

Working Paper Series

Mixed Ancestry Adolescents

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Abstract

We examined whether adolescents who claim mixed ancestry report more adjustment problems (higher levels of depression, substance use, health problems) than their peers who claim a single ancestry. The 90,000 adolescents in the in-school survey of the National Longitudinal Study of Adolescent Health provided the data. The approach was designed to examine whether mixed-ancestry adolescents reveal tendencies that we expected from characteristics of their constituent ancestries, or whether the phenomenon of mixed ancestry is a unique experience, which cannot be explained on the basis of the constituent ancestries. The results showed that adolescents of some mixed ancestry combinations report more adjustment problems than the single ancestry adolescents in their constituent race/ethnicities on many but not all indicators of social adjustment. Adjustment problems were more prevalent among boys of mixed ancestry, especially among boys whose constituent ancestry included an Asian or a White identity.

Mixed Race/Ethnicity Adolescents

Whether adolescents of mixed racial and ethnic ancestry experience more psychological and social adjustment problems than their single-race peers has been a source of controversy. Researchers who have studied clinical populations or community-based small samples have tended to characterize mixed ancestry youth as having problems (e.g., Brandell, 1988; Gibbs, 1987, 1989; Gordon, 1964; Ladner, 1977; Root, 1992, 1998). However, researchers who have studied non-clinical samples have challenged this view (e.g., Gibbs & Hines, 1992; Johnson & Nagoshi, 1986; Phinney & Alipuria, 1996). The contradictions in this body of research have been attributed to differences in research design and sampling (Gibbs & Hines, 1992; Udry, Li, & Hendrickson-Smith, in press).

More recently, since the National Longitudinal Study of Adolescent Health (Add Health) data from a large nationally representative sample of youth have become available, methodological problems associated with the small size and non-representative nature of the samples of previous studies have been overcome. Two recent studies of the Add Health data have shown that adolescents of mixed ancestry have lower scores on indicators of health and social adjustment in several areas of functioning (Cooney & Radina, 2000; Udry et al., in press).

At least two questions remain unresolved in studies of mixed ancestry youth's adjustment: (1) What is the role played by *specific* racial/ethnic identification combinations (see Harris, 2002; Saenz, Hwang, Aguire, & Anderson, 1995) and (2) What is the relevance of gender to mixed-ancestry adolescents' probability of exhibiting higher rates of adjustment problems (see Cooney & Radina, 2000; Udry et al., in press.) Before the questions of specific racial/ethnic combinations and the role of

gender can be answered, however, one needs to define mixed ancestry.

Challenges in Defining Mixed Ancestry

Two issues arise in defining adolescents' mixed ancestry: should Latino/Hispanic ethnicity be included in the definition of mixed ancestry; and what/who defines whether a given adolescent is or is not of mixed ancestry.

Race vs. race/ethnicity. One of the questions confronting anyone interested in the role played by mixed ancestry is whether race and ethnicity are to be merged or kept separate as is done in the Census and many Office of Management and Budget (OMB) forms. This question is rooted in the 19th century use of the word *race*, denoting phenotypic and more importantly moral and intellectual differences which were assumed to be grounded in biological differences (see Sollors, 2002, for a brief overview of the word "race"). However, ethnicity has referred not to biological but to cultural and/or linguistic heritage. As Blauner (1972) and Omi (2001) have observed, racial classifications in the U.S. serve the purpose of describing and maintaining a system of social inequality such that the racial system of inequality is increasingly understood as a social construction of difference that has given rise to the term "minority." Even when race was viewed earlier in U.S. history in biological terms denoting physical differences, the concept was imbued with assumed differences of mental and moral qualities (Banton, 1983; Nobles, 2000; Spickard, 1992) that described and justified inequality. In contemporary U.S. society, "racial" categories of African American, Asian, and Native American together with Hispanic ethnicity serve as indicators of minority status. It has been an easy leap to incorporate Hispanic ethnicity into the system of racial stratification because of the

association of both with minority status. In the U.S., being a minority is what determines one's opportunities and organizes social interactions and since minority status encompasses race and Hispanic ethnicity, distinctions between the two systems of classification have become blurred.

Consequently, even though many forms asking for racial identity include the caveat, "Hispanics/Latinos can be of any race," the distinction between race and Hispanic ethnicity remains on paper and does not seem to play a major role in self-identification. Indeed, the conflation of race with Hispanic ancestry is quite pronounced among Hispanic/Latino children and adolescents (Erkut, 1993; Erkut, Alarcón, & García Coll, 1999). In spite of the official attempts at separating race from Hispanic ethnicity in the Census and other formal ways of enumerating the racial and ethnic diversity of the population, the majority of Hispanic children and adolescents' conception of race includes ethnicity. Even researchers who, in an effort to be consistent with Census and OMB forms, have restricted their analyses to adolescents that identify their race as Caucasian, Black, Asian or Native American, have commented that the vast majority of Hispanic/Latino adolescents mark "Other" when asked about their race (Harris, 2002; Udry et al., in press), presumably because they do not see the Hispanic/Latino option listed. Udry et al. report that 83% of adolescents who checked "Other" had responded "Hispanic or Latino" in a prior question. Thus, in this paper we include Hispanic ethnicity along side the more traditional racial categories to define mixed ancestry in terms of mixed racial and/or ethnic background.¹

What/who defines mixed ancestry? The second question concerns the basis on which it is decided that an adolescent is of mixed ancestry. Racial and ethnic identity is not an "essential" but a socially constructed and fluid characteristic of

individuals (Nagel, 1995; Reed, 2001; Snipp, 1997; Waters & Lieberson, 1993). Consequently, there is no question or a set of questions, no specific way of asking the question, or an entity that could provide the *real* source of information that can supply a *definitive* answer (Stephan & Stephan, 2000). Employing both the in-school and at-home portions of the Add Health data, Harris and Sim (2002) have shown that whether the parent or the adolescent answers the question of ancestry and whether the adolescent is asked in school or at home makes a difference in reporting mixed racial ancestry. These researchers found that some adolescents who identified with a single race in school indicated mixed ancestry when the same question was asked at home and some adolescents who reported being mixed race in school, identified with a single race at home. Moreover, some adolescents who consistently reported being mixed race both in school and at home reported different race mixtures in the two venues. Harris and Sim's research also revealed that such contextual factors as region of residence, racial composition of the neighborhood, and whether the question was asked in private or within earshot of family members made a difference in the likelihood that an adolescent will or will not report mixed ancestry. Similar to Davis' (1991) contention, the researchers also found that having parents who claim to be from different racial groups is neither a necessary nor a sufficient condition for adolescents' mixed racial identification (Harris & Sim, 2002, p. 619). Thus, in adolescence racial/ethnic identity appears to be fluid and situationally determined. It is similar to personality theorists' notion of a "state" (what one thinks, believes, or feels *now*) rather than a "trait," which is more enduring.

Given this fluidity, we are in agreement with Root (2002) that the nature of the research question ought to determine how an adolescent's racial/ethnic identity is ascertained. For example,

investigations of intergenerational acculturation may be best undertaken through an examination of parental race/ethnicity. In contrast, our focus on the self-reported adjustment of adolescents, which we believe is influenced by an emerging self-concept that encompasses race/ethnicity, suggests that adolescents' own private self-report is the preferred method of identification (see Stephan & Stephan, 2000).

Specific Racial/Ethnic Identification Combinations

Previous research has indicated that there is not a singular mixed race experience; rather, both the fluidity of mixed ancestry identification (Harris & Sim, 2002) and the behavioral correlates of mixed race identity can vary by specific racial identity (Udry et al., in press). Harris and Sim's (2002) comparisons of mixed-race identification at home and in school showed that similar percentages of adolescents identified as White/Black and White/Asian at home and in school, but among adolescents who identified as White/Native American in school, a significantly smaller number so identified at home. In the home interview, adolescents who gave mixed race responses were asked, "Which one category best describes your racial background?" Reverting to White as the single best racial category was least likely among adolescents who had reported a White/Black identity (17%), most likely among those who reported being White/Native American (86%), and midway between the two for those reporting White/Asian identity (47%) (Harris & Sim, 2002, p. 622). These results suggest that a Native American identity is the most fluid, which confirms the views expressed by Harris (1994), Nagel (1995), and Snipp (1997; 2002) that a Native American identity is more easily slipped into and out of than other racial identities. Conversely, the least fluid is a Black identity, suggesting the continued operation of the "one-

drop" rule, a legacy of slavery, which describes a system where even a distant Black ancestor meant the person was non-White, hence Black (see Davis, 1991). That close to half of White/Asian adolescents picked White as the one best category has led Harris and Sim (2002) to conclude that the relatively small social distance that separates Whites and Asians gives White/Asian adolescents the freedom to choose one or the other race when remaining multiracial is not an option.

