Published in final edited form as:

J Adolesc. 2015 October ; 44: 168–181. doi:10.1016/j.adolescence.2015.07.007.

School and Peer Influences on the Academic Outcomes of African American Adolescents

Sheretta T. Butler-Barnes, PhD,

George Warren Brown School of Social Work, Washington University in St. Louis, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130

Lorena Estrada-Martinez, PhD, MPH,

College of Public and Community Service, University of Massachusetts Boston, 100 Morrissey Blvd. Boston, MA 02125

Rosa J. Colin, MSW, and

George Warren Brown School of Social Work, Washington University in St. Louis, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130

Brittini D. Jones, BA

Department of Education, Washington University in St. Louis, One Brookings Drive, Campus Box 1183, St. Louis, MO 63130

Sheretta T. Butler-Barnes: sbarnes@brownschool.wustl.edu; Lorena Estrada-Martinez: lorena.estrada@umb.edu; Rosa J. Colin: colin@wustl.edu; Brittini D. Jones: jones.brittini.d@wustl.edu

Abstract

Little scholarship explores how adolescents' beliefs about school and peers influence the academic outcomes of African American boys and girls. The sample included 612 African American boys ($N=307$, $M_{age}=16.84$) and girls ($N=305$, $M_{age}=16.79$). Latent class analysis (LCA) revealed unique patterns for African American boys and girls. Findings indicate that for African American boys, school attachment was protective, despite having peers who endorsed negative achievement values. Furthermore, socio-economic (SES) status was associated with higher grade point averages (GPA) for African American girls. Overall, these findings underscore the unique role of school, peer, and gendered experiences in lives of African American adolescents.

Introduction

A substantial proportion of adolescents' time is spent with peers and in school settings (e.g., Juster, Ono, and Stafford, 2004; Larson, 2001). These *social influences* impact the academic outcomes of adolescents. Adolescent peers have been characterized as both promoting pro-achievement or anti-achievement values and behaviors (e.g., Eamon & Altshuler, 2004; Gutman, Sameroff, & Eccles, 2002; Shin, Daly, & Vera, 2007; Steward & Suldo, 2011). In

Correspondence to: Sheretta T. Butler-Barnes, sbarnes@brownschool.wustl.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

addition to the importance of adolescent peers in shaping academic outcomes, we also turn our attention to adolescents' feelings about school and how these feelings shape achievement motivational beliefs and academic grade performance. More specifically, adolescents' feelings and attitudes about their school impacts academic outcomes. For instance, school attachment plays a pivotal role in the academic success of adolescents (e.g., Anderman, 2003; Libbey, 2004; Stewart, 2007; Van Ryzin, Gravely, & Roseth, 2009). Thus, academic outcomes are influenced by adolescents' social influences, serving as school and peer resources (e.g., Goodenow & Grady, 1993; Lynch, Lerner, & Leventhal, 2013; Mariano, Going, Schrock, & Sweeting, 2011). However, there is a dearth of research to date that explores how school and peers influence the achievement motivational beliefs and academic grade performance of African American adolescents. It is also less clear how adolescent peers achievement-related behavior and attachment to school vary by gender, particularly for African American boys and girls. Thus, the focus in the present research is to identify adolescent peers achievement values and attitudes about school among a socioeconomically diverse sample of African American boys and girls.

Attachment to School

School belongingness is important for adolescents' achievement motivational beliefs (e.g., Anderman, 2003; Libbey, 2004; Stewart, 2007; Van Ryzin et al., 2009). Adolescents' school belongingness serves as an important source of motivation, as adolescents spend the majority of their time in the school setting from kindergarten to 12th grade (e.g., Juster et al., 2004; Larson, 2001), spending approximately 6 to 8 hours of their time in a school setting (Juster et al., 2004). Overall, adolescents' beliefs and connections to their school can serve as a promoting and/or inhibitory environment that may impact adolescents' attitude achievement beliefs (e.g. Garcia-Coll et al. 1996). Nichols (2008) found that school belonging, as described by middle school adolescents, varied based on the importance of peer relationships and the access to educational-oriented opportunities (e.g., academic). Nasir et al. (2011) also found that institutional connection (e.g., *How often do you go to all of your classes?*) was associated with higher academic achievement. Bryan and colleagues (2012) found that students who were less attached to school had lower academic achievement. Johnson, Crosnoe, and Elder (2001) explored the impact of race-ethnicity on school attachment and found that in comparison to White and Latina/o adolescents, African Americans were significantly less attached to school, but more likely to report higher engagement (e.g., going to class, paying attention, and doing homework). In addition, the operationalization of school attachment ranges from interpersonal attachment (*how comfortable are you with talking to teachers at this school about your problems*); institutional attachment (*how often do you go to your classes*); and attachment based on the level of support from teachers, staff, and/or peers (*academic and/or personal support*). In the present study, we are exploring school attachment as a form of institutional attachment.

Peers as a Resource or Risk

Peers are increasingly important in the lives of adolescents (e.g., Berkel et al., 2009; Lehman, 2012; Li & Wright, 2014). Adolescents are also likely to seek peers with attitudes and behaviors similar and different from themselves (Kupersmidt et. al. 1995). Peer interactions vary in terms of the quality of friendships (e.g., Hamm, Lambert, Farmer, &

Agger, 2013; Jones, Irvin, & Kibe, 2012; Lynch et al., 2013; Somers et al., 2008), with adolescents engaging with peers who offer positive support (e.g., support for academics) and negative support (e.g., skipping school) impacting academic and psychosocial outcomes of adolescents (e.g., Fuligni, Eccles, Barber, & Clements, 2001; Gutman, Sameroff, & Eccles, 2002; Hogan et al., 2010; Rankin & Quane, 2002; Shin, Daly, & Vera, 2007; Steward & Suldo, 2011). Van Ryzin et al. (2009) found that peer-related belongingness (e.g., “*in school, other students care about how much I learn*”) was associated with hopefulness towards goals and engagement among rural adolescents. Wentzel, Battle, Russell and Looney (2010) found that peer expectations for academic engagement (e.g., “*my classmates try to make the class interesting*”) were associated with higher interest in class across racial groups.

Despite these findings, the research literature has examined the quality (i.e. negative or positive) of adolescent peer support for academic achievement as mutually exclusive (e.g., Benhorin & McMahon, 2008; Stoddard, Zimmerman, & Bauermeister, 2012; Wang & Eccles, 2012). In both cases, research suggests that positive peer support is associated with positive outcomes (e.g., Carter & Forsyth, 2010; Rice, Barth, Guadagno, Smith, & McCallum, 2013; Ryabov, 2011; Wilson, Karimpour, & Rodkin, 2011), and negative peer support is associated with negative outcomes (e.g., Bellmore, Chen, & Rischall, 2013; Bettencourt & Farrell, 2013; Foney & Cunningham, 2002; Young, Rebellon, Barnes, & Weerman, 2014). However, adolescents’ quality of peer relationships is complex with some having a combination of peers with both negative and positive achievement values. This leads to ambiguity in understanding the diversity of adolescent peers attitudes and behaviors, specifically toward school. The notion that adolescents have only one set of peer (positive *or* negative) as oppose to both types peers (positive *and* negative) is misleading because it suggest that to be academically successful, adolescents should *only* have peers with pro-social behavior. The research literature has also noted the complexity of the quality of peer attitudes and behaviors among African American adolescents (e.g., Fordham & Ogbu, 1986) and achievement motivational beliefs (e.g., Mickelson, 1990). It is also less clear how adolescent peers attitudes and behaviors vary by gender, particularly for African American boys and girls.

