

Mental Health and Educational Experiences Among Black Youth: A Latent Class Analysis

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Abstract Disproportionately lower educational achievement, coupled with higher grade retention, suspensions, expulsions, and lower school bonding make educational success among Black adolescents a major public health concern. Mental health is a key developmental factor related to educational outcomes among adolescents; however, traditional models of mental health focus on absence of dysfunction as a way to conceptualize mental health. The dual-factor model of mental health incorporates indicators of both subjective wellbeing and psychopathology, supporting more recent research that both are needed to comprehensively assess mental health. This study applied the dual-factor model to measure mental health using the National Survey of American Life—Adolescent Supplement (NSAL-A), a representative cross-sectional survey. The sample included 1170 Black adolescents (52% female; mean age 15). Latent class analysis was conducted with positive indicators of subjective wellbeing (emotional, psychological, and social) as well as measures of psychopathology. Four mental health groups were identified, based on having high or low subjective wellbeing and high or low psychopathology. Accordingly, associations between mental health groups and educational outcomes were investigated. Significant associations were observed in school

bonding, suspensions, and grade retention, with the positive mental health group (high subjective wellbeing, low psychopathology) experiencing more beneficial outcomes. The results support a strong association between school bonding and better mental health and have implications for a more comprehensive view of mental health in interventions targeting improved educational experiences and mental health among Black adolescents.

Keywords Dual-factor model of mental health · Educational experiences · School bonding · Black adolescents

Introduction

Regrettably, educational success remains a continued challenge for Black adolescents relative to other racial and ethnic groups (Aud et al. 2013; Clotfelter et al. 2009), in that they academically underperform in school, have lower promotion and higher suspension rates, are more likely to attend resource poor or high poverty schools (Aud et al. 2013; Musu-Gillette et al. 2016), and are subject to lower teacher expectations (McKown and Weinstein 2008). Educational success is a crucial factor in an adolescent's life chances, economic potential, and ability to become a productive member of society (UNICEF 2012). Indeed, current social and economic environments necessitate minimum high school proficiencies for young people to be prepared to function competently in a multifaceted society (Richman et al. 2004). Differential achievement and experiences among Black adolescents are also exacerbated by their disproportionate representation in environments where they

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may experience higher exposure to violence (Francois et al. 2012), neighborhood disadvantage (Ceballos et al. 2004), family and community poverty (Orfield and Lee 2005), and discrimination (Sanchez et al. 2013), all of which potentially contribute to negative educational outcomes (e.g., Francois et al. 2012). These confluent factors make poor educational experiences a key public health concern for Black adolescents (Hanushek and Rivkin 2009; Orfield and Lee 2005).

Mental health is a key developmental factor related to educational outcomes among adolescents. Though less explored among Black adolescents (Joe et al. 2009b), much of the extant literature focuses on the relationship between mental health problems (e.g., depression) and poor educational outcomes (Ansary and Luthar 2009). More recent literature has applied the dual-factor model of mental health (Greenspoon and Saklofske 2001), which is grounded in the perspective that both wellbeing and problem indicators should be evaluated to comprehensively measure mental health (Suldo and Shaffer 2008). This model has been used in previous research with youth to examine academic outcomes and social functioning (e.g., Suldo and Shaffer 2008). Subsequently, the current study will use the dual-factor model as a framework to explore the association between patterns of mental health and educational experiences among a national sample of adolescents.

Educational Experiences of Black Youth

Ethnic-minority youth are at great risk of experiencing poor educational outcomes. Black youth are a group at particular risk given their disproportionate representation in low-income, low-resource surroundings, where they may encounter social and environmental conditions (e.g., higher levels of exposure to violence, discrimination, poverty) that can individually and collectively contribute to worse educational trajectories (Francois et al. 2012; Sznitman et al. 2011). Individual level school-related factors like educational achievement, grade retention, suspensions, and expulsions remain critical issues for Black adolescents. Though there has been improvement over time, studies show that disproportional underachievement still persists for Black adolescents when compared to other racial groups (Braun et al. 2010). The most recent data available from the National Assessment of Educational Progress (NAEP) revealed that Black students' reading and math scores (8th, 12th grades) were lower than their White, Hispanic, and Asian counterparts, even with reduction over time in the national achievement gap (U.S. Department of Education 2016). Disparity also exists within national grade retention, suspension, and expulsion rates among Black youth and other adolescents, which could, in turn, affect student graduation rates and future educational success. For instance,

in 2014, higher percentages of Black students were retained in a grade during elementary and secondary school compared to White students (Musu-Gillette et al. 2016). Notably, during 2012, the percentage of Black students (grades 6–12) who had ever been suspended from school (39%) was more than twice the percentage of any other racial/ethnic group and expulsion rates were higher for Black students compared to their White or Hispanic counterparts (Musu-Gillette et al. 2016). Though not inexorably linked in these national reports, adjusted cohort graduation rate data for public high school students earning a regular high school diploma shows that Black students are graduating at lower rates (75%) compared to Hispanic (78%), White (88%), or Asian/Pacific Islander (90%) youth (Kena et al. 2016).

At the school level, research shows that schools serving ethnic-minority youth are likely to have fewer and reduced quality resources (Basch 2011) and have greater school-level poverty (Clayton 2011). These schools tend to be located in inner-cities, have a disproportionately less diverse student body, serve more ethnic-minority students, suffer from a lack of qualified and effective teachers, and provide less access to higher level learning opportunities (Clayton 2011; Levin 2009). These school-level conditions contribute to lower graduation rates (Greene and Winters 2006; Orfield et al. 2004), grade retention in high school (Balfanz and Legters 2004), and poor student performance on state-level tests (Clayton 2011).

In addition to common behavioral indicators of educational experiences like grades and suspension rates, affective components of a student's school experience, like school bonding, are important to consider (Johnson et al. 2001; Morse et al. 2004). School bonding refers to the close ties students have with school, the investment they make in school, and their positive views of the school environment (e.g., feeling valued and accepted in school). School bonding can also foster consistency with school norms and values (Catalano et al. 2004). Conceptually, school connectedness and positive relationships with teachers and other school staff provide the supportive context that adolescents need to experience successful emotional, behavioral, and academic adjustments (Murray and Greenberg 2000). As such, an adolescent's connection to school is important to positive educational experiences and outcomes (Libbey 2004; Loukas et al. 2016).

Disproportionate suspension rates, as described above, have an impact on school bonding as well. Students who are suspended tend to be less bonded to school, and subsequently, less motivated to achieve academic success (Gregory et al. 2010). School bonding is a protective factor for all youth; however, recent research provides empirical support that school bonding mediates racial group differences on school outcomes (Yang and Anyon 2016). Racial inequities in school stemming from structural racism

contribute to school environments where school bonding is inhibited for Black adolescents. As a result, Black adolescents tend to report significantly lower school bonding than White students (Yang and Anyon 2016).

Conceptualizing Mental Health

Previous research supports the argument that mental health incorporates “the absence of dysfunction in psychological, emotional, behavioral and social spheres... [and] optimal functioning or well-being in psychological and social domains” (Kazdin 1993 p. 128). Indeed, the absence of dysfunction alone is not indicative of positive mental health. For example, Harker (2001) reported that low depressive symptoms did not guarantee higher levels of positive wellbeing. Concomitantly, Keyes (2006) found that flourishing adolescents (i.e., those exhibiting positive emotions and functioning) exhibited low conduct problems and depression as well as higher levels of psychosocial functioning (e.g., self-concept). Recognizing the importance of incorporating aspects of effective social and psychological functioning into definitions of mental health, the World Health Organization (WHO) conceptualized mental health as “a state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her own community” (WHO 2016 para. 2). Thus, conceptualization of a comprehensive mental health model requires inclusion of emotional, psychological, and social wellbeing constructs, in addition to the more established mental health problem perspectives (Kazdin 1993; Keyes 2006).