What has been missing in the literature is an examination of specific cross-racial/ethnic combinations. Udry et al.'s (in press) comparisons of particular combinations of mixed-race adolescents with single-race reporting peers of the constituent races has made a major contribution to understanding specific mixtures, albeit, excluding adolescents of Hispanic/Latino ethnicity. Udry et al. prepared race-specific analyses in which each one-race group is compared to combinations that include this race. Thus they compared the odds ratios for specific two-race adolescents and those with one-race adolescents of the constituent races on whether they viewed their health as only fair or poor, wake up tired, have skin problems, headaches, feel depressed, smoke regularly, or drink regularly. Udry and colleagues found that adolescents who reported mixes with White, Black, or Asian ancestry were at greater risk regarding health indicators such as headaches, skin condition and also substance use than single-race reporting adolescents in these groups. Native American mixed race and single race adolescents were not so different from each other. Adolescents whose race mixture included White or Asian ancestry reported significantly greater risk for considering suicide, having sex, repeating a grade, and being suspended.

Similar to Udry et al.'s approach, we wanted to examine whether mixed-ancestry adolescents revealed tendencies that would be expected from

characteristics of their constituent ancestries, or whether the phenomenon of mixed ancestry was a unique experience producing results that could not be explained in reference to the constituent ancestries. However, Udry et al. (in press) did not report on specific comparisons of race mixtures; for example, they did not compare adolescents who reported a White/Asian mixture with those who reported a White/Black or Black/Asian mixtures. In this paper we focused on the behavioral and health problems of adolescents who self-identify as belonging to specific combinations of two racial/ethnic groups – e.g., Asian and Hispanic, White and Native American, Black and Asian. We examined whether the characteristics of adolescents who reported a particular combination of racial/ethnic identification were significantly different from the characteristics of the single-race/ethnicity adolescents in the two race/ethnicities with which they identified.

Following Harris and Sim, who point out that there is no single mixed-race experience, we hypothesized that particular racial/ethnic combinations will reveal greater or lesser adjustment problems. Previous research has characterized the greater fluidity of a Native American identity (Harris, 1994; Harris & Sim, 2002; Nagel, 1995; Snipp, 1997). We hypothesized that mixed ancestry that includes a Native American identity will be associated with the lowest increases in adjustment problems relative to single-race/ethnicity identifying peers of the constituent ancestries. We also speculated that a part-White identity would be less stressful because of the dominance of Whites in U.S. society; thus adolescents who can claim a part-White identity are likely to reap some social benefits from their association with the dominant group. Thus, we hypothesized that mixed ancestry that includes a White identity will be associated with smaller increases in adjustment

problems relative to single-race/ethnicity identifying peers of the constituent ancestries. We also hypothesized that combinations of Latino/Hispanic, Asian, and Black identities were likely to be more stressful due to the compounding of minority status with being of mixed ancestry.

Role of Gender

A basic premise of the stress-related approach is that mixed racial/ethnic ancestry is likely to complicate adolescent identity development. There is a large body of research which suggests that adolescent girls and boys have somewhat different identity development trajectories and the foci on which their identity issues play themselves out (Archer, 1985; Marcia, 1980, 1987; Skoe & Marcia, 1991). Moreover, just as racial/ethnic identity formation is gendered, so is gender identity formation racialized for boys/men (see Chen, 1999; Connell, 1987; Espiritu, 1997) and for girls/women (Espiritu, 1997; Hill Collins, 2000; Pyke & Johnson, 2003), which can lead to gender differences in the lived experience of mixed race/ethnicity adolescents. Our gender-based hypothesis was derived from the understanding that male gender identity is more difficult to achieve than female gender identity (Pleck, 1981). Eisler, Skidmore, and Ward (1988) have found that male college students reported experiencing more gender-related stress than female students. It appears that adolescent boys have to “prove” their manhood to become men, especially in terms of proving that they are heterosexual (Plummer, 2001), whereas girls do not face a similar challenge; hence, identity formation can be a more stressful process for adolescent boys than for adolescent girls. Connell (1987; 1995) suggests that hegemonic masculinity that is associated with White men who hold power serves as an ideal type, which brings into relief multiple masculinities that deviate from the ideal by virtue of race/ethnicity, class, sexual orientation, and

physical ability differences. The notion of multiple masculinities implies that some groups are more “deviant” from the ideal type than others. We hypothesized that mixed-race/ethnicity adolescent boys will report greater adjustment problems relative to their constituent single-race/ethnicity male peers and mixed race/ethnicity girls of the same race/ethnicity combination.

Methods

Sample. We used data from the National Longitudinal Study of Adolescent Health (Add Health: Bearman, Jones, & Udry, 1997) to test the hypotheses. These data were collected to assess the health status of adolescents and to explore the causes and consequences of their health-related behaviors. We chose this data set because the data are from a nationally representative sample; they are relatively recent (1994–1996); and they are comprehensive. Moreover, they include over sampling of minority populations. The Add Health dataset was based on a clustered sampling design in which 80 high schools and 80 paired “feeder schools” (junior high schools that contributed students to the selected high schools) across the United States yielded a sample of 90,000 adolescents in grades 7–12. These students were given the in-school portion of the survey. Although no special efforts were made to recruit populations at risk for absenteeism or dropout, demographic and school data were available for students not captured by the in-school recruitment procedure. Given the over sampling of minority populations and student profiles of those excluded from the study, cases were weighted in a way to reflect the overall population of students.

We restricted our analysis sample to adolescents who were included as part of the core sampling frame (excluding respondents selected for the

genetic subsample) and who claimed at least one racial ethnic category ($N_{\text{total}}=79,913$). A series of questions were posed to adolescents in the Add Health survey: Are you of Hispanic or Latino origin? Those answering “Yes” to this question were asked to indicate what their Hispanic or Latino background was from among Mexican/Mexican American, Chicano/Chicana, Cuban/Cuban American, Puerto Rican, Central/South American, and Other Hispanic. The next question asked, “What is your race? If you are more than one race, you may chose more than one.” The choices were White, Black or African American, American Indian or Native American, Asian or Pacific Islander, and Other.

Sample sizes for single category claimants and paired combinations of categories are given in **Table 1**. The mean age and grade level for these students were 15.01 years ($SD=1.71$) and grade 9.61 ($SD=1.61$), respectively.

Measures. Three indicators of negative adjustment (depression, substance use, and health problems) were examined. Descriptive statistics of these outcome variables are given in **Table 2**.

Indicators. Depression was operationalized as the mean frequency of seven symptoms experienced in the month prior to the assessment (e.g., poor appetite, insomnia, moodiness, etc.), rated on a scale from 0 (“never”) to 4 (“every day”). Internal consistency coefficients, calculated for each category of single claimants and a combined category of any combination of multiple claims, ranged from 0.80 to 0.85. Substance use was operationalized as the mean frequency of use, in the past 12 months, of three items: smoking, drinking alcohol, and getting drunk, from 0 (“never”) to 6 (“nearly every day”). The alpha coefficients for this composite ranged from 0.81 to 0.87. Health problems was operationalized as the mean of nine items, which

Table 1

Sample sizes for each paired combination of racial/ethnic categories claimed.
Values in the diagonal represent the number of single category claimants.

	<u>White</u>	<u>Black</u>	<u>Hispanic</u>	<u>Asian</u>	<u>Native American</u>
Female					
White	21,842				
Black	453	6,604			
Hispanic	1,689	648	4,107		
Asian	407	194	335	1,874	
Native American	1,261	608	493	127	330
Male					
White	22,331				
Black	352	5,974			
Hispanic	1,712	714	4,304		
Asian	410	243	462	2,038	
Native American	1,131	373	472	143	478

Note: Individuals claiming more than two categories appear in multiple cells.

Table 2

Descriptive statistics for adjustment outcomes, by gender.

	<u>N</u>	<u>Range</u>	<u>Mean</u>	<u>Std Dev</u>
Female				
Depression	37,451	0-4	1.24	0.81
Substance Use	37,848	0-6	0.96	1.33
Health Problems	38,404	0-5	1.59	0.64
Male				
Depression	36,196	0-4	0.75	0.69
Substance Use	36,831	0-6	1.16	1.52
Health Problems	37,676	0-5	1.35	0.66

included a self-rated assessment of general health and the frequency in the prior month of eight health-related symptoms (feeling sick, feeling tired, skin problems, dizzy, chest pain, headache, muscle/joint pain, stomachache), each rated on a 5-point scale. Alpha coefficients for this scale ranged from 0.77 to 0.82. Each of these composite scores was coded such that high scores reflect more problematic outcomes.

Results

We conducted hierarchical regression analyses to account for the complex sampling design (i.e., students clustered within schools and the use of weights to adjust for oversampled populations) using the Mplus statistical package (Version 2.12: Muthén & Muthén, 1998). We fit five sets of models, separately for boys and girls, based on students with any claim of the following ancestries: White ($n=25,470$), Black ($n=7,287$), Hispanic ($n=7,224$), Asian ($n=2,938$), and Native American ($n=2,180$). In these models, we estimated the differences in adjustment outcomes for students claiming each paired combination of racial/ethnic categories compared to students claiming only a single category. Specifically, we modeled as random effects the additional claim of specific racial/ethnic categories at the “within school” level on the three adjustment outcomes, controlling for students’ grade level. These individual level random effect variables were aggregated at the “between school” level, yielding a set of overall effects that have been adjusted for the clustered sampling design.