Guiding Framework

The current study draws on Fergus and Zimmerman’s Framework (2005) for understanding how adolescents’ beliefs about school and peers influence their academic outcomes. We suggest that adolescents peer achievement values serve as *resources* (positive achievement values) and as a *risk* (negative achievement values). Therefore, drawing on Fergus and Zimmerman’s (2005) framework, we use the protective model(s) that describes the role of resources and risk factors as follows: *protective-stabilizing*, *protective-reactive*, and the *protective-protective model*. The *protective-stabilizing* model suggests that the relationship between achievement motivational beliefs and academic grade performance will be greater for adolescents with higher levels of school attachment and peers with positive achievement values (resources), despite having peers with negative achievement values (risk). For instance, African American adolescents who report peers as having negative achievement values (risk factor) without having moderate to high levels of school attachment and peers

with positive achievement values (protective resources) may report lower achievement motivational beliefs and academic grade performance. The second model is the *protective-reactive* model that refers to the number of protective factors (i.e. peer positive achievement values & school attachment) that react to the number of negative factors (i.e. peer negative achievement values). For example, adolescents with peers reporting little to no positive achievement values and school attachment and reporting higher amounts of peer negative achievement values may be more likely to report lower achievement motivational beliefs and lower academic grade performance, suggesting that the lack of positive resources would be associated with poorer outcomes. The third model is the *protective-protective* model (Brooks et al. 1986; 1989). The *protective-protective* model suggests that adolescents with higher levels of peers with positive achievement values and school attachment may serve as a compensatory factor, thereby, enhancing the positive impact of achievement motivational beliefs on academic grade performance. Overall, these models assist in understanding the dynamics of social influences in adolescents' lives. In this study, adolescent peers positive achievement values serve as a resource that can promote positive academic outcomes. Adolescents' peers with negative achievement values serve as a risk and may be associated with negative outcomes. School attachment serves as *school resource* that could promote or hinder achievement motivational beliefs. However, it is not clear how adolescents' report of peers with negative attitudes toward school, peers with positive attitudes toward school, and levels of attachment to school would impact African American adolescents' academic performance. Thus, there are no hypotheses about the cluster group membership and the potential direct and indirect effects on achievement motivational beliefs and academic grade performance and how it varies for African American boys and girls (see Figures 1 to 3).

The Current Study

In this research, we explore specific resources and risks that are pertinent in the lives of African American adolescents: school (i.e. school attachment) and peers (i.e. peers achievement values) and academic attitudes and beliefs. The first body of work documents the link between peer and academic achievement outcomes (e.g., Hamm et al., 2013; Jones et al., 2012; Ryabov, 2011; Wilson et al., 2011). The second addresses the importance of school connectedness and achievement beliefs (Anderman, 2003; Libbey, 2004; Van Ryzin et al., 2009; Stewart, 2007) while the third highlights the importance of adolescents' attitudes about academic achievement (e.g., Carter, 2008; Ford & Harris, 1997; Schwartz, Kelly, & Duong, 2013; Somers et al., 2008). Given the importance of social influences and achievement outcomes (e.g., Goodenow & Grady, 1993), it is important that we gain a better understanding of the variation of African American adolescent boys' and girls' school and peer influences. Previous literature indicates the lack of peer support for academic achievement and the notion of "acting white." (Fordham & Ogbu, 1986). Fordham's and Ogbu's (1986) cultural-ecological theory posit that due to the perceived racial barriers in academic and occupational pursuits, African American adolescents and their peers view academic pursuits as futile. Subsequently, they come to devalue academic orientations and behaviors relevant for school success and occupational mobility. However, not all adolescents' responses to schooling and their peers fit within Ogbu's framework (e.g., O'Connor, 1997). We argue that adolescents' experiences are complex, having peers who have positive and negative achievement values that vary.

We also ask to what extent does the influence of school and peer impact African American adolescents' attitudes and beliefs about educational success? Mickelson's (1990) seminal study highlighted the various beliefs of African American adolescents regarding future achievement orientation beliefs as it pertains to endorsing abstract (e.g., *education is the solution to the social problems, in other words is the key to upward mobility*) and/or concrete (e.g., *based on beliefs that endorse experiences that may be pessimistic about educational success*) beliefs. Findings indicated that African American students' beliefs about the personal utility of education (i.e., *abstract beliefs*) most strongly predicted their academic performance. In this study, we sought to examine the (i.e. *protective-stabilizing, protective-reactive, & protective-protective*) patterns of school and peer influences and the impact on achievement motivational beliefs (i.e. abstract beliefs) and academic grade performance. Furthermore, we explored how adolescent school and peer patterns varied by adolescents' gender.

Method

Data from the Maryland Adolescent Development in Context Study (MADICS) conducted by Eccles, Sameroff, and colleagues was utilized. MADICS is a community-based panel study, starting with 1,480 adolescents and their families in adolescents' 7th grade year (61% African American, 35% European American). This sample is unique in several respects: it includes a large proportion of African American families who represent a range of income and family educational levels, which allows for a closer examination of the impacts of family income, educational attainment, and racial group membership on adolescent development. Additionally, another strength of this study is the representative community sample that is drawn from a county that includes several different ecological settings, including low-income, high-risk urban neighborhoods; middle-class, suburban neighborhoods; and rural, farm-based neighborhoods.

Participants

The present study examines the fourth wave of the MADICS data set, when adolescents were in their junior year of high school. The authors used this wave of data because of the inclusion of Mickelson's (1990) Attitude Achievement Paradox Scale. Although the original sample included 1,057 African American and European American families, we focused on the experiences of those who self-identified as African American ($n=612$) and had complete data on the variables of interest in the present study using multiple imputation analyses, for a total of 612 adolescent boys ($n=307$) and girls ($n=305$). We imputed missing data using the estimation maximization algorithm, which replaces missing values with iterative maximum likelihood estimations (Schafer, 1997). Family income was included as a control variable. M_{age} was 16.49 years. Additional detailed information about participants' community and school contexts can be found at the study website: <http://www.rcg.isr.umich.edu/garp>.

Procedure

At Wave IV, the target adolescent was individually interviewed for approximately one hour, after which he or she completed a 45-minute self-administrated questionnaire and a face-to-face interview. As often as possible, the race of the interviewer was matched to the race of

the adolescents' primary caregiver. More specifically, the PI of the project matched the interviewer and the participant based on where the study participant resided, as the community in which the participant lived was highly racially segregated. Adolescents' parent(s) were present in the home during interviewers' visits and youth survey administration. Both parents, if available, completed a self-administered questionnaire and a face-to-face interview. Parents and adolescents were separated during the questionnaire process. For instance, during the face-to-face interview with the adolescent (involving answering questions out loud), parents were sent to another room to fill out the parent self-administered questionnaire. When parents were interviewed, adolescents were sent to another room to complete the self-administered questionnaire. For both data collections, informed consent was obtained from both adolescents and parents.

Measures

Achievement motivational beliefs—Achievement motivational beliefs were measured using Mickelson's (1990) abstract educational attitudes subscale. The scale assessed adolescents' personal views about education and the opportunity structure for Black people like them, or the extent to which adolescents endorsed schooling as a means to personal success. The subscale consisted of seven items, e.g., "*Young Black people like me have a chance of making it if we do well in school,*" and "*Education really pays off in the future for young Black people like me.*" Adolescents answered items on a 5-point scale ranging from 1 (very pessimistic) to a high of 5 (very optimistic). Responses were summed and averaged with higher mean scores indicating higher agreement with achievement motivational beliefs. Cronbach's alpha for the scale was .80.