The dual-factor model of mental health (Greenspoon and Saklofske 2001) is grounded in the perspective that subjective wellbeing and illness are separate but interrelated and both need to be assessed to comprehensively evaluate mental health. The dual-factor model has been used among children and adolescents (e.g., Antaramian et al. 2010; Kelly et al. 2012; Suldo and Shaffer 2008) as well as young adults (e.g., Eklund et al. 2010; Renshaw and Cohen 2014) and supports the idea that the absence of illness does not indicate mental wellbeing. Though less research exists to substantiate this contention, the dual-factor model has been applied in studies revealing four distinct groups—those with (1) high subjective wellbeing and low psychopathology (i.e., anxiety, depression), (2) high psychopathology and low subjective wellbeing, (3) low psychopathology and low subjective wellbeing, and (4) high subjective wellbeing and high psychopathology (Greenspoon and Saklofske 2001). Additional studies (e.g., Suldo and Shaffer 2008; Antaramian et al. 2010) applying the dual-factor model elucidate four similar groups of adolescents as Greenspoon and Saklofske (2001). Consistent with Suldo and Shaffer’s

(2008) nomenclature, Antaramian et al. (2010) as well as Lyons et al. (2013) refer to these groups as positive mental health [or complete mental health (e.g., Suldo and Shaffer 2008; Suldo et al. 2011)], troubled, vulnerable, and symptomatic but content, respectively. The authors consistently note that traditional approaches to conceptualizing mental health would exclude the two latter groups and importantly, the vulnerable group may not be targeted for receipt of services due to lower levels of or absence of psychopathology (e.g., Antaramian et al. 2010).

Accordingly, Keyes (2005, 2006) proposed that similar to mental illness, mental health is a syndrome of symptoms of subjective wellbeing across emotional, psychological, and social domains. This model is grounded in both hedonic and eudaimonic perspectives (e.g., Ryan and Deci 2001); hedonic refers to feelings, or emotional wellbeing, and is manifested in the form of life satisfaction, happiness, or positive and negative affect, whereas eudaimonic is related to functioning, both on a personal and social level (e.g., psychological wellbeing, social wellbeing; Keyes 2005; Stewart-Brown 2016). Individuals are described as functioning well, for example, when they have an acceptance of self, exhibit a sense of mastery, and can form positive relationships with others (psychological wellbeing; Ryff 1989). Social wellbeing incorporates wider social relationships (beyond close friends and family), such as the connection to, or support by, community members (Keyes 2005). Scale items reflecting measurement of the feeling (emotional) and functioning (psychological, social) domains in Keyes’ conceptualization are all positively worded and are based on the frequency of experiencing symptoms within the past month (Keyes 2006). That is, youth were diagnosed as flourishing if they had experienced one feeling and at least five functioning items almost every day or every day during the past month, languishing if they experienced one feeling and at least five functioning items never or once or twice with the past month, or moderately mentally healthy if they experienced one feeling and at least five functioning items once a week or two to three times a week during the past month (Keyes 2006).

Both models present a more comprehensive picture of mental health by incorporating subjective wellbeing indicators to conceptualize mental health. Studies using the dual-factor model (e.g., Suldo and Shaffer 2008) have conceptualized subjective wellbeing using indicators of life satisfaction and positive and negative affect mainly, whereas the Keyes model includes a broader conceptualization of subjective wellbeing (i.e., adding psychological and social wellbeing). The current study explores the utility of the dual-factor model of mental health among Black youth extending generalizability of the findings to Black adolescents. Keyes (2006) broader conceptualization of subjective wellbeing is applied. Accordingly, emotional

(i.e., life satisfaction), psychological (i.e., self-esteem, mastery, and personal relationships with others), and social wellbeing (i.e., social integration-sense of community belongingness), as well as measures of psychopathology (i.e., depressive symptoms, mental illness) among youth are included to conceptualize mental health. Subsequently, this study examines the educational experiences on which students with various mental health classes may differ.

Education and Mental Health

The prevailing emphasis of much of the literature examining the relationship between mental health and educational experiences has shown that mental health problems (e.g., depression) are related to poor academic functioning (Fergusson and Woodward 2002). For example, high levels of internalizing and externalizing problems in childhood or adolescence lead to poor grades and school adjustment (Ansary and Luthar 2009) and worse educational attainment in young adulthood (McLeod and Fettes 2007). Similarly, depression and academic achievement are inversely related among junior and high school students (Rothon et al. 2009) and children displaying externalizing problems, such as aggression and anti-social behaviors, show grade retention difficulties (Nagin et al. 2003) and experience school dropout (Serbin et al. 2011). The limited literature on Black youth suggests a similar picture, for example, in that lifetime mental disorders have been associated with lower grades, greater retention, and higher suspension and expulsion rates (Rose et al. 2017). Further, for Black adolescents, aggressive behaviors in school can lead to disproportionate rates of punishment, including a greater likelihood of suspension and expulsion, which impact overall school achievement (Finigan-Carr et al. 2015). Though mental health problems associated with students' connections to school has received less attention in prior research (Loukas et al. 2009), studies indicate that school bonding has been related to less suicidal behavior (Maimon and Kuhl 2008), fewer depressive symptoms (Kaminski et al. 2010; Loukas et al. 2016), lower anxiety among girls, and better mental health functioning among boys (Shochet et al. 2006).

Youth reporting positive subjective wellbeing (e.g., life satisfaction) are more engaged in the school environment and have better educational experiences concurrently (Suldo and Shaffer 2008) and over time (Suldo et al. 2011). For example, Baumeister et al. (2003) assert that individuals with greater self-esteem may set higher goals for themselves than those with low self-esteem; when faced with early educational challenges, they are more apt to persevere and less likely to doubt their abilities which could, in turn, bolster their self-esteem. Higher self-esteem has also been associated with better school performance (Trzesniewski

et al. 2006). Further, increased life satisfaction in early adolescence has been associated with decreased aggressive and violent behaviors in the school context (Valois et al. 2006). School bonding and positive relationships with both school staff and peers have been associated with lower levels of aggression (Elsaesser et al. 2012). Relatedly, greater affective connections to school (e.g., school bonding) have been associated with better life satisfaction (Danielsen et al. 2009), happiness (Stiglbauer et al. 2013), social and emotional outcomes (Frydenberg et al. 2009), perceptions of wellness (e.g., emotional; Ashley et al. 2012), subjective wellbeing (Jose et al. 2012), and a sense of mastery (Patrick et al. 2007). Positive perceptions of school have also been related to higher self-esteem among ethnic-minority adolescents (Greene and Way 2005).