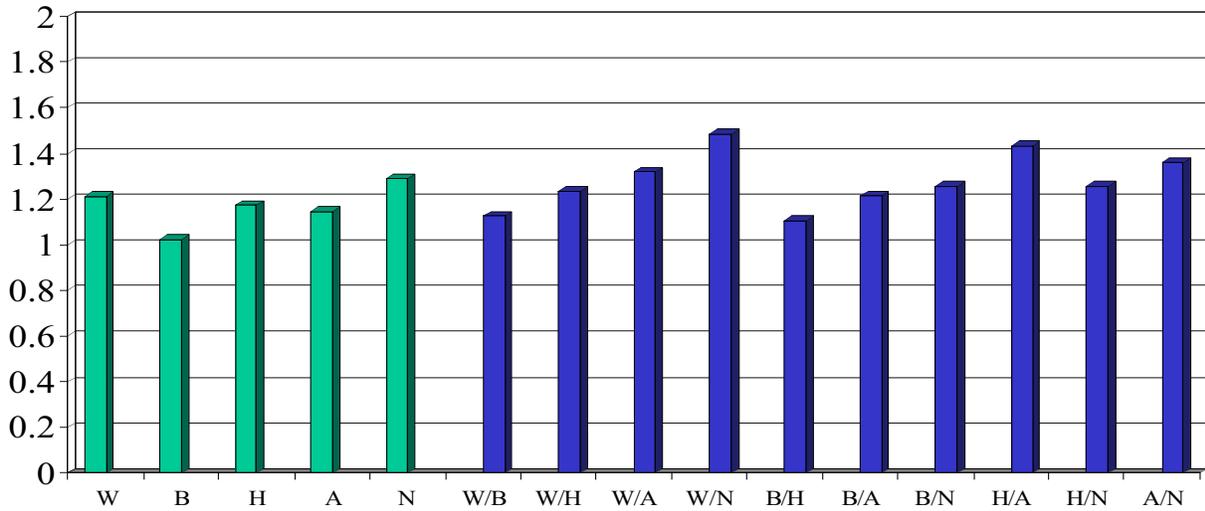
For instance, one model drew from the data of all female respondents claiming a White identity. In this model, scores on the outcome variables were obtained by means of a series of four dummy variables indicating additional claims of Black, Hispanic, Asian, and/or Native American identities. In these analyses adolescents’ grade in school (a proxy for social age) was used as a

covariate. The results for all racial/ethnic by gender analyses are given in Appendix A.

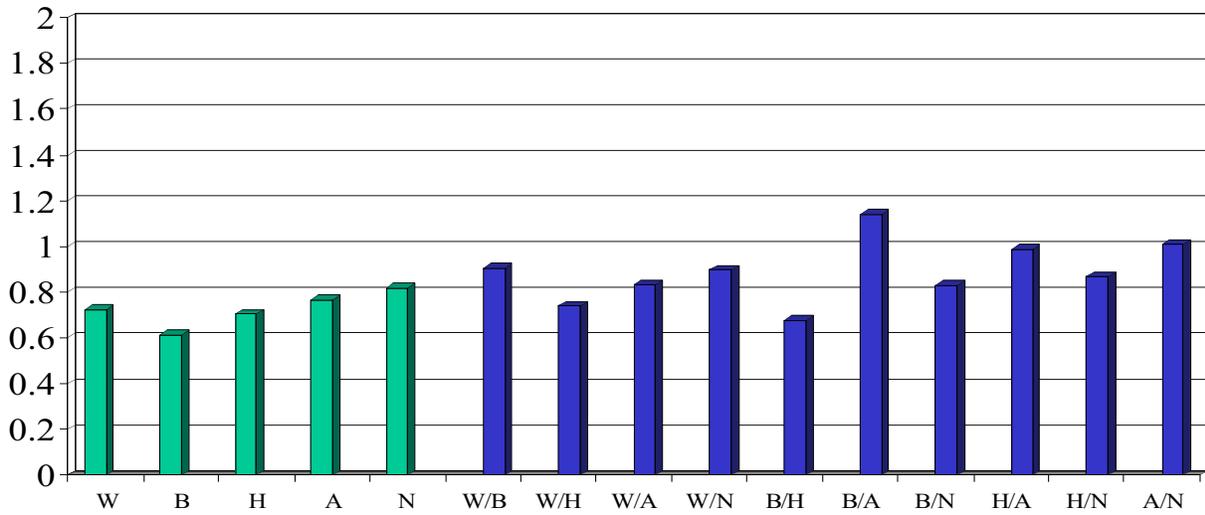
Since we were interested in testing the hypothesis that adolescents claiming multiple categories differ from adolescents in each of the constituent reference categories, we took the extra step of calculating predicted values for each paired combination, taking into consideration the complex clustered sampling design and grade level as a covariate. Because the effect of claiming a given combination of categories (e.g., White/Black) was estimated in two different models (e.g., once in the model based on White claimants and once in the model based on Black claimants), the point estimate and its standard error for each paired combination was calculated by averaging the two model-based values. Each point estimate was then compared to the mean of the outcome variable for single claimant respondents (i.e., the intercept term at the “between schools” level of the models) by constructing a confidence interval about the point estimate. Point estimates for each paired combination and the distance from both reference group means are given in Table 3.

Our hypothesis that adolescents of mixed ancestry will report poorer adjustment outcomes than their peers who claim a single ancestry is supported when both comparisons reveal significant difference in the hypothesized direction. Of the 60 cells in the study (10 mixed ancestry pairs by 3 adjustment outcomes for each gender), our hypothesis was confirmed in 26 cells (see Table 3). This means in 43% of the comparisons, the negative adjustment scores of mixed ancestry adolescents exceeded the levels observed among peers of their constituent ancestries who reported a single-ancestry. Our hypothesis regarding gender differences was also confirmed. Only 30% of the comparisons for girls but 57% of the boys showed significant differences from both of the constituent ancestries.) Figures 1, 2 and 3 show

Figure 1. Predicted values for depression for single category reference groups and paired combinations of race/ethnicity.

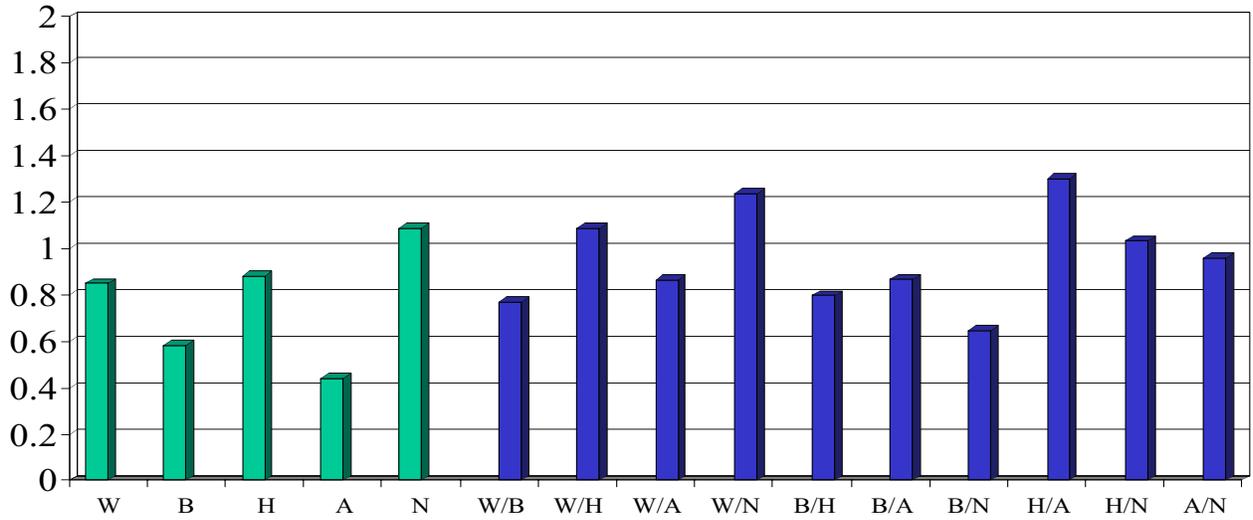


Females

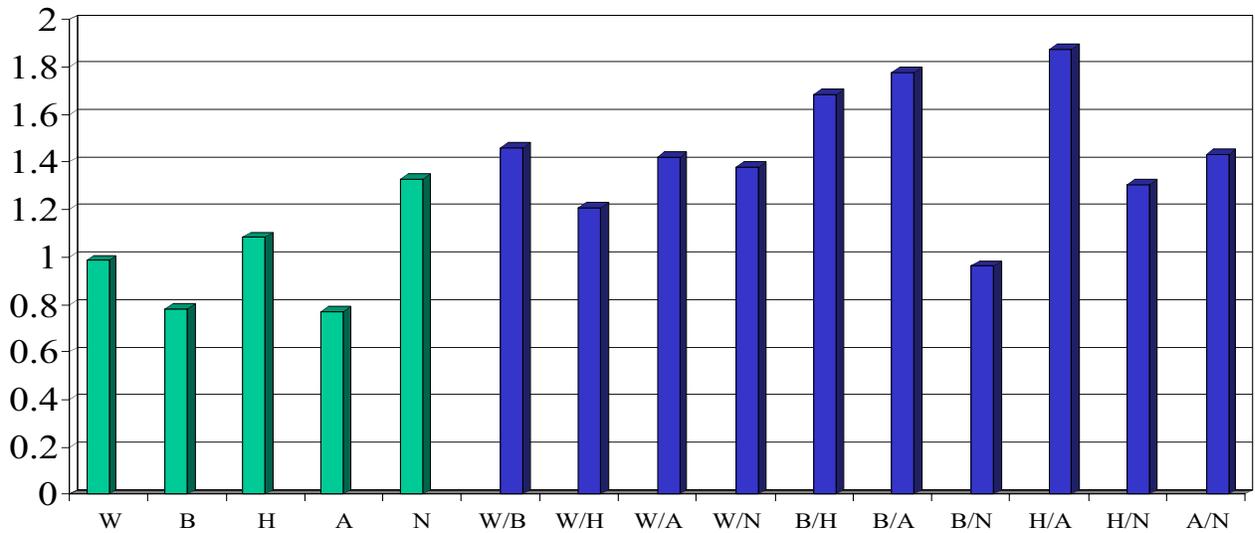


Males

Figure 2. Predicted values for substance use for single category reference groups and paired combinations of race/ethnicity.