School attachment—School attachment was measured using a scale created by Eccles, Midgley, Buchanan, Wigfield, Rueman, and Maclver (1993), which assessed institutional attachment. The scale ranged from 1 (not an important reason) to 7 (a very important reason) and consisted of three items ("*I go to school because I enjoy my classes,*" "*I go to school because I like what I'm learning,*" and "*I go to school because it makes me feel smart*"). Responses were summed and averaged with higher mean scores indicating agreement with higher institutional attachment. Cronbach's alpha for the scale was .83.

Peer negative achievement values—The peer negative attitudes toward school scale created by Eccles et al. (1993) was used to assess level of exposure to peers who had negative attitudes toward school. The scale ranged from 1 (none of them) to 5 (all of them) and consisted of three items. Adolescents were asked, "*How many of the friends that you spend most of your time with think teachers don't respect them,*" and "*How many of the friends that you spend most of your time with think being popular with friends is more important than getting A's in school.*" Responses were summed and averaged with higher mean scores indicating agreement with higher peer negative attitudes toward school. Cronbach's alpha for the scale was .72.

Peer positive achievement values—The peer positive attitudes toward school scale created by Eccles et al. (1993) was used to assess level of exposure to peers who had positive attitudes toward school. The scale ranged from 1 (none of them) to 5 (all of them)

and consisted of two items. Adolescents were asked, “*How many of the friends that you spend most of your time with do well in school,*” and “*How many of the friends that you spend most of your time with think it is important to do well in school.*” Responses were summed and averaged with higher mean scores indicating agreement with higher peer positive attitudes toward school. Cronbach’s alpha for the scale was .79.

Academic grade performance—Adolescents’ self-reported grade point average (GPA) reflected their performances (based on school records) across core academic subjects (e.g., English, math, science, and social studies) from school records, with possible scores ranging from 0 to 4.0.

Family Income—Family income ranged from 1 = Less than \$5,000 to 25=More than \$200,000 and was asked yearly.

Results

Descriptive and Correlational Analyses

Descriptive statistics were presented separately by gender. Generally, for African American adolescent boys ($M_{\text{age}}=16.84$) the mean grade point average (GPA) was 2.25 on a 4.0 scale, which is equivalent to a C average. Boys also reported moderate levels of school attachment ($M=4.36$, $SD=1.47$), peer positive attitudes toward school ($M=3.15$, $SD=.39$), and achievement motivational beliefs ($M=3.80$, $SD=.68$). However, boys reported low to moderate levels of perceiving their peers as endorsing a negative attitude toward school ($M=2.25$, $SD=.81$). Family income on average was between \$60,000 to \$64,999 per year. Correlational analyses indicated that GPA was significantly positively associated with achievement motivational beliefs ($r=.32$, $p<.01$), school attachment ($r=.28$, $p<.01$), and peer positive attitudes toward school ($r=.19$, $p<.01$). Achievement motivational beliefs were also significantly positively related to peer positive attitudes toward school ($r=.26$, $p<.01$) and school attachment ($r=.28$, $p<.01$). Achievement motivational beliefs were also significantly negatively associated with peer negative attitudes toward school ($r=-.19$, $p<.01$) (see Table 1).

African American girls—African American adolescent girls’ ($M_{\text{age}}=16.79$) mean grade point average (GPA) was 2.55 on a 4.0 scale, which is equivalent to a C average. Girls also reported moderate to high levels of school attachment ($M=4.64$, $SD=1.53$), peer positive attitudes toward school ($M=3.64$, $SD=.80$), and achievement motivational beliefs ($M=3.95$, $SD=.59$). However, girls reported lower levels of perceiving their peers as endorsing a negative attitude toward school ($M=1.96$, $SD=.67$). The median family income for African American girls is between \$55,000 to \$59,999 per year. Correlational analyses indicated that GPA was significantly positively associated with achievement motivational beliefs ($r=.19$, $p<.01$), school attachment ($r=.13$, $p<.05$), peers with positive achievement values ($r=.13$, $p<.05$). Family income was also significantly positively associated with peer positive attitudes toward school ($r=.12$, $p<.05$) and GPA ($r=.17$, $p<.01$). Achievement motivational beliefs were also significantly positively related to school attachment ($r=.38$, $p<.01$). Achievement

motivational beliefs were also significantly negatively associated with peer negative attitudes toward school ($r=-.19, p<.01$) (see Table 1).

African American Adolescents' Perceived Peer Profile

Latent class analysis (LCA) was implemented using *Latent Gold 4.5* (Magidson & Vermunt, 2004) and was utilized to identify clusters based on African American boys and girls school and peer influences. LCA allows identification of mutually exclusive classes by using robust maximum likelihood estimation such as Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC). However, the most widely used statistical approach utilizes the likelihood ratio chi-squared statistic, L^2 . The initial step in the selection of cluster profiles involves statistical criteria used to explore the baseline model in which L^2 is the total association among the variables. To determine model fit, the baseline model is compared to the alternative model, in which a decrease in L^2 is indicative of the total association explained. L^2 is used in conjunction with other statistical fit indices such as BIC, in which a lower BIC and a reduction in L^2 are preferable (Langeheine, Pannekoek, & Van de Pol, 1996; Magidson & Vermunt, 2004).

Six cluster models were specified to examine the model with the best fit to the data for African American boys and girls separately. Table 2 summarizes the empirical fit of the models for boys and girls. The criteria used to determine the best cluster fit is a lower BIC (LL), a reduction in L^2 , and a non-significant p-value. Additionally, the bivariate residual (BVR) determines the dependence among latent values. Values greater than 1 suggest that the model fails to account for the pairwise associations with the three indicators (e.g. *school attachment, peer positive achievement values, and peer negative achievement values*).

African American Boys Profile—Model 1 exhibited a poor model fit as indicated by a high BIC (LL) 3491.74, L^2 of 365.05, and a significant p-value ($p=.00$). The second model was a poor model with a BIC (LL) of 3476.21, L^2 of 326.61 and a significant p-value of ($p=.04$). Model 3 had a higher BIC (LL) 3490.91, L^2 of 318.41 than Model 2, and a non-significant p-value ($p=.06$), indicating a poor model fit. Model 4 had a BIC (LL) of 3502.20, L^2 of 306.79 and a non-significant p-value of ($p=.11$). However, models 5 had a higher BIC (LL) of 3512.66, L^2 of 294.35 and indicated an adequate fit with a non-significant p-value ($p=.18$) and model 6 indicated an adequate fit as indicated by the BIC (LL) of 3526.07, L^2 of 284.84 and a non-significant p-value of ($p=.24$). Models 1 through 4 were excluded from the analyses because of the high BIC (LL) and the high L^2 . (see Table 2). As a result, from the six models we chose models 5 and model 6 because of the lower L^2 values and the non-significant model fit in comparison to models 1, 2, 3, and 4. Selecting the latent class cluster best fit is accomplished by the following: 1) likelihood ratio chi-squared test (L^2), where L^2 is the total association among the indicators, 2) The baseline model (is one class) comparison with latent class clusters of >2 are the alternative models, 3) the reduction across the indicator variables is the total association by the number of explained proposed classes, and 4) the L^2 statistic is used in conjunction with the BIC which assesses the parsimonious and the model fit. The model with the lowest L^2 is preferred.