Though somewhat limited, person-centered studies applying the dual-factor model among adolescents similarly found differences in educational outcomes by group membership. Suldo and Shaffer (2008) reported that the complete mental health group (high subjective wellbeing, low psychopathology) had better reading scores and valued school to a greater degree than the troubled group (low subjective wellbeing, high psychopathology). The complete mental health group also had better grade point averages than both groups reporting high psychopathology and lower school absences than the vulnerable group. In a follow-up longitudinal study, Suldo et al. (2011) reported better grade point averages over time for the mental health groups with low psychopathology (i.e., complete and vulnerable groups) compared to the troubled group. Further, the complete mental health group had better math scores and lower school absences than the troubled group and the symptomatic but content group (high subjective wellbeing, low psychopathology) had greater office discipline referrals than any other group. Similarly, Antaramian et al. (2010) found that the positive mental health group (high subjective wellbeing, low psychopathology) had better grades and teacher-student relationships than all other groups. As well, the symptomatic but content group (high subjective wellbeing, high psychopathology) had better student relationships than both the vulnerable group (low subjective wellbeing, low psychopathology) and the troubled group in the same study. Likewise, Lyons et al. (2013) reported better grade point averages and emotional engagement (i.e., student relationships with peers and teachers in school) for the positive mental health group compared to the vulnerable group. The positive mental health group also had better behavioral engagement (e.g., follows school rules) than all other groups and better cognitive engagement (e.g., plans future goals) compared to the vulnerable group. Finally, when comparing groups by levels of psychopathology, Suldo et al. (2016) reported that behavioral measures of educational achievement (office discipline referrals, grade

point averages, school absences) differed such that groups with higher psychopathology (symptomatic but content, troubled) had significantly worse outcomes than their peers with low psychopathology (complete mental health, vulnerable). The same authors also reported better attitudes towards school (i.e., belongingness), valuing of school, and academic self-perceptions for the complete mental health group compared to the vulnerable group. Accordingly, there seems to be support for differentiation of groups by both subjective wellbeing and psychopathology, strengthening the use of a dual-factor model approach.

Current Study

Disproportionately lower educational achievement, coupled with higher grade retention, suspensions, and expulsions, make educational success among Black youth a major public health concern. Racial inequities in the school setting also foster environments where school bonding is inhibited, thus potentially lower, among Black adolescents. These experiences are compounded by racial discrimination and the overrepresentation of Black youth in lower income surroundings, where higher levels of exposure to violence and poverty are more likely, all of which potentially foster a negative context for successful educational experiences. Mental health is a key developmental factor related to educational outcomes among adolescents and important to explore as adolescence typifies opportunities for positive social and emotional growth and is, conversely, a time when psychological distress and subsequent mental health problems emerge (Roeser et al. 2000). Though existing literature has focused on the relationship between mental health problems (e.g., depression) and poor educational outcomes, there is less information on the association between positive mental health and better educational experiences, particularly among Black adolescents (Joe et al. 2009b). The dual-factor model of mental health suggests that, to comprehensively assess mental health, indicators of both subjective wellbeing and psychopathology need to be considered. This model is applied in the current study extending its application, specifically among Black adolescents, and with a broader conceptualization of subjective wellbeing including indicators of emotional, psychological, and social wellbeing (i.e., Keyes 2006).

Accordingly, the purpose of this study is to identify mental health classes of youth and explore the association between the resulting classes and both demographic and educational experiences among a national sample of Black adolescents. Over the last 15 years, longitudinal research consistently documents the relationship between early mental health functioning and later educational outcomes (Suldo et al. 2014; Valdez et al. 2011). Indeed, early mental health problems can influence both later educational and

social outcomes, sometimes referred to as a “dual failure model of consequences” (Suldo et al. 2014). At the same time, there is a recognition of the potential for reverse causal dynamics; that is, positive academic performance may support better emotional and psychological wellbeing and poor academic performance may contribute to feelings of low self-esteem and depressive symptoms (Masten et al. 2005; Schwartz et al. 2008). Thus, directionality has not fully been established and strong potential exists for bi-directional relationships. Consequently, this study hypothesizes that educational experiences and mental health will be inversely associated i.e., 1) positive educational experiences will be associated with better mental health (e.g., Suldo and Shaffer 2008; Trzesniewski et al. 2006); and 2) poorer educational experiences will be associated with greater mental health problems (Fergusson and Woodward 2002; Serbin et al. 2011).

Method

This study is a secondary analysis of the 2001–2003 National Survey of American Life—Adolescent Supplement (NSAL-A) (Jackson et al. 2004), originally collected by researchers at the Program for Research on Black Americans (PRBA) through the University of Michigan’s Institute for Social Research. The NSAL is an IRB approved nationally representative household survey, which provides extensive data on mental disorders and the mental health of Black Americans. It utilizes a stratified and clustered sample design to generate a nationally representative sample of 3570 African American (AA), 1006 non-Hispanic whites, and 1621 blacks of Caribbean descent (CBs) aged 18 years and older [see Jackson et al. (2004) for more detailed information about the NSAL]. AA and CB households that included an adult participant in the NSAL were screened for an eligible adolescent living in the household, and adolescents were selected using a randomized procedure thereby generating the NSAL-A. If more than one adolescent in the household was eligible, up to two adolescents were selected for the study, and if possible, the second adolescent was of a different gender (Joe et al. 2009a). The NSAL-A was weighted to adjust for variation in probabilities of selection within households, and non-response rates for adolescents and households. The weighted data were post-stratified to approximate the national population distributions for gender (male and female subjects) and age (13, 14, 15, 16, and 17 year old) subgroups among black youth (Joe et al. 2009a). This process allows accurate inferences to be made about the national population of Black youth. The sample design and weight characteristics classify the NSAL-A as a complex sample survey.

Informed consent and assent were obtained from the adolescent's legal guardian and adolescent prior to the interview. Trained interviewers used a computer-assisted instrument to conduct most of the interviews in the adolescents' homes. Additionally, about 18% were conducted either in part or fully by telephone. Respondents were paid \$50 for their participation in the study; the overall response rate was 80.6% (80.4% for AAs and 83.5% for CBs). The original AA and CB adolescent sample was comprised of 1193 cases, of which 23 were dropped from analyses, as they were 18 or older. The resulting sample consisted of 1170 AA ($n = 810$) and CB ($n = 360$) youths ranging in age from 13 to 17 years (Joe et al. 2009a). The sample did not significantly differ by gender (48% male; 52% female).

Measures

The demographic variables included gender, age (continuous), ethnicity (AA or CB), and family income. Education measures included grades, grade retention, suspensions, expulsions, and school bonding. Mental health was determined by both subjective wellbeing (SWB) and psychopathology. SWB included three dimensions: emotional wellbeing (life satisfaction), psychological wellbeing (self-esteem, mastery, and positive relations with others), and social wellbeing (social integration), consistent with Keyes' conceptualization (2006). Psychopathology was measured by depressive symptoms, the number of lifetime disorders, and the severity of mental illness.

School bonding

This construct represented an affective component of students' educational experiences. A 9-item scale was used, including items such as, "Most of my teachers treat/ed me fairly." The items were scored on a 4-point Likert scale ranging from very true to not at all true. The scale was partially derived from conceptualizations of school experiences as protective mechanisms (Hawkins et al. 1992) or resiliency factors (Zimmerman and Arunkumar 1994) related to adolescent behavioral or wellbeing outcomes. Positively worded items were reverse scored. Higher scores represent greater bonding to school ($\alpha = .71$ for the current sample).

Behavioral educational experiences

Four measures of behavioral educational experiences included grades, grade retention, school suspension, and school expulsion. Grades were measured with a 5-pt response question asking adolescents what kind of grades they usually received. Responses ranged from "mostly failing grades" to "mostly As." The question was derived

from the National Comorbidity Survey: Adolescent Supplement (NCS-A), Kessler (2001–2004). Grade retention was assessed by the question, "Did you ever stay back or repeat a grade in school?" School suspension was evaluated by the student's response to "Were you ever suspended from school for a day or longer?" Finally, school expulsion was assessed by the question, "Were you ever expelled from school?" Grade retention, school suspension, and school expulsion were dichotomized as yes/no and recoded in this study to 0 (no) and (1) yes. Questions about grade retention, suspension, and expulsion were derived from the National Longitudinal Study of Adolescent to Adult Health (Add Health; Harris 2013; Harris et al. 2009).