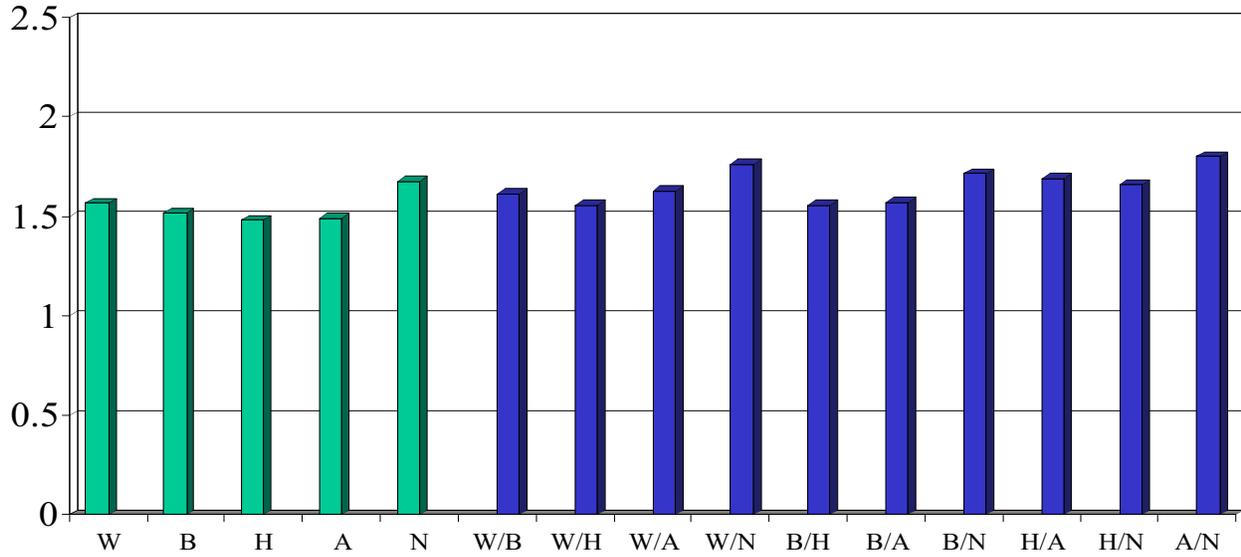


Females

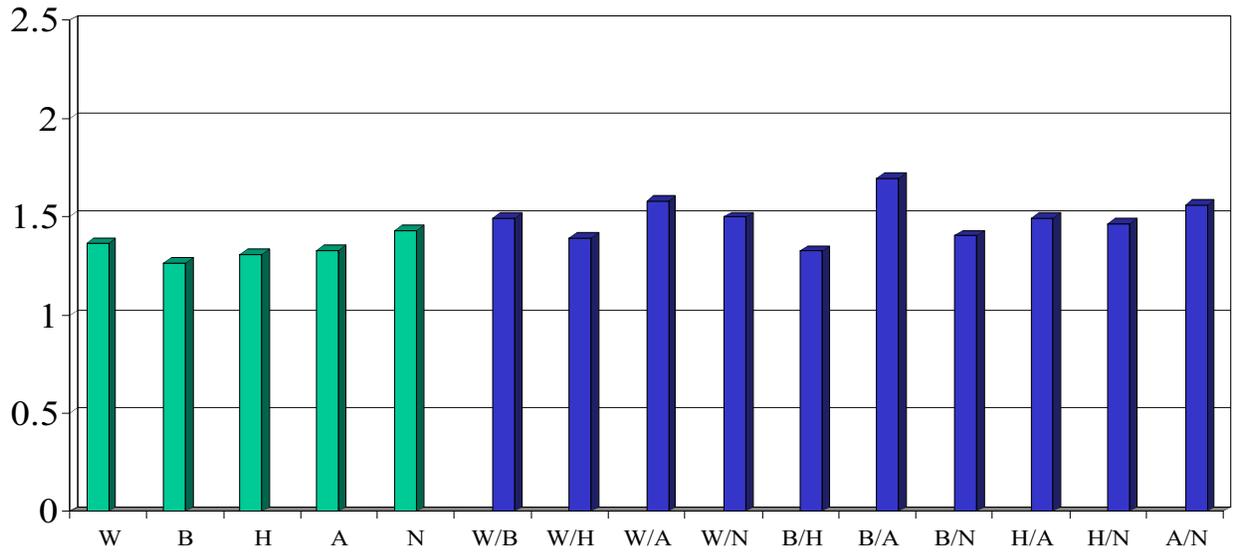


Males

Figure 3. Predicted values for health problems for single category reference groups and paired combinations of race/ethnicity.



Females



Males

Table 3.

Table 3. Predicted adjustment scores for paired category claimants and their distance from the predicted values of their single-claimant reference groups -

		FEMALES			MALES		
		Depression Ŷ (SE)	Substance Use Ŷ (SE)	Health Problems Ŷ (SE)	Depression Ŷ (SE)	Substance Use Ŷ (SE)	Health Problems Ŷ (SE)
W/B		1.13 (0.05)	0.77 (0.07)	1.61 (0.04)	0.91 (0.07)	1.46 (0.15)	1.50 (0.05)
	From White	-0.08	-0.08	0.04	0.18**	0.47**	0.13**
	From Black	0.11*	0.19**	0.09*	0.30***	0.68***	0.23***
W/H		1.24 (0.03)	1.09 (0.05)	1.56 (0.02)	0.74 (0.03)	1.21 (0.05)	1.39 (0.03)
	From White	0.03	0.24***	-0.01	0.01	0.22***	0.02
	From Hispanic	0.07*	0.21***	0.08***	0.03	0.13**	0.08**
W/A		1.32 (0.04)	0.86 (0.09)	1.63 (0.04)	0.88 (0.05)	1.42 (0.13)	1.58 (0.06)
	From White	0.11**	0.01	0.06	0.15**	0.43***	0.21***
	From Asian	0.17***	0.42***	0.14***	0.11*	0.65***	0.25***
W/N		1.49 (0.03)	1.24 (0.06)	1.76 (0.03)	0.90 (0.03)	1.38 (0.06)	1.50 (0.03)
	From White	0.28***	0.39***	0.19***	0.17***	0.39***	0.13***
	From Native American	0.20***	0.15**	0.08***	0.08**	0.05	0.07*
B/H		1.11 (0.03)	0.80 (0.07)	1.56 (0.03)	0.68 (0.04)	1.69 (0.11)	1.33 (0.04)
	From Black	0.09**	0.22**	0.04	0.07	0.91***	0.06
	From Hispanic	-0.06*	-0.08	0.08**	-0.03	0.61***	0.02
B/A		1.21 (0.08)	0.87 (0.11)	1.57 (0.06)	1.14 (0.11)	1.78 (0.20)	1.70 (0.09)
	From Black	0.19**	0.29**	0.05	0.53***	1.00***	0.43***
	From Asian	0.06	0.43***	0.08	0.37***	1.01***	0.37***
B/N		1.26 (0.05)	0.65 (0.06)	1.72 (0.04)	0.83 (0.05)	0.96 (0.11)	1.41 (0.05)
	From Black	0.24***	0.07	0.20***	0.22***	0.18	0.14**
	From Native American	-0.03	-0.44***	0.04	0.01	-0.37**	-0.02
H/A		1.43 (0.08)	1.30 (0.18)	1.69 (0.06)	0.99 (0.07)	1.88 (0.13)	1.49 (0.07)
	From Hispanic	0.26**	0.42*	0.21***	0.28***	0.80***	0.18**
	From Asian	0.28***	0.86***	0.20***	0.22**	1.11***	0.16*
H/N		1.26 (0.05)	1.03 (0.08)	1.66 (0.04)	0.87 (0.06)	1.31 (0.10)	1.46 (0.05)
	From Hispanic	0.09	0.15*	0.18***	0.16**	0.23*	0.15**
	From Native American	-0.03	-0.06	-0.02	0.05	-0.02	0.03
A/N		1.36 (0.08)	0.96 (0.16)	1.80 (0.07)	1.01 (0.09)	1.43 (0.19)	1.56 (0.08)
	From Asian	0.21**	0.52**	0.31***	0.24**	0.66***	0.23**
	From Native American	0.07	-0.13	0.12	0.19*	0.10	0.13

Note: Shaded cells represent tests for which our overall hypothesis was supported (differences from both reference categories are significant and in the hypothesized direction).