Thus, the five and six-cluster models were compared to assess the model improvement using a conditional bootstrap method. The conditional bootstrap method is used to test for a significant improvement when increasing the number of clusters. In our case, we are determining if the five-cluster model statistically provides a better fit than the six-cluster model. The results indicated that the 6-cluster model did not provide a significant improvement over the 5-cluster model ($p = .14$). Thus, the five-cluster group was our final cluster solution as the fit indices were appropriate. This was indicated by the reduction in L^2 from models 1 to 4, respectively, and the non-significant p-value ($p=.18$). Additionally, adding the bivariate residual (BVR) statistic to test the local dependencies explains the relationship that cannot be adequately explained by the model. A BVR statistic that is larger than 1 indicates that the model is not adequate. Model 5 had BVRs of .02, .04, and .35, which was less than 1 and provided a significant improvement over models 1, 2, 3, 4, and 6 (see Figure 4).

The raw and standardized means of the school and peer influences were used to describe and label the five clusters. Overall, cluster 1 was labeled low peers ($N=109$, 37% of sample). This cluster was characterized by African American boys' reporting low amounts of having peers with achievement values (i.e., peer negative and positive attitudes toward school). Cluster 2 was labeled the negative values group ($N=64$, 20% of sample). African American boys reporting higher levels of peers with negative achievement values characterized this cluster. Cluster 3 was labeled school attachment ($N=76$, 25% of sample). Boys in this group had higher school attachment and peers with positive achievement values. Cluster 4 was labeled at-risk ($N=32$, 10% of sample). African American boys in this group had little to no resources or risk and less school attachment in comparison to the other groups. Lastly, cluster 5 was labeled as school attachment and negative peer values ($N=26$, 8% of sample). Adolescent boys in this group reported on average higher amounts of peers with school attachment and negative peers. Cluster group membership using two binary coded dummy variables was utilized. Boys in the low group were set as the reference level (coded as 0) because majority of the boys were in this cluster. Additionally, there were no significant differences between the cluster groups and reported family income, $\chi^2(1, n=307) = 201.13$, $p>.05$, achievement motivational beliefs, $\chi^2(1, n=307) = 315.13$, $p>.05$, and GPA, $\chi^2(1, n=307) = 312.41$, $p>.05$.

African American Girls Profile—Model 1 exhibited a poor model fit as indicated by a high BIC (LL) 3455.41, L^2 of 360.25, and a significant p-value ($p=.00$). However, models 2 through 6 had adequate model fits. As a result, several conditional bootstrap reference models were conducted to determine the best fitting model. Model 6 was compared to Model 5 to determine if model 6 (source model) provided a significant improvement over the 5-class model. The p-value was non-significant, indicating that model 6 was not a better fit in comparison to model 5. Similar conditional bootstrap methods were conducted comparing the following models consecutively: 6 vs. 4, 6 vs. 3, 6 vs. 2, 6 vs. 1, 5 vs. 4, 5 vs. 3, 5 vs. 2, 5 vs. 1, 4 vs. 3, etc. The final cluster model that was selected was the 4-cluster model. Thus, the 4-cluster model was compared to the 3, 2, and 1-cluster models. The findings indicated that the 4-cluster model was a significant improvement and provided the best fit with a BIC (LL) of 3434.87, L^2 of 271.06, and a non-significant p-value of ($p=.55$).

Model 4 had BVRs that ranged from .03 to .40, which is less than 1 (see Table 2 and Figure 5).

Overall, cluster 1 was labeled low achievement values ($N=193$, 63% of sample). This cluster was characterized by African American girls' reporting low amounts of negative achievement values (i.e., peer negative and positive attitudes toward school) and school attachment. Cluster 2 was labeled as peers with negative achievement values group ($N=72$, 24% of sample). This cluster was characterized by African American girls' reporting average levels of peers with negative achievement values. Cluster three was labeled school attachment and positive peers ($N=27$, 9% of sample). Girls in this group reported higher levels of school attachment and peers with positive achievement values. Cluster 4 was labeled as the school attachment group ($N=13$, 4% of the sample). Girls in this group reported higher levels of school attachment. Additionally, there were no significant differences between the cluster groups and reported family income, $\chi^2(1, n=305) = 129.82$, $p > .05$ and GPA, $\chi^2(1, n=305) = 188.56$, $p > .05$. However, there were significant differences between the cluster groups on achievement motivational beliefs, $\chi^2(1, n=305) = 270.17$, $p < .01$. Post hoc test comparisons using Bonferroni test indicated that the mean achievement motivational beliefs level in the low group ($M=4.02$, $SD=.54$) was higher than the girls in the negative group ($M=3.61$, $SD=.61$). Findings also indicated that African American girls in the negative group ($M=3.61$, $SD=.61$) had significantly lower achievement motivational beliefs in comparison to those in the low ($M=4.02$, $SD=.54$) and positive peer group ($M=4.19$, $SD=.62$), and the school attachment group ($M=4.21$, $SD=.59$). There were also significant group mean differences between girls in the school attachment and positive peers group ($M=4.19$, $SD=.62$) and the negative group ($M=3.61$, $SD=.62$). Lastly, there were significant mean differences for those in the school attachment ($M=4.21$, $SD=.44$) and the negative group ($M=3.61$, $SD=.62$).

Peers, School Attachment, & Achievement Motivational Beliefs

African American boys—Hierarchical regression analyses were conducted in which adolescents' grade point average was regressed on family income, achievement motivational beliefs and the five-cluster solution (i.e., *Low*, *Negative*, *School Attachment*, *At-Risk*, and *School Attachment and Negative Peers*). Table 3 summarizes results from the analyses. In each model, family income were entered in block 1, achievement motivational beliefs was entered in block 2, cluster group membership was entered in block 3, and cluster group memberships X achievement motivational beliefs interaction were entered in block 4. As recommended by Aiken and West (1991) when testing interaction effects, variables were centered prior to entering into regression models. Cluster group membership using two binary coded dummy variables was utilized. Adolescents in the low achievement values group was set as the reference level (coded as 0) against which all other clusters were compared (negative vs. low, school attachment vs. low, at-risk vs. low, and school attachment and negative peers vs. low). The final academic performance model was statistically significant $F(10, 296) = 7.43$, $p = .001$. In block 1, family income was not significantly associated with GPA. In step 2, achievement motivational beliefs ($\beta = .32$, $p < .001$) were positively significantly associated with African American boys reporting higher GPA's. In step 3, there was a significant negative association between the negative vs. low

cluster group and GPA ($\beta = -.18, p < .010$), with African American boys in the negative group reporting lower GPA in comparison to those in the low group. There was also a negative association for at-risk vs. the low group ($\beta = -.14, p < .05$), indicating that African American boys in the at-risk group reported a lower GPA in comparison to those in the low group. A significant direct effect for school attachment and the negative peer group vs. the low group ($\beta = .11, p < .05$), with African American boys in the school attachment and the negative peer group reporting higher GPA's in comparison to those in the low group. At step 4, there was a significant negative interaction effect for the school attachment/negative peer group by achievement motivational beliefs (e.g., low group is the reference). The findings suggest that for African American boys in the low group, under conditions where achievement motivational beliefs were low, they reported a lower GPA (see Table 3 and Figure 6). Figure 6 was graphed using Modgraph software (Jose, 2013).