Self-esteem

The 10-item Rosenberg Self-Esteem scale (RSES; Rosenberg 1965), was used to assess global self-esteem with items such as, "On the whole, I am satisfied with myself." A 4-point response set was used ranging from 1 (strongly agree) to 4 (strongly disagree). Positively worded items were reverse scored. Higher scores indicate better self-esteem ($\alpha = .72$). The RSES has received extensive psychometric analysis and empirical validation (Gray-Little et al. 1997) and has been used previously among AA adolescents (Lockett and Harrell 2003; Utsey et al. 2000).

Mastery

The 7-item Pearlin's Mastery scale assesses individuals' sense of control over their own life chances (Pearlin and Schooler 1978). A sample item from the scale is, "I can do just about anything I set my mind to." A 4-point response set was used ranging from 1 (strongly agree) to 4 (strongly disagree). Positively worded items were reversed scored. Higher mean scores indicate greater mastery ($\alpha = .68$). The same scale has demonstrated high levels of validity in diverse populations (Marshall and Lang 1990; Pearlin et al. 1981) and has been widely used among African Americans (Finlayson et al. 2010; Watkins et al. 2011).

Life satisfaction

This single item question asked adolescents "How satisfied with your life as a whole would you say you are these days?" Responses ranged from 1 (very satisfied) to 4 (very dissatisfied). The item was reverse coded such that higher scores represent greater life satisfaction. This item was derived from the National Survey of Black Americans (NSBA; Jackson and Neighbors 1997).

Positive relations with others

This was measured by asking “How satisfied are you with the quality of the relationships you have with the people in your family?” and “How satisfied are you with the quality of the relationships you have with your friends?” Both items were derived from the NSBA (Jackson and Neighbors 1997). The mean of the responses to these two questions was taken to reflect positive relations with others. A 4-point response set was used ranging from 1 (very satisfied) to 4 (very dissatisfied). Items were reversed coded. Higher mean scores indicate greater positive relations with others.

Social integration

This was measured by the mean of four questions from an 8-item scale assessing adolescents’ perceptions about the neighborhood within which they reside. These four items represented a sense of belonging to community and support by community members. A sample item is “People in my neighborhood trust each other.” A 4-point response set was used ranging from 1 (very true) to 4 (not at all true). Positively worded items were reversed scored. Higher mean scores indicate greater social integration ($\alpha = .79$). Questions for the scale were derived from NSBA (Jackson and Neighbors 1997) and Add Health (Harris 2013; Harris et al. 2009).

Depressive symptoms

The 12-item Center for Epidemiologic Studies Depression Scale (CES-D) scale (Radloff 1977) was used to measure depressive symptoms in the past week, with items such as “I felt depressed.” Responses ranged from 0 (rarely or none of the time; less than 1 day) to 3 (most or all of the time; 5 to 7 days). Positively worded items were reversed scored. Higher scores indicate greater depressive symptoms ($\alpha = .68$). Previous study has revealed acceptable validity and reliability of the CES-D 12 among adolescents (Poulin et al. 2005).

Lifetime mental disorders

The DSM-IV World Mental Health Composite International Diagnostic Interview (WMH-CIDI), a fully structured diagnostic interview, was used to assess mental disorders. The mental disorders sections used for NSAL are slightly modified versions of those developed for the World Mental Health project initiated in 2000 (Demyttenaere et al. 2004) and the instrument used in the National Comorbidity Survey-Replication (NCS-R) (Kessler and Üstün 2004). The number of lifetime mental disorders (including panic, social phobia, agoraphobia without panic, generalized

anxiety, post-traumatic stress, major depression, dysthymia, bi-polar, irritable major depression, drug abuse, drug dependence, alcohol abuse, alcohol dependence, oppositional defiant, conduct, intermittent explosive disorder, anorexia, bulimia, and binge eating disorder) was calculated and categorized as 0 (none), 1 (one disorder), 2 (two disorders), and 3 (three and more disorders).

Mental disorder severity

This is a summary variable created in the NSAL-A by using the means of questions asking the adolescent how severe their feelings were during the time they experienced the particular mental disorders listed previously. A 4-point response set was used ranging from 1 (none) to 4 (severe, serious). Higher mean scores indicate greater severity of mental disorders.

Analytic Strategy

Descriptive statistics for the demographic characteristics, subjective wellbeing, and psychopathology items were calculated using Stata 14 (StataCorp. 2015). Mplus v. 7.4 was used to conduct latent class analysis (LCA). Mental health indicators are treated as continuous indicators except for the number of lifetime mental disorders, which is treated as a categorical variable. Maximum likelihood with robust standard errors was used to estimate the model using missing data theory that incorporates all available data. Mplus also accounts for the complex survey design of the data by correcting the standard errors and chi-square tests of model fit based on stratification, unequal probability of selection, and non-independence of observations (Muthén and Muthén 1998–2015).

For this study, LCA was used to identify and describe underlying classes of mental health in youth, and identified classes were examined for significant association with demographic and education covariates. LCA is a person-centered methodological approach that can help to elucidate population heterogeneity within observed data through the identification of underlying subgroups of individuals, thus allowing the examination of how mental health problems and SWB indicators can simultaneously occur (Chung et al. 2006). Membership in the subgroups is based on similarities in individual responses to a set of observed variables (e.g., behavior; Bray 2015; Lanza et al. 2010). LCA produces both posterior (overall individual probability of being in a particular class) and item-class probabilities (probability of responses for specific indicators based on class membership; Collins and Lanza 2010).

A 3-step approach to modeling was utilized (Asparouhov and Muthén 2013; Vermunt 2010). This approach is recommended for use with covariates using the R3Step

method in Mplus (Asparouhov and Muthén 2013). Step one utilized the mean estimates of the mental health indicators to estimate the latent class model. The second step included the estimation of the most likely class using the latent class probabilities, and the final step involved the multinomial logistic regression of the most likely class on the demographic and education covariates. This final step accounts for any misclassification in step two. The advantage of this approach is that the covariates are introduced into the model while the measurement model (i.e., classes) remains fixed (Vermunt 2010). Collinearity statistics were also used to assess the possible collinearity between covariates. No variance inflation factor (VIF) exceeded 2.0, suggesting collinearity was not a problem. The exact number of latent classes representing mental health is unknown. Therefore, an exploratory approach that estimates one to eight latent classes was used. This method included a close examination of item loadings and model fit indices for estimated latent classes. The final number of latent classes was determined by the agreement with substantive theory (i.e. dual-factor model), empirical evidence, statistical model fit indices including the Akaike's Information Criterion (AIC; Akaike 1974), Bayesian Information Criterion (BIC; Schwarz 1978), adjusted BIC (Sclove 1987), Lo–Mendell–Rubin test (LMR; Lo et al. 2001), entropy statistic, and mean responses to each scale by class. The bootstrap likelihood ratio test (BLRT) was not utilized as model fit criteria, as it is unavailable in Mplus with data that have a complex survey structure.

Results

Table 1 presented the descriptive statistics of the sample in this study. Around half of the sample was female and the average age was 15 years old. About 21% of the adolescents lived in higher-income families (\$55,000 or greater). More than half of the students experienced school suspension (52.56%) and around 30% have repeated a grade at least once.