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

the point estimates for these negative adjustment outcomes for each single ancestry category and paired combination.

Our hypotheses concerning specific combinations of racial/ethnic backgrounds were only partially supported and showed different patterns for boys than for girls. We had hypothesized that combinations involving Native American adolescents would reveal the lowest increased adjustment problems, followed by combinations involving White adolescents, and that Hispanic, Asian, and Black adolescents would be associated with greater increased problems. Among boys, our results show that combinations including Native American ancestry yielded the fewest

elevated problem indicators (3 of 12 cells). However, Black and Hispanic combinations also revealed relatively few elevated adjustment problems (7 and 5 cells, respectively). Combinations that included White or Asian ancestry, on the other hand, were more problematic (9 and 10 cells, respectively). Combinations involving Asian ancestry revealed increased problems especially in substance use, an unexpected finding since single-race Asian adolescents have the lowest levels of reported substance use (see Figure 2). Among girls, combinations including Black ancestry were the least problematic (only 1 of the 12 cells), followed by combinations including Hispanic or Native American ancestry (4 and 3 cells, respectively) and White or Asian ancestry (5 cells, each).

Discussion

These results provide a more nuanced view of the effects of mixed ancestry based on previous findings using the same dataset (Cooney & Radina, 2000; Udry, et al., in press). On some indicators of adjustment, most notably the negative indicators of substance use, depression, and health problems, many but not all combinations of mixed-ancestry adolescents report significantly higher levels of problems than adolescents claiming only the constituent single-racial/ethnic categories. The findings clearly suggest that on some facets of social adjustment, mixed ancestry adolescents experience problems that cannot be explained on the basis of their constituent ancestries.

Substance use, depression, and self-reported health problems can be responses to stress. The added stress of negotiating a dual racial/ethnic identity remains a viable explanation of the increased tendency to report depression, health problems, and substance use among mixed-ancestry adolescents. Following Gibbs (1998) who cautioned against concluding without direct evidence that identity problems are the source of stress, we cannot be sure that stress derives solely, or even primarily, from the difficulty of identity formation. A viable additional (or alternative) hypothesis is that the source of stress may be a lack of social acceptance and discrimination. Szalacha (2000) observed a similar finding of more substance use and depression among sexual minority adolescent girls compared to girls who did not report attraction to or sexual involvement with other girls. Szalacha interpreted her results as a response to the stress associated with homophobia and lack of social acceptance facing sexual minority girls. Perhaps the pattern of elevated negative indicators observed among mixed-race/ethnicity adolescents is also a response to social exclusion or not fitting in.

Future research needs to examine what aspects of mixed-ancestry adolescents lives are conducive to stress responses.

Specific Racial/Ethnic Combinations

The results support the general hypothesis that specific racial/ethnic combinations reveal differential patterns of adjustment problems. These findings confirm Harris and Sim's (2002) analyses that there is not a singular mixed ancestry experience. We had speculated that compounding the effect of ancestry mixture with minority status would lead to more adjustment problems. This was confirmed for adolescents who claimed and Asian ancestry in their mixture. We speculate that the insular and cohesive families where filial piety is a major value, characteristic of so many Asian subgroups (Caplan, Choy, & Whitmore, 1992; Chen, 1999; Tsai, Ying, & Lee, 2001) may be playing a role in the very low substance use rates of single-race Asian adolescents. It may also be playing a role in the high rates observed among mixed-race Asian adolescents. It is as if attachment to the family forms a protective wall between single-race Asian youth and the dangers of the mainstream culture. When a person of Asian ancestry has a child with someone who is not Asian (a violation of filial piety rules, as it is likely to be against the parents' wishes), that mixed-race/ethnicity child may be excluded from or no longer protected by the cohesive Asian family system. The lack of protection and concomitant exclusion may be a source of stress for Asian adolescents of mixed ancestry. Future research should examine the validity of exclusion-from-a-cohesive-family-system explanation as well as other potential explanations to understand why mixed-race/ethnicity Asian adolescents report elevated levels of substances use, health problems, and depression.

Counter to our hypothesis, combinations involving White adolescents also revealed increased adjustment problems. While the source of stress for these combinations might be difficulty in identity formation, an alternative explanation may be a loss of status relative to being perceived as White, perhaps reflecting the lingering “one-drop” rule (Davis, 1991), such that not being “pure” White may lower one’s standing among peers (see Sollors, 1999). Another plausible explanation is the pain of being discriminated against as a “person of color,” especially when part of one’s heritage belongs to the dominant group that defines the exclusionary boundaries. Its converse is equally plausible. A mixed ancestry adolescent may feel different from or rejected by the minority group for being part White, as one cannot assume that all adolescents will want to be “White,” especially when their peer group and neighborhood are composed of minority individuals.

Role of Gender

The hypothesis predicting that mixed-ancestry adolescent boys will report higher levels of negative adjustment than mixed ancestry girls and single-ancestry boys was supported. Mixed ancestry boys were more likely to report substance use, health problems, and depression than both their constituent single-race/ethnicity male peers and girls of the same combination of mixed-race/ethnicity. We believe this gender difference is related to the difficulty of achieving the male gender role as articulated by Pleck (1981) and the exacerbation of the challenge of achieving the male gender role among minority adolescents who deviate from the model of hegemonic masculinity (Connell, 1995). We believe it is harder for boys than for girls to achieve the male gender role, harder for boys of color, and harder still for mixed-race/ethnicity adolescent boys. This interpretation of the gender-based results

needs to be tested using data on gender role ideology which is not available in the Add Health study. Until then, it remains a conjecture.

The gender difference we observed among mixed ancestry adolescents contradicts Udry et al.’s findings of little or no gender difference (in press). The differences in the outcome of the two studies may be methodological. Even though they used the same Add Health dataset, Udry et al. did not include mixtures involving Hispanic/Latino ethnicity in their operational definition of mixed-race and they employed a number of outcomes measured by single items, whereas we employed items grouped into scales.

Our finding that mixed ancestry boys revealed more negative adjustment than single ancestry boys and mixed ancestry girls has received some support from Cooney and Radina’s (2000) research, which employed the public use subset of data from the in-home interviews of the first wave of the Add Health Study. The authors restricted their sample to adolescents living with both biological parents, one of whom was interviewed and provided information on the racial categorization of the adolescent. Their sample included 1,870 single-race White, 534 single-race minority, and 284 multiracial adolescents (analyses were restricted to adolescents who were identified by their race and excluded those who were identified as Other, or Latino/Hispanic in response to the race question). Cooney and Radina found that multiracial adolescents were no different than their single-race peers on many dimensions of school, behavioral, and psychological functioning. However, multiracial boys were more likely to have been suspended or expelled from school, experienced grade retention, been more depressed, and reported higher rates of seeking counseling. Multiracial girls showed similar outcomes with the exception of depression.

The challenge of being a mixed ancestry Asian adolescent boy. In the analyses for the present paper, all combinations involving Asian boys revealed elevated adjustment problems. The argument raised above in connection with the challenges of achieving a male gender role may be applicable here. Deviation from hegemonic masculinity may be particularly problematic for Asian adolescent males. Socio-historic forces have constructed a feminized image of Asian men in the Western world (see Espiritu, 1997; Goellnicht, 1992; Kim, 1990; Said, 1978). Wong (1976) has described how the forced bachelor status of Chinese men (due to laws restricting the immigration of Chinese women) who found employment as houseboys and launderers through the 1900s reinforced the stereotype of the feminized and asexual (or homosexual) Chinese men. Chen's (1999) more recent research on Chinese American masculinities suggests that Chinese men are still struggling against this negative stereotype. It appears that this negative stereotype has been generalized to all Asian men, for the average White North American cannot tell Asians from different countries of origin apart. (The Chinese man attacked by disgruntled auto workers who resented competition from Japanese imports is an unfortunate illustration of this tendency to generalize.) Future research needs to examine the lives of adolescents whose ancestry includes an Asian heritage in order to understand what family and societal factors operate to make some aspects of social adjustment particularly challenging for adolescent boys but also for girls with mixed Asian ancestry.

Limitations

The reader needs to bear in mind that the data collection procedures allowed adolescents to pick as many racial/ethnic identities as they wished, which we analyzed as paired combinations. Our

analytic approach was guided by the fact that the vast majority of the respondents indicated either one or two racial/ethnic identifications. However, of the identities claimed, 3.8% of the adolescent girls' and 3.6% of the male adolescents' identities were claimed in the context of three or more racial/ethnic identities. By focusing on two racial/ethnic identities at a time, our analyses do not capture the unique experiences of adolescents with more than two racial/ethnic identities.