African American girls—Adolescent girls' grade point average was regressed on family income, achievement motivational beliefs and the four-cluster solution (i.e., *Low, Negative, School Attachment & Positive Peers, and School Attachment*). Table 4 summarizes results from the analyses. In each model, family income were entered in block 1, achievement motivational beliefs was entered in block 2, cluster group membership was entered in block 3, and cluster group memberships X achievement motivational beliefs interaction were entered in block 4. Cluster group membership using two binary coded dummy variables was utilized. The low achievement values group was set as the reference level (coded as 0) against which all other clusters were compared (*negative vs. low, school attachment & positive peers vs. low, and school attachment vs. low*). The final academic performance model was statistically significant $F(8, 296) = 3.70, p = .001$. In step 1, family income was significantly associated with GPA ($\beta = .17, p < .05$). In step 2, achievement motivational beliefs ($\beta = .20, p < .01$) were positively significantly associated with African American girls' reporting higher GPA's. In step 3, there was a significant negative direct effect for African American girls in the negative vs. the low group, indicating that girls in the negative group reported a lower GPA in comparison to girls in the low group. Lastly, family income was the only significant predictor in step 4.

Discussion

In this study, we explored the role of school and peer influences on achievement motivational beliefs and academic grade performance. Overall, there were five unique clusters for African American boys: *Low, Negative, School Attachment, At-Risk, and School Attachment and Negative Peers*. For African American girls there were four unique clusters: *Low, Negative, School Attachment and Positive Peers, and School Attachment*. African American boys and girls similarities on cluster group memberships are that they both have low, negative, and school attachment clusters. The differences and similarities in the cluster group between African American boys and girls highlight the unique ways that peers and attachment to school impact academic outcomes and the important role of gender.

African American Boys

African American boys and girls vary in reported school and perceived peer achievement values. The difference for African American boys varies by having peers with school attachment and negative achievement values and at-risk (lack of school and peers) categories. The first set of findings indicated that African American boys in the negative and at-risk cluster group had lower levels of GPA in comparison to those in the low cluster group with boys, indicating a 1.73 and 1.77 on a 4.0 GPA scale, respectively. Additionally, those in negative and at-risk clusters had similar levels of unit decrease in GPA. In comparison, African American boys in the low cluster group had a GPA of 2.35. Furthermore, boys in the negative cluster group have higher amounts of negative peers and those in the at-risk group have low to no peers with values and school attachment, appearing to be isolated. So in the case of peer values and school attachment, having peers who endorse negative achievement values is detrimental to academic success. This finding also supports the *protective-reactive* model in that the negative cluster was comprised of boys reporting peers with little to no positive achievement values and school attachment but reporting moderate to high levels of negative peers resulting in lower GPA's. In comparison to the low group, they have approximately equal number of peers with positive and negative achievement values. The differences in these groups are the fact that boys in the low group have a similar amount of peers in the positive and negative group with little to no amounts of attachment to school. Thus, it appears that a balance of peers with positive and negative achievement values is more beneficial for Black boys in this sample as oppose to having negative peers and being isolated. There was also a significant negative interaction effect for the school attachment and negative peers by achievement beliefs. The school attachment and negative peers group had a higher amount of perceived peers with negative achievement values, but who also reported positive peers with achievement values, with a slightly higher amount of school attachment, relative to other groups. This group had the higher GPA (2.72) relative to the other groups, despite having a higher amount of peers with perceived negative achievement values. Comparing the negative and the school attachment and negative peer cluster groups, we speculate that despite both groups having peers with negative attitudes toward school, those with higher levels of school attachment felt a strong connection with school that reduced the negative impact of having peers with negative attitudes about school. In this case, school belongingness is protective for African American boys. Additionally, the significant interaction revealed differences between African American boys in the school attachment and negative peers and the low group, such that those not in the school attachment and negative peer groups had significantly lower GPA's when they report lower levels of achievement motivational beliefs in comparison to those in the school attachment and negative peer group. Yet, under conditions of high achievement motivational beliefs for all groups, cluster membership does not matter underscoring the importance of Black boys holding higher achievement motivational beliefs. These findings provide support for Fergus and Zimmerman's (2005) *protective-stabilizing* model. For instance, the *protective-stabilizing* model suggests that the relationship between achievement motivational beliefs and academic grade performance would be greater for adolescents with high levels of school attachment and peers with positive attitudes toward school, despite having peers with negative attitudes toward school.

Another unique group in the findings was the at-risk group, which was not present for African American girls. The at-risk group reported little to no school and peer achievement values and low attachment to school. Because this group reported the lowest GPA, this is cause for concern and suggests additional research examining the unique stage of adolescence, loneliness, and isolation for some youth. In addition to feeling isolated, adolescents may also be more likely to experience psychological distress and suicidal thoughts (Bearman & Moody, 2004; Erickson, 1959; Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007; Newman, Holden, & Delville, 2005). For instance, Hall-Lande et al. (2007) found that adolescents who felt socially isolated were more likely to report depressive symptomatology. These findings require some longitudinal investigations about the experiences of African American boys within the school setting (e.g., school connectedness and school climate). It is also particularly important to explore adolescence within the framework of the major developmental milestones that adolescents face and to understand the impact on other developmental competencies (e.g., self-efficacy and psychological well-being). Also, in comparison to African American girls, boys' academic outcomes were contingent upon their abstract views about the utility of education (e.g., young Black people like me have a chance of making it if we do well in school). In other words, African American boys with higher achievement motivational beliefs, despite being in the school attachment and negative and the low group had higher internalized views of self around their achievement motivational beliefs. Lastly, the school attachment and the school attachment and negative peers groups reported the highest GPA's, 2.72 and 2.57, respectively.

Overall, our findings contribute to the work on dispelling the myth that African American peers cannot be supportive. In fact, our findings indicate that African American boys can have both types of peers and do academically well, despite having peers with negative attitudes toward school. School attachment, in this case, is particularly important. Our findings contribute to this work, but also highlight the complexity of adolescent peers attitudes and behaviors toward school. The findings also in some ways explain the gender differences reported in earlier studies about peer relationships. For instance, Ross and Rudolph (2006) found that adolescent boys are more likely to conform to peer relationships whether it is positive or negative due to status and/or competition. However, this idea of status or competition may be associated with school attachment, and in some ways academic success. It could be the case that status and competition not only extends to sports, but to academic success for African American boys. For instance, in what ways do status and competition relate to achievement motivational beliefs of African American boys? In what ways do status and competition mediate the relationship between school attachment and academic outcomes for African American boys? Future research is warranted to further understand the roles of school attachment and academic outcomes for African American boys.

African American Girls

The cluster group membership for African American girls differed from African American boys. The LCA resulted in a 4-cluster solution: low, negative, school attachment and positive peers, and school attachment. The findings revealed no significant direct or

interaction effects for girls. The variable that was associated with higher GPA's was family income. In other words, the higher the income the higher the GPA. These findings corroborate previous research findings of the impact of socioeconomic status on academic performance, in that students coming from higher socio-economic (SES) backgrounds have higher academic outcomes (e.g., Bumgarner & Brooks-Gunn, 2013). However, caution must be taken when interpreting this finding. SES should not only be assessed by parents' reported income but other reports such as parents' occupation, and access to resources (e.g., education and extracurricular activities). It could be the case that in our study, family income has a lot to do with access to resources (e.g., tutoring) that support academic success. Future research should consider the measurement of SES to provide a more cohesive understanding of the way in which access to resources for African American girls mediates and/or moderates the relationship between peer relationships and academic achievement outcomes. Unlike African American boys, girls' achievement beliefs were important, but including the direct and the indirect effects, family income was the only significant predictor. In addition, similar to African American boys school attachment, it is important for African American girls as well. Both groups; school attachment and positive peers and school attachment had the highest GPA's, 2.43 and 2.87, respectively. Future research needs to explore additional personal assets in the lives of African American girls. These findings also contribute to the dearth of research on the experiences of African American girls (e.g., Larke, Webb-Hasan, & Young, in press). These gender differences in the importance of school attachment and achievement motivational beliefs merit further exploration to understand the unique lived experiences of African American boys and African American girls.