Latent Class Model of Youth Mental Health

The model selection criteria for one to eight latent classes are presented in Table 2. Examination of the fit indices presented conflicting ideas. The adjusted BIC values decreased until a seven-class solution was found. The eight-class model was examined, but the best log-likelihood value was not replicated even with increased random starts. Therefore, it was not considered for the final model as the solution may not be trustworthy due to local maxima. The *p*-value of LMR test for the two-class model was significant indicating the two-class solution fit the data better than a

Table 1 Descriptive statistics

	<i>n</i> (%)	Mean (SD)
Demographics		
Gender		
Female	607 (51.88)	
Age		15.03 (1.43)
Ethnicity		
Caribbean Black	360 (30.77)	
Family income		
0–17,999	311 (26.58)	
18,000–31,999	330 (28.21)	
32,000–54,999	281 (24.02)	
55,000 +	242 (20.68)	
Subjective Wellbeing (SWB)		
Self-esteem		3.55 (0.42)
Mastery		3.14 (0.55)
Life satisfaction		2.60 (29.31)
Social integration		3.07 (0.74)
Positive relations with others		3.45 (0.49)
Psychopathology		
Depressive symptoms (CES-D)		8.92 (5.26)
Severity of mental disorders		1.48 (0.82)
Number of lifetime disorders		
0 disorder	739 (63.16)	
1 disorder	237 (20.26)	
2 disorders	99 (8.46)	
3 and more disorders	95 (8.12)	
Educational Experiences		
School bonding		3.39 (0.45)
Grades		
Mostly A	174 (14.87)	
Mostly B	530 (45.3)	
Mostly C	394 (33.68)	
Mostly D	49 (4.19)	
Failing grades	15 (1.28)	
Missing	8 (0.68)	
Grade retention (1 = yes)	327 (27.95)	
School suspension (1 = yes)	615 (52.56)	
School expulsion (1 = yes)	82 (7.01)	

Note: *N*, percentage, means, and standard deviation (SD) are unweighted

three-class solution and above. Yet, a closer investigation of the item probabilities found that the two-class model was not interpretable based on theory. The dual-factor model has consistently supported four mental health groups: complete (or positive) mental health, troubled, vulnerable, and

Table 2 Summary of latent class model identification and fit statistics

Number of Classes	LogL (H0)	AIC	BIC	Adjusted BIC	LMR LRT <i>p</i> -value for <i>k</i> -1	Entropy
1	−11060.166	22154.333	22240.434	22186.436	N/A	N/A
2	−9963.343	19982.687	20124.500	20035.562	0.0000	0.947
3	−9149.248	18376.495	18574.021	18450.144	0.2413	1.000
4	−8890.116	17880.232	18133.470	17974.653	0.4556	0.904
5	−7736.273	15594.545	15903.496	15709.738	0.7602	0.918
6	−7693.508	15531.016	15895.678	15666.981	0.7602	0.926
7	−7535.899	15237.798	15658.173	15394.537	0.5047	0.919

symptomatic but content (Antaramian et al. 2010; Suldo and Shaffer 2008). Therefore, the two-class model while supported by statistical model fit indices, was not chosen for its failure to match theoretical evidence. Additionally, the five-class to seven-class models each included a latent class that contained a very small percentage of the sample ($\leq 2\%$), which is too small to fully trust as being generalizable to the broader population (Finch and Bolin 2017). Between the two remaining models (three and four classes), the AIC, BIC, and adjusted BIC were lower for the four-class model. The entropy was also 0.904. An entropy level 0.6 and higher indicates good class separation (Asparouhov and Muthén 2013). Based on these factors and examination of the substantive meaningfulness of the classes, the four-class model was retained and four mental health classes were identified. This model also best allowed for examination of variability in mental health guided by the dual-factor model, and thus the association between educational experiences and mental health classes.

Table 3 displays the mean subscale score and estimated probability for each mental health indicator based on most likely class membership for the four-class model. Consistent with Antaramian et al. (2010), these results were used to descriptively name the latent classes. As shown, the vulnerable group ($n = 234$, 20%) was comprised of youth with the relatively low mean scores on both SWB indicators and psychopathology. They had the lowest scores in mastery and social integration, and low mental illness severity while also very high probabilities of having none of the mental disorders. The troubled group ($n = 192$, 16%) was represented by low SWB and high psychopathology. Youth in this group had the lowest scores in self-esteem, life satisfaction, and positive relations with others, while the highest scores on depressive symptoms, mental illness severity, and probabilities of having three and more mental disorders. The symptomatic but content group ($n = 149$, 13%) had high SWB and high psychopathology. Adolescents in this group had the highest probabilities of having one disorder and two disorders, while also the second highest mean scores in self-esteem, mastery, life satisfaction, social integration, positive relations with others, mental illness

severity, and third highest in depressive symptoms. The positive mental health group ($n = 595$, 51%) had the highest scores on all the SWB indicators and the lowest scores on psychopathology. Youth in this group had the lowest depressive symptoms, low mental illness severity, the lowest probability of having one and more disorders, and highest probabilities of having none of the mental disorders.

Demographic and Educational Experiences associated with Latent Class Membership

Table 4 shows the findings of multinomial logistic regression examining the demographic and educational experiences associated with class membership. The positive mental health group was used as the reference group to elucidate the variables significantly associated with having different types of mental health patterns. Results revealed no statistically significant effect of ethnicity when comparing the positive mental health group to the other three groups. However, there was a significant effect of gender such that compared to males, females had higher odds (OR = 1.865) of being in the troubled group compared to positive mental health group. Adolescents from higher-income families had lower odds of being in either vulnerable group (OR = 0.721) or symptomatic but content group (OR = 0.789) compared to the positive mental health group. Older youths also had increased odds of being in the symptomatic but content group compared to the positive mental health group (OR = 1.264).

No statistically significant effects of educational covariates (i.e., grades, grade retention, suspensions, expulsions), except school bonding, were observed between the positive mental health group and both the vulnerable group and symptomatic but content group. Compared to adolescents in the positive mental health group, youth in both the vulnerable mental health group and the symptomatic but content group had lower odds of reporting high school bonding (OR = 0.192 and 0.206 respectively). Thus, higher school bonding was significantly associated with better mental health.

Table 3 Four-class model: mean mental health score and estimated probabilities by latent class membership ($n = 1170$)

MH Indicator	Latent Classes			
	I. Troubled ($n = 192$; 16%)	II. Vulnerable ($n = 234$; 20%)	III. Symptomatic but content ($n = 149$; 13%)	IV. Positive mental health ($n = 595$; 51%)
Subjective Wellbeing (SWB)				
Self-esteem	3.264	3.293	3.501	3.768
Mastery	2.871	2.745	3.000	3.462
Life satisfaction	3.100	3.326	3.392	3.680
Social integration	2.930	2.915	3.088	3.289
Positive relations with others	3.228	3.229	3.367	3.628
Psychopathology				
Depressive symptoms (CES-D)	13.586	12.209	10.305	5.958
Severity of mental disorders	3.141	1.000	2.000	1.000
Number of lifetime disorders				
0 disorder	0.028	0.845	0.000	0.905
1 disorder	0.419	0.098	0.550	0.090
2 disorders	0.230	0.047	0.284	0.004
3 and more disorders	0.323	0.010	0.166	0.000

Note: Self-esteem, mastery, life satisfaction, social integration, positive relations with others (range 1–4); CES-D scores range 0–30; severity (ranges 1–4); number of lifetime disorders (0 is none, 1 is one disorder, 2 is two disorders, 3 is three and more disorders) is treated as categorical, the estimated probabilities are shown for each category

The findings evinced statistically significant effects of school bonding, grade repetition, and school suspension when examining associations between the positive mental health group and the troubled group. Compared to non-repeaters, grade repeaters had higher odds of being in the troubled group ($OR = 1.904$) compared to the positive mental health group. Further, adolescents in the troubled group had lower odds ($OR = 0.152$) of reporting high school bonding, and higher odds ($OR = 2.115$) of school suspension compared to those in the positive mental health group. Similar to the previous finding, as school bonding decreased, the odds of being in the troubled mental health group increased.