We employed self-identification obtained in school as the method of eliciting mixed-racial and ethnic identity in this study, based on the rationale that self-identification would be more closely related to self-reported measures of risk than parental identification of the adolescent or parents' self-identification. Self-identification obtained in a group administered questionnaire is but one method for classifying adolescents' racial/ethnic identity (Root, 2002). We are mindful that there is no empirical evidence to bear on which method of obtaining racial/ethnic identity is most relevant for understanding adolescent adjustment. Other methods may yield different results.

A further limitation of our approach to identifying adolescents' racial/ethnic identity is that the phenomenon is fluid and situational (Harris & Sim, 2002; Reed, 2001; Root, 2002; Stephan & Stephan, 2000). While the answer provided to the question on racial and ethnic identification reflect an adolescent's state at the moment of completing the questionnaire, we do not have a way of knowing whether the same identity was salient when the adolescent was using substances in the last 12 months or feeling depressed in the last month, which were the durations designated in the questionnaire for answering questions on substance use and depressive symptoms, respectively.

The analyses reported here used broad racial/ethnic categories, within which there is known diversity. This is especially true with respect to Asian (Xie & Goyette, 1997) and Latino/Hispanic subgroups (Erkut & Tracy, 2002). Therefore, the results we obtained may not pertain to different subgroups of adolescents within the broad categories we have examined. Moreover, we did not examine ethnic mixing within different subgroups. For example, while the adolescents themselves, their families, and their larger community may consider the child of Chinese and Japanese parents to be of mixed ancestry, we did not take into consideration mixing within the broad categories as an instance of mixed ancestry. It is possible that within broad categories that contain many subgroups certain subgroups have greater social distance between them than with others (such as the Chinese and Japanese, who can have animosity toward each other due to the Sino-Japanese war). Children born to unions within, say, the broad Asian category, of parents from different subgroups may resemble patterns observed among the mixed ancestry categories we examined here. Our analyses would have missed the identification of these types of similarities (or differences).

Finally, the reader needs to keep in mind that there is no single mixed ancestry experience and for socio-historical reasons mixed ancestry has different meanings in different racial and ethnic groups. Many racial and ethnic groups, especially Blacks, Native Americans, and Hispanics, continue to encompass multiple mixtures. Yet often depending on phenotype, and local custom, their members may or may not perceive and/or report mixed ancestry.

Suggestions for Future Research

In addition to the directions for future research suggested in the Discussion section, we have recommendations for systematic study of a number of issues. Above all, we lack methodologically rigorous measures of racial/ethnic identification for adolescents. All of the research on how best to ask the race question in the census was conducted on adults who tend to be the ones to fill out the census forms. There is a need for experimental studies that assess the differential impact on adolescents of the variety of ways of asking the relevant racial/ethnic identification questions and of the contexts in which those questions are asked (e.g., race/ethnicity of the interviewer, public or private declaration, racial/ethnic composition of the setting in which the questions are asked). Future research should focus on methodological issues in the measurement of racial and ethnic identity that have validity for the age group for which it was designed.

While the stress associated with developing a multi-racial/ethnic identity has been invoked as the antecedent to the increased adjustment problems, our findings are open to different interpretations. These include stresses associated with social rejection, lack of social support, and the challenges of acquiring a positive gender role alongside a mixed ancestry identity. Future research needs to incorporate qualitative analyses of the lived experience of adolescents of mixed ancestry to examine the multiple processes whereby mixed ancestry is conducive to stress.

We also lack a developmentally grounded, contextualized understanding of the lives of adolescents with different mixed- and single-racial and ethnic identities to guide empirical

research on their adjustment problems. Rockquemore and Brunsma's (2002) study of Black and White mixed race adults has produced a typology of biracial identities that shows promise. The validity of this typology for racial/ethnic mixes beyond Black and White needs to be examined. It also remains to be seen whether the typology generated on the basis of data from adults can accommodate the fluidity of the racial/

ethnic identification of adolescents. Indeed, theory building in racial/ethnic identity development must incorporate fluidity as a characteristic of the reported identity at any point in time. It should also be able to accommodate data produced by more refined methods for assessing racial/ethnic identity formation, which suggest that the designation of single-race identity can be similarly fluid.

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Endnote

¹ Our assertion that the distinction between race and ethnicity is blurred centers on the self-identification of Hispanics in the U.S. and does not refer to the more “optional” ethnicity of many Americans of European descent (see Waters, 1990). Thus, our use of mixed ancestry interchangeably with mixed race/ethnicity subsumes varieties of White ethnicity, such as Polish, Irish, Russian, under the White category because in contemporary U.S. society these ethnicities do not denote minority status.

Appendix A: Results of the Hierarchical Regression Models

By modeling these data in a two-level model, we were able to adjust the parameter estimates for design characteristics associated with the clustered sampling. For the individual level race/ethnicity effects, correction for sampling design required us to model these effects as random effect variables at the individual level and aggregate them at the school level. In other words, for each school, a separate regression equation was fit, using the individual level predictors. The effects of race/ethnicity were allowed to vary across schools (random effects) while the effect of grade was constrained to be equal across schools (fixed effect). Because the race/ethnicity effects vary across schools, these effects could be entered as a predictor variable in the “between schools” level of the model, yielding the aggregated effects reported in the tables below. Significant race/ethnicity regression parameters indicate paired combinations with the reference category that differ significantly from the reference group (single category claimants) on the outcome variable of interest. These results were used to calculate predicted values of each outcome variable for each group in the study. Following the conventions for labeling parameter matrices in structural equations modeling, the coefficients reported in the following tables represent unstandardized regression effects of individual level variables (β), residual variances of outcome variables within schools (θ), mean levels of random effects of race/ethnicity combinations estimated within schools (α), and variances of these random effect variables (ψ). In order to aid model convergence, some of the variances of random effect variables were fixed to zero if they were very small and causing problems with convergence. Those that were fixed to zero are noted on the following tables.

