and protective factors play a role over time. Additionally, the current investigation utilized a holistic approach in evaluating the intersectionality of multiple identities, including the elements of gender, race, age, and class, in these associations. The homogeneity of our sample provides our study with both a strength and a weakness. Increased research on minority and at-risk population is needed, and our study serves to increase the literature base with regards to Black American adolescents living in high poverty areas. However, because our sample is homogeneous, inferences beyond our sample are less likely to be valid.

One limitation of the study is that causal conclusions cannot be drawn. Because it is unethical to use experimentation in predicting suicidality, future research could include multiple reports (e.g., teachers and parents) of how connected they perceive their students to be as an additional source of information. Additionally, the measure of an identified suicide attempt utilized in this study was created by determining that a suicide attempt should have occurred in the preceding year based on self-report items, although the adolescents did not report explicitly to engaging in a suicide attempt during the preceding year. The identified suicide attempts only take into account those who unsuccessfully attempting suicide, so the results may be biased because they did not include adolescents that were successful. Lastly,

our measure of school connectedness had a low alpha reliability, indicating a lower than expected internal reliability. The scale itself contains eight dichotomous items, which in of itself mathematically limits the internal reliability of the scale. Previous literature suggests that lower reliability of a scale can be acceptable under these constraints (Robinson, Shaver, & Wrightsman, 1991).

### Implications for Research and Practice

More recent research has been geared to designing preventive programs for adolescents, such as one study aimed at piloting an intervention based on Joiner's (2005, 2009) interpersonal psychological theory of suicide, focusing solely on the factor of perceived burdensomeness (Hill & Pettit, 2016). Much like Hill and Pettit's (2016) study targeted at reducing perceived burdensomeness, our findings have the capability to inform research and clinically based actions aimed at preventing social isolation by increasing focus on school connectedness. It could be that future prevention and intervention models could include a specific focus on infusing school connectedness in their work with all adolescents in general and Black American adolescents in particular. Toward this end, future research would need to test and evaluate the benefits, efficacy, and effectiveness of including school connectedness in prevention and interventions trials.

In translating the findings to current practice, schools can integrate ways to promote connectedness, such as through the use of peer mentoring programs or by offering a wide array of clubs and activities for students in which they may participate and in which they may develop relationships. King (2001) suggested that another way to enhance school connectedness is by instillation of pride of the physical appearance of the school. For example, showing satisfaction in students' work by displaying it, utilizing inspiring messages as part of the décor, and simply maintaining the cleanliness of a school can contribute to an overall message that the students are cared about and viewed as worthy (see King, 2001). In addition, it is critical—in both research and practice—to consider culturally tailoring such preventive programs and interventions. Since this study highlighted the intersectionality of many parts of one's cultural identity, taking into account financial burdens, cultural background, and socialization would be helpful. Small changes like this have the power to lead to larger scale changes, whether the focus is directed toward decreasing perceived burdensomeness, increasing feelings of belonging, or, ultimately, and urgently decreasing suicide ideations and attempts.

### Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Informed Consent** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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