These findings highlight and contribute to the literature in supporting the notion that African American adolescents, similar to their non-Black counterparts, have supportive peers who promote academic success. Additionally, the largest percentage of African American boys and girls with peers fell into the low cluster group. For instance, 37% of the sample was in the low group and 63% of the sample for boys and girls, respectively. It's important to understand why majority of the youth in this sample fell into the low categories. We speculate that it may be due to the climate of the school. The context in which youth spend their time could provide some understanding of the larger environment and the implications on academic success.

Also, we highlight that adolescents have various types of peers who deviate from the dominant narrative (positive vs. negative peers) to a mixture of both types of peers and how it varies by gender. Our findings underscore the important role of school attachment, especially for African American boys. These findings also highlight the potential risk for African American boys (i.e., At-Risk group) and corroborate previous literature underscoring the unique experiences of African American boys (e.g., *The 2010 Schott 50 State Report on Public Education and Black Males*), in addition to the unique experiences of African American girls (e.g., Belgrave, 2009; *Unlocking Opportunity for African American Girls*, 2014).

Overall, the protective-reactive and the protective-stabilizing model were supported for African American boys. For African American boys having peers with negative

achievement values with little to no positive resources is associated with lower GPA's (protective-reactive). However, African American boys who report having peers with negative achievement values and who report moderate levels of school attachment and peers with positive achievement values report higher GPA's supporting the protective-stabilizing model. Yet, none of the risk and resilience models were found for African American girls. These findings underscore the importance of utilizing cluster analytic techniques in observing similarities and differences. African Americans are not monolith and are quite diverse in their educational experiences. This is especially the case with gendered experiences. Thus, we encourage research to continue to understand adolescent boys and girls various support systems in achieving academic success.

Study Limitations and Considerations

Despite the strengths of the current study, there are several limitations that should be noted. Overall, this study contributes to the dearth of research literature on African American adolescents' school and adolescent peer achievement values by gender. First, we explored adolescents' peers with positive and negative attitudes toward school and these were *perceptions* on how adolescents viewed their peers. There is variation in the quality of peers and various ways of measurement (socio-metric peer ratings) that contributes to the way in which we understand adolescents' experiences. Adolescents' perception should not be the only source (e.g., observations, social network centrality, see Gest, Graham-Bermann, & Hartup, 2001). Utilizing various methods can reduce source bias. Second, the data were cross-sectional and the perceived peer negative value subscale had two items, which limits our understanding and ability to draw inferences about the causal directions of the relationships found in the current study. Additionally, use of two item scales presents a source of measurement error. Thus, using a variety of methods in understanding the dynamics of peer relationships over time will contribute to the dearth of research in understanding the educational success among African American boys and girls. Third, there was no differentiation between acquaintances vs. friends. Adolescents may have peers who are not supportive of school success, but these peers may be considered as acquaintances within the school context. Lastly, we also did not examine the school climate, which may have provided information that could explain the cluster group membership. This will aid in our understanding of the complexity and the important role of school and peer resources.

Conclusions/Implications

In summary, the findings of the current study suggest that social influences impact the academic outcomes of African American girls and boys differently. Our findings suggest that having a connection to school matters and personal assets (e.g., achievement motivational beliefs) are particularly important for African American boys. Additional work is needed to further understand the unique role of adolescent assets, resources, and risks in promoting healthy developmental outcomes. Future research is needed to explore additional personal (e.g., self-efficacy), cultural (e.g., racial pride), and resources (e.g., parents and teachers). By understanding the role of additional assets, resources, and risks will significantly contribute to the fields of education and psychology in identifying factors that

can deter school dropout and promote academic success among African American boys and girls.

Acknowledgments

The data reported in this manuscript come from The Maryland Adolescent Development in Context Study (MADICS) that was funded to Jacquelynne S. Eccles and Arnold J. Sameroff from the Mac Arthur Foundation Research Network on Successful Adolescent Development in High Risk Settings and the National Institute for Child Health and Human Development (NICHD).

References

- Aiken LS, West SG. Multiple regression: Testing and interpreting interactions. 1991:46–54.
- Anderman LH. Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *The Journal of Experimental Education*. 2003; 72(1):5–22.
- Bearman PS, Moody J. Suicide and friendships among American adolescents. *American Journal of Public Health*. 2004; 94(1):89–95. [PubMed: 14713704]
- Belgrave, FZ. *African American Girls*. Springer; 2009.
- Bellmore A, Chen W, Rischall E. The reasons behind early adolescents' responses to peer victimization. *Journal of Youth and Adolescence*. 2013; 42:275–284. [PubMed: 23014851]
- Benhorin S, McMahon SD. Exposure to violence and aggression: protective roles of social support among urban African American youth. *Journal of Community Psychology*. 2008; 36:723–743.
- Berkel C, Murry VM, Hurt TR, Chen Y, Brody GH, Simons RL, Cutrona C, Gibbons FX. It takes a village: Protecting rural African American youth in the context of racism. *Journal of Youth and Adolescence*. 2009; 38:175–188. [PubMed: 19636716]
- Bettencourt AF, Farrell AD. Individual and contextual factors associated with patterns of aggression and peer victimization during middle school. *Journal of Youth and Adolescence*. 2013; 42:285–302. [PubMed: 23160659]
- Brooks JS, Gordon AS, Whiteman M, Cohen P. Dynamics of childhood and adolescent personality traits and adolescent drug use. *Developmental Psychology*. 1986; 22:403–414.
- Brooks JA, Whiteman M, Gordon AA, Cohen P. Changes in drug involvement: A longitudinal study of childhood and adolescent determinants. *Psychological Reports*. 1989; 65(3):707–726. [PubMed: 2608826]
- Bryan J, Moore-Thomas C, Gaenzle S, Kim J, Lin CH, Na G. The effects of school bonding on high school seniors' academic achievement. *Journal of Counseling & Development*. 2012; 90(4):467–480.
- Bumgarner E, Brooks-Gunn JEANNE. Socioeconomic status and student achievement. *International guide to student achievement*. 2013:92–94.
- Carter D. Achievement as resistance: The development of a critical race achievement ideology among Black achievers. *Harvard Educational Review*. 2008; 78(3):466–497.
- Carter RT, Forsyth J. Reactions to racial discrimination: Emotional stress and help-seeking behaviors. *Psychological Trauma: Theory, Research, Practice, and Policy*. 2010; 2:183–191.
- Eamon MK, Altshuler SJ. Can we predict disruptive school behavior? *Children & Schools*. 2004; 26:23–37.
- Eccles J, Midgley C, Buchanan C, Wigfield A, Reuman D, MacIver D. Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and families. *American Psychologist*. 1993; 48:90–101. [PubMed: 8442578]
- Erikson EH. Identity and the life cycle: Selected papers. *Psychological issues*. 1959
- Fergus S, Zimmerman MA. Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health*. 2005; 26:399–419.
- Foney DM, Cunningham M. Why do good kids do bad things? Considering multiple contexts in the study of antisocial fighting behaviors in African American urban youth. *Journal of Negro Education*. 2002; 71:143–157.