Results for models based on a White female reference group - FEMALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
WITHIN	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
Black	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Hispanic	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.08 (0.01)***	-0.22 (0.01)***	-0.02 (0.01)***	0.03 (0.01)***	0.10 (0.01)***	-0.00 (0.01)
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.63 (0.01)***	1.69 (0.06)***	0.38 (0.01)***	0.56 (0.01)***	0.62 (0.01)***	0.54 (0.01)***
BETWEEN	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	1.21 (0.01)***	0.85 (0.03)***	1.57 (0.01)***	3.74 (0.01)***	3.68 (0.02)***	3.02 (0.02)***
Black	-0.08 (0.05)	-0.17 (0.08)*	0.05 (0.03)	-0.13 (0.05)**	0.17 (0.04)***	-0.10 (0.05)*
Hispanic	0.01 (0.03)	0.20 (0.05)***	-0.01 (0.02)	0.02 (0.03)	0.12 (0.03)***	-0.14 (0.04)***
Asian	0.10 (0.04)*	0.06 (0.10)	0.08 (0.05)	-0.23 (0.06)***	-0.01 (0.05)	0.04 (0.06)
Native American	0.27 (0.03)***	0.33 (0.05)***	0.18 (0.02)***	-0.25 (0.03)***	-0.16 (0.02)***	-0.11 (0.03)***
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.01 (0.00)***	0.07 (0.01)***	0.01 (0.00)***	0.01 (0.00)***	0.03 (0.00)***	0.04 (0.01)***
Black	0.02 (0.02)	0.01 (0.04)	0.00 (0.01)	0.00 (0.02)	0.01 (0.01)	0.01 (0.02)
Hispanic	0.01 (0.01)	0.09 (0.04)*	0.02 (0.01)	0.00 (<i>fixed^d</i>)	0.01 (0.01)	0.05 (0.02)*
Asian	0.00 (<i>fixed^d</i>)	0.12 (0.13)	0.03 (0.03)	0.02 (0.02)	0.01 (0.02)	0.07 (0.06)
Native American	0.00 (<i>fixed^d</i>)	0.03 (0.02)	0.01 (0.01)	0.02 (0.01)	0.00 (<i>fixed^d</i>)	0.01 (0.01)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a White reference group - MALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
WITHIN	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
Black	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Hispanic	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.04 (0.00)***	-0.25 (0.01)***	0.00 (0.00)	0.04 (0.00)***	0.05 (0.01)***	-0.01 (0.01)
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.43 (0.01)***	2.07 (0.06)***	0.40 (0.01)***	0.52 (0.01)***	0.68 (0.01)***	0.61 (0.01)***
BETWEEN	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	0.73 (0.01)***	0.99 (0.02)***	1.37 (0.01)***	4.00 (0.01)***	3.64 (0.02)***	2.87 (0.02)***
Black	0.21 (0.07)**	0.45 (0.15)**	0.13 (0.05)**	-0.16 (0.07)*	-0.10 (0.06)	-0.15 (0.05)**
Hispanic	0.01 (0.02)	0.19 (0.05)***	0.02 (0.03)	-0.01 (0.03)	0.03 (0.02)	-0.19 (0.03)***
Asian	0.21 (0.07)**	0.54 (0.14)***	0.24 (0.07)***	-0.20 (0.07)**	-0.14 (0.06)*	0.01 (0.06)
Native American	0.45 (0.15)**	0.36 (0.05)***	0.12 (0.02)***	-0.27 (0.03)***	-0.11 (0.03)***	-0.15 (0.03)***
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.00 (0.00)***	0.05 (0.01)***	0.00 (0.00)***	0.00 (0.00)***	0.10 (0.01)***	0.04 (0.01)***
Black	0.32 (0.08)***	0.53 (0.26)*	0.09 (0.04)*	0.00 (0.02)	0.04 (0.03)	0.00 (<i>fixed^d</i>)
Hispanic	0.01 (0.01)	0.03 (0.04)	0.03 (0.01)*	0.01 (0.01)	0.00 (<i>fixed^d</i>)	0.01 (0.01)
Asian	0.08 (0.07)	0.43 (0.24)	0.26 (0.08)**	0.00 (<i>fixed^d</i>)	0.05 (0.03)	0.00 (<i>fixed^d</i>)
Native American	0.00 (<i>fixed^d</i>)	0.04 (0.03)	0.00 (0.01)	0.00 (<i>fixed^d</i>)	0.00 (0.01)	0.01 (0.01)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a Black reference group - FEMALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
White	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Hispanic	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.06 (0.01)***	-0.06 (0.01)***	-0.01 (0.01)	0.02 (0.01)**	0.07 (0.01)***	-0.04 (0.01)**
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.61 (0.01)***	0.93 (0.05)***	0.45 (0.02)***	0.51 (0.02)***	0.69 (0.02)***	0.50 (0.01)***
<u>BETWEEN</u>	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	1.02 (0.01)***	0.58 (0.03)***	1.52 (0.01)***	4.00 (0.02)***	3.41 (0.03)***	2.69 (0.03)***
White	0.10 (0.05)*	0.28 (0.07)**	0.10 (0.04)*	0.06 (0.05)	-0.10 (0.05)*	0.14 (0.04)**
Hispanic	0.07 (0.04)*	0.21 (0.07)**	0.04 (0.04)	-0.00 (0.05)	-0.09 (0.05)	-0.14 (0.04)***
Asian	0.21 (0.09)*	0.37 (0.14)**	0.09 (0.06)	-0.10 (0.08)	-0.07 (0.08)	-0.22 (0.07)**
Native American	0.24 (0.05)***	0.03 (0.05)	0.20 (0.04)***	-0.18 (0.05)**	0.01 (0.04)	0.09 (0.04)*
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.00 (0.00)	0.04 (0.01)**	0.01 (0.00)*	0.00 (0.00)	0.04 (0.01)***	0.06 (0.01)***
White	0.00 (<i>fixed^f</i>)	0.11 (0.11)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.01 (0.01)	0.00 (<i>fixed^f</i>)
Hispanic	0.00 (<i>fixed^f</i>)	0.23 (0.10)*	0.02 (0.01)	0.00 (<i>fixed^f</i>)	0.02 (0.01)	0.02 (0.02)
Asian	0.08 (0.08)	0.88 (0.43)*	0.05 (0.04)	0.02 (0.04)	0.06 (0.05)	0.06 (0.06)
Native American	0.06 (0.02)***	0.04 (0.02)	0.03 (0.01)*	0.03 (0.02)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a Black reference group - MALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
White	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Hispanic	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.02 (0.01)***	-0.15 (0.02)***	0.02 (0.01)***	0.02 (0.01)*	0.03 (0.01)**	-0.02 (0.01)
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.41 (0.01)***	1.65 (0.09)***	0.43 (0.01)***	0.50 (0.02)***	0.74 (0.02)***	0.55 (0.02)***
<u>BETWEEN</u>	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	0.61 (0.01)***	0.78 (0.03)***	1.27 (0.01)***	4.14 (0.02)***	3.57 (0.02)***	2.56 (0.03)***
White	0.27 (0.07)***	0.70 (0.14)***	0.22 (0.05)***	-0.10 (0.07)	-0.25 (0.07)***	0.05 (0.05)
Hispanic	0.05 (0.04)	0.30 (0.11)**	0.05 (0.04)	0.00 (0.04)	-0.08 (0.04)*	-0.06 (0.04)
Asian	0.52 (0.11)***	1.15 (0.23)***	0.44 (0.09)***	-0.21 (0.10)*	-0.27 (0.11)*	0.13 (0.10)
Native American	0.17 (0.05)***	0.10 (0.09)	0.10 (0.05)*	-0.21 (0.09)*	-0.12 (0.09)	0.08 (0.06)
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.01 (0.00)**	0.05 (0.01)***	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)***	0.04 (0.01)***
White	0.22 (0.07)**	0.40 (0.31)	0.06 (0.04)	0.00 (<i>fixed^f</i>)	0.04 (0.03)	0.00 (<i>fixed^f</i>)
Hispanic	0.05 (0.02)*	0.34 (0.13)**	0.03 (0.02)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.01 (0.02)
Asian	0.43 (0.15)**	1.88 (0.56)***	0.38 (0.11)***	0.07 (0.11)	0.24 (0.16)	0.26 (0.09)**
Native American	0.01 (0.02)	0.00 (<i>fixed^f</i>)	0.04 (0.03)	0.16 (0.14)	0.16 (0.10)	0.00 (<i>fixed^f</i>)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a Hispanic reference group - FEMALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
White	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Black	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.07 (0.01)***	-0.09 (0.02)***	-0.01 (0.01)	0.02 (0.01)*	0.04 (0.01)***	-0.04 (0.01)**
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.67 (0.02)***	1.50 (0.12)***	0.47 (0.01)***	0.57 (0.02)***	0.66 (0.02)***	0.55 (0.02)***
<u>BETWEEN</u>	α (SE)	α (SE)	A (SE)	α (SE)	α (SE)	α (SE)
Intercept	1.17 (0.02)***	0.88 (0.04)***	1.48 (0.02)***	3.79 (0.02)***	3.53 (0.03)***	2.73 (0.03)***
White	0.07 (0.03)**	0.25 (0.05)***	0.08 (0.02)***	0.09 (0.03)**	0.06 (0.03)*	0.12 (0.04)**
Black	-0.06 (0.03)	-0.08 (0.07)	0.07 (0.03)*	-0.17 (0.05)***	0.13 (0.04)*	-0.22 (0.05)***
Asian	0.29 (0.08)***	0.50 (0.18)**	0.22 (0.06)***	-0.17 (0.08)*	-0.16 (0.08)	0.12 (0.06)*
Native American	0.10 (0.04)*	0.11 (0.07)	0.18 (0.04)***	-0.03 (0.05)	-0.02 (0.04)	0.04 (0.05)
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.01 (0.00)***	0.09 (0.03)***	0.01 (0.00)***	0.01 (0.00)*	0.01 (0.01)**	0.04 (0.01)***
White	0.01 (0.00)	0.08 (0.04)*	0.00 (0.00)	0.00 (<i>fixed[†]</i>)	0.00 (0.00)	0.04 (0.02)*
Black	0.00 (<i>fixed[†]</i>)	0.03 (0.05)	0.01 (0.01)	0.02 (0.02)	0.02 (0.01)*	0.03 (0.03)
Asian	0.24 (0.14)	2.30 (0.55)***	0.10 (0.09)	0.12 (0.07)	0.32 (0.07)***	0.04 (0.05)
Native American	0.00 (0.01)	0.12 (0.06)*	0.04 (0.02)	0.03 (0.02)	0.00 (<i>fixed[†]</i>)	0.03 (0.03)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a Hispanic reference group - MALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
White	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Black	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.03 (0.01)***	-0.19 (0.02)***	0.01 (0.01)	0.03 (0.01)***	0.05 (0.01)***	-0.04 (0.01)***
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.50 (0.02)***	2.13 (0.11)***	0.51 (0.02)***	0.56 (0.02)***	0.74 (0.02)***	0.59 (0.02)***
<u>BETWEEN</u>	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	0.71 (0.02)***	1.08 (0.05)***	1.31 (0.02)***	3.98 (0.02)***	3.59 (0.02)***	2.59 (0.03)***
White	0.04 (0.03)	0.16 (0.05)**	0.09 (0.03)**	0.05 (0.04)	0.03 (0.03)	0.07 (0.03)*
Black	-0.01 (0.04)	0.13 (0.11)	0.03 (0.04)	-0.02 (0.04)	0.07 (0.03)	-0.10 (0.04)*
Asian	0.34 (0.07)***	0.95 (0.13)***	0.23 (0.07)**	-0.23 (0.07)***	-0.23 (0.07)***	0.15 (0.07)*
Native American	0.18 (0.05)***	0.20 (0.09)*	0.16 (0.04)***	-0.22 (0.06)***	-0.04 (0.04)	-0.06 (0.05)
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.01 (0.00)**	0.07 (0.03)**	0.01 (0.00)***	0.00 (0.00)	0.00 (0.00)	0.04 (0.01)***
White	0.00 (0.00)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (<i>fixed[†]</i>)	0.01 (0.01)
Black	0.04 (0.02)*	0.36 (0.15)*	0.03 (0.02)	0.01 (0.01)	0.00 (<i>fixed[†]</i>)	0.00 (<i>fixed[†]</i>)
Asian	0.28 (0.10)**	0.91 (0.27)***	0.42 (0.15)**	0.02 (0.02)	0.06 (0.03)	0.18 (0.09)*
Native American	0.04 (0.02)	0.03 (0.05)	0.05 (0.03)	0.02 (0.02)	0.00 (<i>fixed[†]</i>)	0.04 (0.03)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on an Asian reference group - FEMALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)				
White	<i>random effect</i>	<i>random effect</i>				
Black	<i>random effect</i>	<i>random effect</i>				
Hispanic	<i>random effect</i>	<i>random effect</i>				
Native American	<i>random effect</i>	<i>random effect</i>				
Grade	-0.05 (0.01)***	-0.12 (0.02)***	-0.03 (0.01)***	0.03 (0.01)*	0.05 (0.01)***	0.02 (0.02)
	θ (SE)	θ (SE)				
Residual	0.61 (0.02)***	1.19 (0.14)***	0.46 (0.02)***	0.51 (0.02)***	0.54 (0.02)***	0.49 (0.03)***
<u>BETWEEN</u>	α (SE)	α (SE)				
Intercept	1.15 (0.03)***	0.44 (0.03)***	1.49 (0.02)***	3.69 (0.03)***	3.60 (0.03)***	3.20 (0.04)***
White	0.18 (0.05)***	0.38 (0.09)***	0.12 (0.04)***	-0.12 (0.05)*	0.04 (0.05)	-0.06 (0.06)
Black	0.05 (0.07)	0.34 (0.09)***	0.04 (0.06)	-0.25 (0.08)**	0.33 (0.08)***	-0.65 (0.07)***
Hispanic	0.26 (0.08)**	0.77 (0.18)***	0.19 (0.06)**	-0.16 (0.08)*	-0.08 (0.09)	-0.17 (0.07)*
Native American	0.17 (0.08)*	0.26 (0.15)	0.27 (0.07)***	-0.14 (0.08)	-0.25 (0.07)***	-0.18 (0.10)
	ψ (SE)	ψ (SE)				
Intercept	0.00 (0.00)	0.03 (0.01)***	0.00 (0.00)	0.01 (0.00)*	0.02 (0.01)**	0.03 (0.02)*
White	0.00 (<i>fixed^f</i>)	0.22 (0.11)*	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.12 (0.09)
Black	0.03 (0.04)	0.00 (<i>fixed^f</i>)	0.03 (0.02)	0.07 (0.04)*	0.06 (0.04)	0.05 (0.08)
Hispanic	0.25 (0.15)	2.85 (0.58)***	0.11 (0.10)	0.11 (0.06)	0.34 (0.08)***	0.10 (0.08)
Native American	0.00 (<i>fixed^f</i>)	0.73 (0.30)*	0.07 (0.05)	0.19 (0.06)**	0.00 (<i>fixed^f</i>)	0.30 (0.10)**