Discussion

Previous studies have documented the relationship between mental health and educational outcomes; however, there is a lack of research addressing the use of a dual-factor model approach incorporating subjective wellbeing and mental health problems together. Importantly, few studies have addressed how mental health, conceptualized as such, is associated with the disadvantaged educational outcomes that Black adolescents are experiencing. Hence, the present

study bridges these gaps in the literature in a number of key ways. First, the study utilized a national probability sample of Black adolescents, allowing a level of generalizability of the findings. Second, this study applied the dual factor-model of mental health as a framework to identify mental health classes of Black youth based on both subjective wellbeing and problem symptoms, adding to the use of this model among adolescents broadly and Black adolescents in particular. Third, the study utilized a statistical procedure that allowed for a fuller examination of patterns in mental health across a wider set of subjective wellbeing indicators, broadening the conceptualization of subjective wellbeing from previous peer-reviewed studies using the dual-factor model. Finally, the study was able to illuminate how critical educational factors, specifically school bonding, vary in their association with patterns of mental health, thereby adding to the limited research on these constructs among this adolescent subgroup, underrepresented in mental health research. The current study results indicate four distinct mental health groups of Black adolescents, and reveal differences in gender, age, income, school bonding, grade retention, and suspensions among the four mental health classes. These findings support the applicability of the dual-factor model in a more comprehensive view of mental health, and the significant association of school

Table 4 Multinomial logistic regression of demographic and educational experiences by latent class ($n = 1170$)

Demographic and Education Variables	Vulnerable Mental Health Group ($n = 234$)			Symptomatic but Content Mental Health Group ($n = 149$)			Troubled Mental Health Group ($n = 192$)		
	B	SE	Odds Ratio	B	SE	Odds Ratio	B	SE	Odds Ratio
Age	-0.065	0.079	0.937	0.234*	0.062	1.264*	-0.023	0.080	0.977
Caribbean Black African American	-0.027	0.497	0.973	0.095	0.285	1.100	0.147	0.359	1.158
Females	0.094	0.272	1.099	-0.107	0.251	0.899	0.623*	0.153	1.865*
Males									
Income	-0.327*	0.136	0.721*	-0.237*	0.105	0.789*	-0.001	0.093	0.999
School Bonding	-1.650*	0.305	0.192*	-1.578*	0.209	0.206*	-1.886*	0.289	0.152*
Ever repeated a grade	0.520	0.351	1.682	0.114	0.292	1.121	0.644*	0.295	1.904*
Ever suspended 1+ days	0.254	0.240	1.289	0.508	0.302	1.662	0.749*	0.251	2.115*
Ever expelled from school	0.388	0.531	1.474	0.366	0.301	1.442	0.628	0.348	1.874
Grades	0.084	0.168	1.088	0.093	0.179	1.097	-0.063	0.174	0.939

Reference is positive mental health group

Italics indicate comparison for categorical covariates

B is unstandardized coefficient; SE is the standard error

*Statistically significant at $p < .05$

bonding and better mental health among Black youth. Both hypotheses on the associations between educational experience and mental health were partially supported; no differences in grades or expulsions were observed between the mental health groups.

Support for the Dual-Factor Model of Mental Health

Consistent with previous studies applying the dual-factor model (e.g., Suldo and Shaffer 2008), this study was able to replicate the four mental health groups (troubled, vulnerable, symptomatic but content, positive mental health) and differentiate educational experiences among Black youth. This finding extends the applicability of the dual-factor model to more comprehensively assess mental health among youth, Black youth specifically, and is aligned with research that supports the contention that absence of problem symptoms does not necessarily indicate wellbeing (e.g., Keyes 2006). Notably, this study broadened the indicators of subjective wellbeing from previous studies using the dual-factor model to include aspects of emotional, psychological, and social wellbeing (Keyes 2006), adding to the literature on the importance of including measures of both positive feeling and functioning in a conceptualization of mental health (e.g., Ryan and Deci 2001). Consistent with previous studies using the dual-factor model (e.g., Suldo et al. 2011), the four mental health groups identified

suggest that subjective wellbeing and psychopathology are not opposite ends of the spectrum and the absence of one does not preclude the presence of the other. This was most observable in the symptomatic but content and vulnerable groups. Specifically, 13% of adolescents who had significant levels of psychopathology also reported moderate to high subjective wellbeing suggesting that despite the presence of mental health problems, these youth were relatively satisfied with life and had higher self-esteem. Likewise, among adolescents with low levels of mental health problems, 20% also had relatively low subjective wellbeing, suggesting that absence of or lower symptoms alone does not necessarily equate to better mental health. These youth, in fact, may be less targeted for intervention to improve mental health based on lower problem symptoms and disorder. The findings are key for Black adolescents who may already seek mental health services less than their peers and at the same time have limited access to interventions or services that target an improvement in mental health (Lindsey et al. 2010).

Even with alignment to the dual-factor model, the findings from this study varied somewhat in relation to significant educational outcomes compared to previous studies using the model. In accordance with former studies, the positive mental health group generally fared better in some educational experiences compared to the other groups, particularly the troubled group, supporting the association

of better mental health (high subjective wellbeing, low psychopathology) to improved school experiences. However, whereas previous research (e.g., Antaramian et al. 2010; Lyons et al. 2013) found differences among groups on grade point average or grades, there were no differences on self-reported grades identified in the current study among groups. This inconsistency could be due, in part, to how grades were measured. Previous studies used school records as part of grade assessment and the current study used self-reports of grades assessed as what the youth felt they mostly received in school (e.g., mostly As), which may not be as reliable. Notwithstanding, the current study assessed other behavioral dimensions such as suspensions, grade retention, and expulsions not fully examined in prior studies, particularly among Black youth, though Suldo et al. (2011, 2016) did examine office discipline referrals, which could be considered a pre-cursor to suspensions and expulsions. Further, while measures of affective connections to school were not completely consistent with previous studies, Antaramian et al. (2010) did find that the positive mental health group (high subjective wellbeing, low psychopathology) had better reports of student-teacher relationships than all other groups. Similarly, Lyons et al. (2013) reported better emotional engagement (i.e., student relationships with peers and teachers in school) for the positive mental health group compared to the vulnerable group (low subjective wellbeing, low psychopathology). Suldo et al. (2016) also reported better attitudes towards school (e.g., a sense of belonging) for the complete mental health group compared to the vulnerable group. Student-teacher relationships and a sense of belonging can be considered a part of the construct of school bonding or connectedness and would be consistent with the current study findings that the positive mental health group reported significantly greater school bonding than all other mental health groups.