- Ford DY, Harris JJ III. A study of the racial identity and achievement of Black males and females. *Roeper Review*. 1997; 20:105–110.
- Fordham S, Ogbu JU. Black students' school success: Coping with the "burden of acting White. *Urban Review*. 1986; 18:176–206.
- Fuligni AJ, Eccles JS, Barber BL, Clements P. Early adolescent peer orientation and adjustment during high school. *Developmental Psychology*. 2001; 37:28–36. [PubMed: 11206430]
- García-Coll CT, Lamberty G, Jenkins R, McAdoo HP, Crnic K, Wasik BH, Vazquez García H. An integrative model for the study of developmental competencies in minority children. *Child Development*. 1996; 67(5):1891–1914. [PubMed: 9022222]
- Gest SD, Graham-Bermann SA, Hartup WW. Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status. *Social development*. 2001; 10(1):23–40.
- Goodenow C, Grady KE. The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *The Journal of Experimental Education*. 1993; 62(1): 60–71.
- Gutman LM, Sameroff AJ, Eccles JS. The academic achievement of African American students during early adolescence: An examination of multiple risk, promotive, and protective factors. *American Journal of Community Psychology*. 2002; 30:367–400. [PubMed: 12054035]
- Hall-Lande JA, Eisenberg ME, Christenson SL, Neumark-Sztainer D. Social isolation, psychological health, and protective factors in adolescence. *Adolescence*. 2007; 42(166)
- Hamm JV, Lambert K, Farmer TW, Agger CA. Promotive peer contexts of academic and social adjustment among rural African American early adolescent boys. *American Journal of Orthopsychiatry*. 2013; 83:278–288. [PubMed: 23889019]
- Hogan MJ, Parker JD, Wiener J, Watters C, Wood LM, Oke A. Academic success in adolescence: Relationships among verbal IQ, social support and emotional intelligence. *Australian Journal of Psychology*. 2010; 62(1):30–41.
- Jones MH, Irvin MJ, Kibe GW. Geographic setting alter the roles of academically supportive factors? African American adolescents' friendships, math self- concept, and math performance. *Journal of Negro Education*. 2012; 81:319–337.
- Johnson MK, Crosnoe R, Elder GH Jr. Students' attachment and academic engagement: The role of race and ethnicity. *Sociology of Education*. 2001:318–340.
- Jose, PE. ModGraph-I: A programme to compute cell means for the graphical display of moderational analyses: The internet version, Version 3.0. Victoria University of Wellington; Wellington, New Zealand: 2013. Retrieved [February 1, 2013] from <http://pavlov.psyc.vuw.ac.nz/paul-jose/modgraph/>
- Juster, FT.; Ono, H.; Stafford, FP. Changing times of American youth: 1981–2003. Ann Arbor, Michigan: Institute for Social Research, University of Michigan; 2004.
- Kupersmidt JB, Griesler PC, DeRosier ME, Patterson CJ, Davis PW. Childhood aggression and peer relations in the context of family and neighborhood factors. *Child Development*. 1995; 66:360–375. [PubMed: 7750371]
- Langeheine R, Pannekoek J, Van de Pol F. Bootstrapping goodness-of-fit measures in categorical data analysis. *Sociological Methods & Research*. 1996; 24(4):492–516.
- Larke, PJ.; Webb-Hasan, G.; Young, JL. Introduction to CARE. In: Larke, P.; Webb-Hasan, G.; Young, J., editors. *Cultivating Achievement, Respect, and Empowerment (CARE) for African American Girls in PreK-12 Settings*. Charlotte, NC: Information Age; (In Press)Solicited Book Chapter
- Larson RW. How US children and adolescents spend time: What it does (and doesn't) tell us about their development. *Current Directions in Psychological Science*. 2001; 10(5):160–164.
- Lehman B. The impacts of friendship groups' racial composition when perceptions of prejudice threaten students' academic self-concept. *Social Psychology of Education*. 2012; 15:411–425.
- Li Y, Wright MF. Adolescents' social status goals: Relationships to social status insecurity, aggression, and prosocial behavior. *Journal of Youth and Adolescence*. 2014; 43:146–160. [PubMed: 23526208]

- Libbey HP. Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. *Journal of School Health*. 2004; 74(7):274–283. [PubMed: 15493704]
- Lynch AD, Lerner RM, Leventhal T. Adolescent academic achievement and school engagement: An examination of the role of school-wide peer culture. *Journal of Youth and Adolescence*. 2013; 42:6–19. [PubMed: 23076767]
- Magidson, J.; Vermunt, JK. Latent class models. In: Kaplan, D., editor. *The Sage Handbook of Quantitative Methodology for the Social Sciences*. Vol. 10. Thousand Oaks: Sage Publications; 2004. p. 175–198.
- Mariano JM, Going J, Schrock K, Sweeting K. Youth purpose and the perception of social supports among African-American girls. *Journal of Youth Studies*. 2011; 14:921–937.
- Mickelson RA. The attitude-achievement paradox among black adolescents. *Sociology of Education*. 1990; 63:44–61.
- NA'ILAH SUAD NASIR, Jones A, McLaughlin M. School connectedness for students in low-income urban high schools. *Teachers College Record*. 2011; 113(8):1755–1793.
- National Women's Law Center. Unlocking opportunity for African American Girls: A call to action for educational equity. 2014. Available at <http://www.nwlc.org/resource/unlocking-opportunity-african-american-girls-callaction-educational-equity>
- Newman ML, Holden GW, Delville Y. Isolation and the stress of being bullied. *Journal of adolescence*. 2005; 28(3):343–357. [PubMed: 15925686]
- Nichols SL. An exploration of students' belongingness beliefs in one middle school. *The journal of experimental education*. 2008; 76(2):145–169.
- O'Connor C. Dispositions toward (Collective) struggle and educational resilience in the inner city: A case analysis of six African-American high school students. *American Educational Research Journal*. 1997; 34:593–629.
- Rankin BH, Quane JM. Social contexts and urban adolescent outcomes: The interrelated effects of neighborhoods, families, and peers on African-American youth. *Social Problems*. 2002; 49(1):79–100.
- Rice L, Barth JM, Guadagno RE, Smith GP, McCallum DM. The role of social support in students' perceived abilities and attitudes toward math and science. *Journal of Youth and Adolescence*. 2013; 42:1028–1040. [PubMed: 22890901]
- Ryabov I. Adolescent academic outcomes in school context: network effects reexamined. *Journal of Adolescence*. 2011; 34:915–927. [PubMed: 21295338]
- Schafer, JL. *Analysis of incomplete multivariate data*. CRC press; 1997.
- Schwartz D, Kelly BM, Duong MT. Do academically-engaged adolescents experience social sanctions from the peer group? *Journal of youth and adolescence*. 2013; 42(9):1319–1330. [PubMed: 23277293]
- Shin RQ, Daly BP, Vera EM. The relationships of peer norms, ethnic identity, and peer support to school engagement in urban youth. *Professional School Counseling*. 2007; 10:379–388.
- Somers CL, Owens D, Piliawsky M. Individual and social factors related to urban African American adolescents' school performance. *High School Journal*. 2008; 91:1–11.
- Stewart EB. Individual and school structural effects on African American high school students' academic achievement. *The High School Journal*. 2007; 91(2):16–34.
- Steward T, Suldo S. Relationships between social support sources and early adolescents' mental health: The moderating effect of student achievement level. *Psychology in the Schools*. 2011; 48:1016–1033.
- Stoddard SA, Zimmerman MA, Bauermeister JA. A longitudinal analysis of cumulative risks, cumulative promotive factors, and adolescent violent behavior. *Journal of Research on Adolescence*. 2012; 22:542–555. [PubMed: 23049231]
- The 2010 Schott 50 State Report on Public Education and Black Males. 2010. Retrieved from <http://www.blackboysreport.org>
- Van Ryzin MJ, Gravely AA, Roseth CJ. Autonomy, belongingness, and engagement in school as contributors to adolescent psychological well-being. *Journal of Youth and Adolescence*. 2009; 38:1–12. [PubMed: 19636787]