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on an Asian reference group - MALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
White	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Black	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Hispanic	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Native American	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.09 (0.01)***	-0.21 (0.02)***	-0.03 (0.01)**	0.04 (0.01)***	0.06 (0.01)***	0.03 (0.01)*
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.57 (0.04)***	2.09 (0.15)***	0.51 (0.03)***	0.62 (0.03)***	0.71 (0.04)***	0.55 (0.03)***
<u>BETWEEN</u>	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	0.77 (0.02)***	0.77 (0.08)***	1.33 (0.03)***	3.88 (0.03)***	3.65 (0.03)***	3.10 (0.03)***
White	0.07 (0.04)	0.55 (0.11)***	0.22 (0.06)***	-0.18 (0.05)**	-0.04 (0.06)	-0.21 (0.06)***
Black	0.38 (0.10)***	0.85 (0.17)***	0.35 (0.08)***	-0.21 (0.09)*	-0.09 (0.08)	-0.24 (0.08)**
Hispanic	0.17 (0.06)**	0.95 (0.13)***	0.12 (0.07)	-0.21 (0.06)***	-0.08 (0.06)	-0.25 (0.07)***
Native American	0.17 (0.08)*	0.12 (0.16)	0.10 (0.07)	-0.03 (0.09)	-0.05 (0.10)	-0.09 (0.09)
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.01 (0.01)	0.18 (0.09)*	0.02 (0.01)*	0.01 (0.00)**	0.01 (0.01)*	0.03 (0.01)**
White	0.00 (<i>fixed^f</i>)	0.09 (0.06)	0.12 (0.08)	0.00 (<i>fixed^f</i>)	0.01 (0.01)	0.01 (0.01)
Black	0.37 (0.14)**	0.82 (0.32)**	0.27 (0.09)**	0.07 (0.06)	0.02 (0.05)	0.12 (0.04)**
Hispanic	0.19 (0.09)*	0.65 (0.23)**	0.37 (0.16)*	0.00 (<i>fixed^f</i>)	0.01 (0.02)	0.20 (0.09)*
Native American	0.06 (0.06)	0.06 (0.25)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.14 (0.07)*	0.00 (<i>fixed^f</i>)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a Native American reference group - FEMALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)					
White	<i>random effect</i>					
Black	<i>random effect</i>					
Hispanic	<i>random effect</i>					
Asian	<i>random effect</i>					
Grade	-0.08 (0.01)***	-0.21 (0.03)***	-0.02 (0.01)	0.05 (0.01)***	0.11 (0.01)***	-0.01 (0.02)
	θ (SE)					
Residual	0.77 (0.02)***	1.70 (0.09)***	0.52 (0.02)***	0.64 (0.02)***	0.70 (0.03)***	0.57 (0.02)***
<u>BETWEEN</u>	α (SE)					
Intercept	1.29 (0.04)***	1.09 (0.06)***	1.68 (0.03)***	3.73 (0.04)***	3.46 (0.04)***	2.76 (0.05)***
White	0.20 (0.04)***	0.21 (0.07)**	0.09 (0.03)**	-0.06 (0.05)	-0.15 (0.04)***	0.05 (0.03)
Black	-0.04 (0.06)	-0.40 (0.06)***	0.04 (0.04)	-0.23 (0.06)***	0.31 (0.05)***	-0.01 (0.02)
Hispanic	-0.05 (0.06)	-0.02 (0.08)	-0.02 (0.05)	0.08 (0.07)	0.05 (0.06)	0.08 (0.05)
Asian	0.12 (0.08)	0.14 (0.17)	0.16 (0.08)*	-0.13 (0.09)	-0.28 (0.09)***	0.18 (0.02)***
	ψ (SE)					
Intercept	0.00 (<i>fixed^f</i>)	0.03 (0.02)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.01 (0.01)	0.03 (0.01)***
White	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.01 (0.01)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)
Black	0.04 (0.02)**	0.00 (<i>fixed^f</i>)	0.03 (0.01)*	0.06 (0.03)*	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)
Hispanic	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.03 (0.03)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)
Asian	0.00 (<i>fixed^f</i>)	0.65 (0.36)	0.00 (<i>fixed^f</i>)	0.15 (0.07)*	0.00 (<i>fixed^f</i>)	0.23 (0.07)**

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Results for models based on a Native American reference group - MALES.

	<u>Depression</u>	<u>Substance Use</u>	<u>Health Problems</u>	<u>Self-esteem</u>	<u>School Attachment</u>	<u>Academic Success</u>
<u>WITHIN</u>	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
White	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Black	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Hispanic	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Asian	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>	<i>random effect</i>
Grade	-0.05 (0.01)***	-0.21 (0.03)***	-0.02 (0.01)	0.04 (0.01)**	0.04 (0.02)*	-0.02 (0.02)
	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)	θ (SE)
Residual	0.56 (0.03)***	2.54 (0.09)***	0.51 (0.02)***	0.64 (0.03)***	0.96 (0.04)***	0.63 (0.02)***
<u>BETWEEN</u>	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)	α (SE)
Intercept	0.82 (0.03)***	1.33 (0.06)***	1.43 (0.03)***	3.84 (0.04)***	3.41 (0.04)***	2.51 (0.04)***
White	0.09 (0.03)**	0.08 (0.08)	0.08 (0.03)*	-0.06 (0.05)	0.02 (0.04)	0.16 (0.04)***
Black	0.06 (0.06)	-0.29 (0.12)*	0.01 (0.06)	-0.10 (0.09)	0.09 (0.07)	0.06 (0.07)
Hispanic	0.04 (0.06)	-0.00 (0.11)	0.03 (0.06)	-0.01 (0.07)	0.10 (0.05)	-0.03 (0.07)
Asian	0.26 (0.10)**	0.65 (0.21)**	0.26 (0.10)**	0.01 (0.09)	-0.15 (0.12)***	-0.01 (0.10)
	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)	ψ (SE)
Intercept	0.01 (0.00)***	0.07 (0.01)***	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.04 (0.01)***
White	0.02 (0.02)	0.01 (0.04)	0.00 (<i>fixed^f</i>)			
Black	0.01 (0.01)	0.09 (0.04)*	0.05 (0.03)	0.11 (0.09)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)
Hispanic	0.00 (<i>fixed^f</i>)	0.12 (0.13)	0.07 (0.03)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.04 (0.03)
Asian	0.00 (<i>fixed^f</i>)	0.03 (0.02)	0.21 (0.10)*	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)	0.00 (<i>fixed^f</i>)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$