School Bonding Matters for Mental Health

It is evident from the study findings that higher school bonding is strongly associated with having better mental health: as school bonding increased, the odds of being in a group with higher subjective wellbeing increased, with more prominent association with the positive mental health group. Much of the previous literature found lower school bonding to be related to elevated adolescent anxiety and depressive symptoms (Bond et al. 2007; Shochet et al. 2006), and some studied the promotive effects of school connections on wellbeing suggesting that positive school connections are associated with better self-esteem (Greene and Way 2005) and happiness (e.g., Stiglbauer et al. 2013). Consistent with this study's hypotheses, the results strengthen and extend the empirical literature by investigating the mental health of Black adolescents, an

understudied population. Indeed, school bonding can be considered a part of overall school engagement and has been identified as a key factor in the academic success of African American adolescents (Steele 1992). More study is needed to understand within group variation of school bonding and subsequent correlates among African American youth (Dotterer et al. 2009).

Alternatively, it is plausible that youth with greater subjective wellbeing are more engaged in the school environment. Stiglbauer et al. (2013) found a reciprocal relationship over time between happiness and positive school connections (e.g., relationships between students and teachers). Similarly, Lewis et al. (2011) found a significant bidirectional relationship between life satisfaction and adolescent students' level of school engagement. As greater school bonding has been associated with better academic progress and achievement (Bond et al. 2007), it could be a conduit through which positive mental health influences educational achievement. Given the importance of school bonding to positive mental health and vice versa, along with the literature that suggests Black students report lower bonding (Yang and Anyon 2016), the findings reflect the need for more research on an integrative model for the positive development of Black adolescents in both mental health and educational experiences, especially taking into account variations in culture, context, and ethnicity (Kia-Keating et al. 2011).

Associations between Grade Retention, Suspensions, and Positive Mental Health

This study also observed differences between the positive mental health group and the troubled group on grade repetition and suspensions, such that grade repeaters and those suspended a day or more had higher odds of being in the troubled group. Notably, students in the troubled group had not only high reports of psychopathology but also lower reports of subjective wellbeing, which emphasizes a focus not just on reducing mental health problems but also improving subjective wellbeing as a way to potentially address these specific school outcomes among Black youth. In general, grade retained students have lower academic achievement, poorer personal adjustment, lower self-concept, and hold less favorable attitudes towards school than promoted students (Jimerson 2001; Nagin et al. 2003). Besides, grade retention was rated as the most stressful life event by sixth-grade students (Anderson et al. 2005). In addition, McCarty et al. (2008) found that adolescent school failures including grade retention could predict depression among girls. Lifetime mental disorders have been associated with greater retention and higher suspension rates among Black youth (Rose et al. 2017). Both school suspensions and grade retention have implications for school

disengagement, and ultimately lower school achievement (Wang and Fredricks 2014) as well as mental health problems (i.e., depression; Li and Lerner 2011). Importantly, as Black students are being retained and suspended at a higher rate than their peers (e.g., White students; Musu-Gillette et al. 2016), it is critical to better understand how both are associated with mental health to target interventions that support better mental health as well as reduce disengagement from the school environment for Black youth.

Demographic Differences in Mental Health

This study revealed no statistically significant effects of ethnicity (African American or Caribbean Black) when comparing the positive mental health group to all other groups, which is in line with some previous literature. For example, there was no significant ethnicity effect on psychiatric disorders (Angold et al. 2002) and Suldo et al. (2016) reported no differences in mental health group based on ethnicity. However, Roberts and Roberts (2007) reported lower risk of anxiety disorders for European American youth compared to African American or Mexican American youth and Suldo and Shaffer (2008) found that youth who were American Indian were overrepresented in the troubled mental health group. Thus, there is some conflicting evidence in the empirical literature. The findings also revealed a significant income effect such that higher income was associated with greater odds of being in the positive mental health group, which is consistent with Suldo and Shaffer (2008), specifically, and more generally with literature that supports lower income or socioeconomic status (SES) as a context for both mental disorders (McLaughlin et al. 2011) and poor emotional wellbeing (Sznitman et al. 2011). In fact, Sznitman and colleagues (2011) found that poverty is a significant context for poor emotional wellbeing that, in turn, impedes youth's ability to experience better educational outcomes. For Black youth, who may be disproportionately represented in low-income environments, results suggest that a greater focus is needed on fostering better mental health among this potentially high-risk group.

Older youth in the current study also had higher odds of being in the symptomatic but content group compared to the positive mental health group. This is in contrast to other literature reporting no differences by grade level between groups (Suldo and Shaffer 2008; Suldo et al. 2016). Further, Roberts and Roberts (2007) observed no age effect for African American youths for anxiety, any DSM-IV disorder, and comorbid disorders. The difference between these two groups is related, in part, to the higher levels of psychopathology in the symptomatic but content group. Thus, in this study, though both groups experience better levels of subjective wellbeing, more older youth are experiencing mental health problems compared to their

younger counterparts. Certainly, there may be substantial heterogeneity of mental health outcomes across age, ethnicity, and income groups, which call for further research.

The study results also indicated that, compared to males, females had higher odds of being in the troubled mental health group compared to the positive mental health group. Conversely, Suldo and Shaffer (2008) found no differences in gender among any of the mental health groups. However, Suldo et al. (2016) did find some group differences between the troubled group and other groups with a lower proportion of males in the troubled group. In regards to gender, the literature is variant among adolescents but suggests differences by type of disorder such that females may have a higher prevalence of depression and other mood disorders and males may experience a higher prevalence of externalizing disorders (Kessler et al. 2012). While also considering interactive effects, previous literature revealed that older African American and Caribbean Black female adolescents reported higher levels of depressive symptoms than older African American male adolescents (Seaton et al. 2010). Additionally, African American and European American females were at higher risk for anxiety disorders, but at lower risk of disruptive substance use disorders than their male counterparts (Roberts and Roberts 2007). Clearly, more study is needed to further delineate the complexity of gender differences in mental health, considering other variables such as type of disorder, age, ethnicity, and income in an ecological and life-course perspective.

Limitations and Future Research

Despite the empirical contributions to the existing literature, it is also worthwhile to note some limitations of this study that call for future research based on design, measurement, and other populations. First, this study used a cross-sectional design based on retrospective data, so causal links between mental health and educational experiences could not be examined. Besides, directionality cannot be established. However, the current data is advantageous based on its large and nationally representative sample, including African American and Caribbean Black youth, and afforded a relatively broad set of indicators of mental health and education variables to serve the study purposes. Further research should employ longitudinal data to address the dynamics of mental health and educational trajectories. Specifically, do mental health problems and wellbeing change over time? How does mental health affect academic performance over time, or vice versa? These are important yet understudied questions.

Second, in this study all four groups of Black youth reported relatively high scores in self-esteem. This is consistent with previous studies when compared to the White population in general (Twenge and Crocker 2002; Phinney

et al. 1997). However, while considering perceived discrimination, African American and Caribbean Black youth reported significantly lower self-esteem (Seaton et al. 2008). Thus, it may not be the best indicator of psychological wellbeing. Concurrently, data is self-reported. To strengthen validity and causal hypotheses, future research, using more or other indicators of mental health, and utilizing multiple informants' report, are encouraged.

Third, although this study investigates direct associations between mental health and educational experiences of Black youth, there may be mediation or moderation effects through this process, and distal outcomes are not fully explored. Future research is recommended to examine the indirect relationship between mental health and educational experiences. For example, school bonding could mediate the relationship between mental health and educational experiences, such that those with better mental health have increased school bonding and, in turn, better grades. Besides, other factors that shape or are critical contexts for Black adolescent life experiences, like racial/ethnic discrimination, may also have an impact on educational experiences and mental health and need to be further examined as moderators or mediators; discrimination is related to lower school bonding, for example, and has received minimal attention in adolescent research (Dotterer et al. 2009).