- Wang M, Eccles JS. Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development*. 2012; 83:877–895. [PubMed: 22506836]
- Wentzel KR, Battle A, Russell S, Looney L. Social supports from teachers and peers as predictors of academic and social motivation. *Contemporary Educational Psychology*. 2010; 35:193–202.
- Wilson T, Karimpour R, Rodkin PC. African American and European American students' peer groups during early adolescence: Structure, status, and academic achievement. *Journal of Early Adolescence*. 2011; 31:74–98.
- Young JT, Rebellon CJ, Barnes &, Weerman FM. Unpacking the black box of peer similarity in deviance: Understanding the mechanisms linking personal behavior, peer behavior, and perceptions. *Criminology*. 2014; 52:60–86.

Figure 1.
Protective-Stabilizing Model

Figure 2.
Protective-Reactive Model

Figure 3.
Protective-Protective Model

Figure 4.
Summary of African American boys 5-cluster profile using standardized means.

Figure 5.
Summary of African American girls 4-cluster profile using standardized means.

Figure 6.
African American boys school attachment and negative peers by achievement motivational beliefs interaction

Table 1

Correlations and Descriptive Data

<i>Boys</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Family Income	13.07	5.84					
2. Achievement Beliefs	3.80	.68	-.05				
3. GPA	2.25	1.14	.06	.32**			
4. School Attachment	4.36	1.47	-.04	.28**	.28**		
5. Peer Negative Attitudes	2.25	.81	-.02	-.19**	-.02	-.21**	
6. Positive Peer Attitudes	3.15	.39	-.05	.26**	.19**	.29**	-.22**
<i>Girls</i>							
1. Family Income	12.44	6.17					
2. Achievement Beliefs	3.95	.59	-.02				
3. GPA	2.55	1.21	.17**	.19**			
4. School Attachment	4.64	1.53	-.02	.38**	.13*		
5. Peer Negative Attitudes	1.96	.67	.07	-.19**	-.03	-.26**	
6. Positive Peer Attitudes	3.64	.80	.12*	.16**	.13*	.35**	-.25**

Note. Family income ranges from 1 = Less than \$5,000 to 25=More than \$200,000. The mean income for boys is \$60,000 to \$64,999 and girls it is \$55,000 to \$59,999 per year.

Table 2

Model Fit Statistics from Latent Class Analyses of Peer School Attitudes and School Attachment for Boys (n=307) and Girls (n=305)

Model	LL	BIC(LL)	Npar	L ²	df	Max. BVR	p-value
Boys							
Step 1							
Model 1	-1694.33	3491.74	18	365.05	389	28.45	.00
Model 2	-1675.10	3476.21	22	326.61	285	1.81	.04
Model 3	-1671.01	3490.91	26	318.41	281	.45	.06
Model 4	-1665.20	3502.20	30	306.79	277	.37	.11
Model 5	-1658.97	3512.66	34	294.35	273	.35	.18
Model 6	-1654.22	3526.07	38	284.84	269	.16	.24
Step 2							
* Model 5	-----	-----	-----	-----	-----		.18
Girls							
Step 1							
Model 1	-1676.22	3455.41	18	360.25	287	28.85	.00
Model 2	-1646.77	3419.39	22	301.35	283	2.74	.22
Model 3	-1637.64	3424.01	26	283.09	279	1.38	.42
Model 4	-1631.63	3434.87	30	271.06	275	.30	.55
Model 5	-1628.13	3450.74	34	264.06	271	.40	.61
Model 6	-1625.27	3467.91	38	258.34	267	.37	.64
Step 2							
* Model 4	-----	-----	-----	-----	-----		.55

Note. BIC(LL)=Log-Likelihood based Bayesian information criterion, L²=Likelihood ratio chi-square, and Npar=Number of parameters.

* Bootstrap p-value.

Table 3

Hierarchical Multiple Regression Analyses Predicting Academic Grade Performance from Achievement Motivational Beliefs and Cluster Group Membership for African American Boys

Academic Grade Performance			
	<i>B</i>	<i>SE(B)</i>	β
Step 1			
Family Income	.01	.01	.06
Step 2			
Family Income	.02	.01	.08
Achievement Beliefs	.53	.09	.32***
Step 3			
Family Income	.02	.01	.08
Achievement Beliefs	.46	.09	.27***
Negative	-.51	.16	-.18**
School Attachment	.05	.16	.02
At-Risk	-.53	.21	-.14*
School Attachment & Negative Peers	.44	.23	.11*
Step 4			
Family Income	.01	.01	.08
Achievement Beliefs	.67	.16	.40***
Negative	-.54	.17	-.19**
School Attachment	.03	.17	.01
At-Risk	-.54	.21	-.14**
School Attachment & Negative Peers	.40	.23	.09
Negative X Ach. Beliefs	-.32	.26	-.08
School Attachment X Ach. Beliefs	-.15	.24	-.05
At-Risk X Ach. Beliefs	-.29	.36	-.05
School Attachment/Negative Peers X Ach. Beliefs	-.55	.27	-.13*

Note. Adjusted R^2 = .00 for Step 1; R^2 = .10 for Step 2, R^2 = .15 for Step 3, and R^2 = .16 for Step 4.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Dummy coded peer cluster group membership, respectively; cluster 1 (Low) is the reference group.

Table 4

Hierarchical Multiple Regression Analyses Predicting Academic Grade Performance from Achievement Motivational Beliefs and Cluster Group Membership for African American Girls

Academic Grade Performance			
	<i>B</i>	<i>SE(B)</i>	β
Step 1			
Family Income	.03	.01	.17***
Step 2			
Family Income	.04	.01	.18***
Achievement Beliefs	.40	.11	.20***
Step 3			
Family Income	.03	.01	.17**
Achievement Beliefs	.33	.12	.16**
Negative	-.35	.17	-.12*
Positive	-.29	.24	-.07
School Attachment	.15	.33	.02
Step 4			
Family Income	.03	.01	.17**
Achievement Beliefs	.22	.15	.11
Negative	-.29	.18	-.10
Positive	-.29	.25	-.07
School Attachment	.08	.39	.01
Negative X Ach. Beliefs	.30	.27	.08
Positive X Ach. Beliefs	.09	.40	.02
School Attachment X Ach. Beliefs	.32	.77	.03

Note. Adjusted R^2 = .03 for Step 1; R^2 = .07 for Step 2, R^2 = .08 for Step 3, and R^2 = .09 for Step 4.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Dummy coded peer cluster group membership, respectively; cluster 1 (Low) is the reference group.