Fourth, the current study limited educational experiences to those specifically related to affective and behavioral dimensions in the school environment. Other school-based constructs such as school climate [e.g., safety, school engagement (cognitive, behavioral)], participation in school-based activities, attendance, office discipline referrals, and school dropout, to name a few, were not considered but are worthy of future research. For example, the literature has shown that school-based extracurricular participation is positively related to school bonding and school self-esteem for African American youth (Dotterer et al. 2007). Additionally, youth educational aspirations and expectations along with teacher expectations merit future attention as potential moderators or mediators of a student's school experience, as all may be associated with mental health and other academic outcomes.

Finally, while contributing to the knowledge on mental health and educational experiences of Black youth, the study results may not be generalized to other adolescent subgroups, such as White, Asian, or Latino youth. Future research should continue to extend this work by applying the dual-factor model of mental health to examine educational experiences within other ethnic groups. Understanding group differences could further benefit the design of targeted school interventions to improve mental health and educational experiences of various other racial groups.

Implications for Practice

As previous literature using the dual-factor model approach has indicated (e.g., Suldo et al. 2011), groups of adolescents who may present with lower or less clinical problem symptoms may not be considered a target for intervention, but youth in this study reporting lower wellbeing had lower school bonding than their higher subjective wellbeing peers. Accordingly, universal or school-wide intervention approaches need to consider a focus on improving subjective wellbeing in addition to reducing problem symptoms and, as well, this vulnerable group of adolescents may benefit from a targeted intervention to improve subjective wellbeing. This type of intervention is also relevant based on the better performance of the positive mental health group in relation to other groups, suggesting potential benefits in fostering subjective wellbeing (Antaramian et al. 2010), and contributes to the importance of school-based programs that foster subjective wellbeing (Bird and Markle, 2012; Suldo et al. 2015). Indeed, research has suggested that subjective wellbeing be monitored in addition to traditional screening for mental health problems and intervention provided to students exhibiting decreased subjective wellbeing (Suldo et al. 2011). Thus, school mental health professionals can design small group interventions that target Black youth with low levels of subjective wellbeing and this focus on building subjective wellbeing may be less stigmatizing for youth who are typically involved in services based on their identified deficits. Notably, as Black adolescents engage in mental health help-seeking less than their peers (Lindsey et al. 2010) and have a general mistrust of mental health professionals (Molock et al. 2007), school-based universal programs or targeted programs to promote subjective wellbeing are critical to consider, particularly given that about one-third of Black youth in the current study exhibited lower subjective wellbeing.

In particular, the study findings that increased school bonding is associated with positive mental health contribute to a growing literature that school context has a prominent association with mental health among adolescents, but particularly Black adolescents. This is important, as schools are a key setting for the implementation of health and mental health interventions for adolescents (Roeser et al., 2000) and Black students may experience lower school bonding based on structural issues, such as racism and discrimination (Yang and Anyon 2016). Hence, schools could build in culturally responsive activities that help to foster stronger student connections with school staff and peers within the school environment in an effort to facilitate safe and supportive relationships for Black youth. These activities could be school-wide and target specific areas of school bonding such as improving school belongingness,

for example, by incorporating student voice in decision-making around school programs and activities. Additionally, teachers or teachers in concert with school mental health, guidance, or social work professionals could facilitate classroom-based activities that foster better student-teacher relationships and ultimately improved school bonding. Moreover, as better school bonding is related to both improved mental health and educational outcomes, it is a key target in advancing a mental health promotion and educational agenda for Black youth. As noted earlier, grade retention and suspensions were also more evident among adolescents with lower subjective wellbeing, thus interventions that target the improvement of subjective wellbeing and concomitantly provide supports for Black students that are being retained and suspended more often may be warranted. This suggestion, however, needs to be considered in the context of the other structural dynamics (e.g., discrimination) that may be at the root of this disparity. However, given the association of suspension and retention among groups of Black youth with worse mental health, fostering subjective wellbeing and reducing mental health problems among this group is a worthy endeavor.

Finally, Black youth, like Black adults, may rely on and seek psychological and emotional support from informal sources in their communities, like religious organizations (Ellison et al. 2008), which also provide positive social connections and a sense of community (Smith 2003). There is a documented relationship between religion and better psychosocial adjustment among Black youth (Rose et al. 2014; Wong et al. 2006) and though limited, studies have revealed a positive influence of religion on academic outcomes (i.e., grades, school bonding; Milot and Ludden 2009) and a protective influence of religion on academic progress for youth in higher poverty environments (Regnerus and Elder 2003). Further, religiosity is considered a strength-based developmental asset for adolescents (Butler-Barnes et al. 2012). Thus, religious organizations may be an important context for fostering subjective wellbeing and positive educational experiences among Black youth.

Conclusion

During adolescence, psychosocial changes can include both the development of positive wellbeing, as well as the emergence of mental health problems (Roeser et al. 2000). At the same time, adolescents are navigating other developmental processes, e.g. school and academic success, which is fundamental to their life chances and economic potential (UNICEF 2012). For Black adolescents, educational success remains a public health concern due to differential achievement and problematic retention,

suspension, and expulsion rates, which, in turn, negatively affects their ability to reach their full life and economic potential. Using a nationally representative sample of Black adolescents, this research examined the associations between mental health and educational experiences. The study underscores the critical importance of a more comprehensive conceptualization of mental health that includes subjective wellbeing or other positive mental health characteristics and thus, provides further evidence for the use of a dual-factor model of mental health (e.g., Suldo and Shaffer 2008) among adolescents, generally, and Black adolescents, specifically. This model is particularly important as there has been a prevailing emphasis or focus on the absence of dysfunction as a way to conceptualize mental health. The current study findings suggest that this narrower conceptualization of mental health does not lend itself to a full inclusion of the positive psychosocial changes adolescents may experience. Key findings from this study include that higher school bonding is strongly associated with having better mental health, and that those with poor mental health experience other problematic school issues such as grade retention and school suspensions. Though there has been much study on school bonding, its association to positive mental health among Black youth is important, as school bonding is a malleable factor and can be a target of intervention. In light of these findings, ongoing efforts are needed to address disparities in the educational experiences of Black youth. The results of the study along with existing developmental literature, and research generated from the fields of public health, mental health, education, and positive youth development support the continued exploration of culturally relevant school and community-based interventions that address subjective wellbeing, mental health problems, as well as improved educational experiences among Black youth. As adolescence is a critical period for intervention, these strategies are an essential part of an agenda to promote positive development among Black youth.

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Author Contributions T.R. conceived of the study, conducted the statistical analysis, led interpretation of data, drafted the background and discussion sections of manuscript, formatted the manuscript including references, and edited throughout; M.L. participated in data interpretation, helped to draft the background and discussion sections of the manuscript, and provided additional edits throughout; Y.X. helped conduct the statistical analysis, wrote up results, edited the method section, worked on the discussion section of the manuscript, and provided additional edits throughout; N.F.C. participated in data interpretation, drafted the method section of the manuscript, and provided additional edits throughout; S.J. provided critical feedback on

data analysis and interpretation and participated in editing the manuscript. All authors read and approved the final manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

Ethical Approval The NSAL is an IRB approved nationally representative household survey thus all procedures performed 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.

Informed Consent This study is a secondary analysis of the 2001–2003 National Survey of American Life (NSAL) adolescent sample, originally collected by researchers at the Program for Research on Black Americans (PRBA) through the University of Michigan's Institute for Social Research. Informed consent and assent were obtained from the adolescent's legal guardian and adolescent prior to the study participation.

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