

# Behavioral Health in Multiracial Adolescents: The Role of Hispanic/Latino Ethnicity

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## SYNOPSIS

**Objectives.** The purpose of the present study was twofold: (1) to determine whether adolescents who self-identify as multiracial have more adverse health behaviors than their monoracial counterparts, and (2) to examine whether the health behaviors of adolescents who are multiracial and Hispanic are more similar to those who identify as monoracial Hispanic or those who are multiracial and non-Hispanic.

**Methods.** Secondary analyses of data in a subsample from the Youth Risk Behavior Survey of 3,704 (27.2%) adolescents who identified as Hispanic/Latino only, multiracial Hispanic, or multiracial non-Hispanic were conducted. Regression analyses were conducted using SUDAAN for the complex sampling to test for differences in health behaviors (i.e., smoking, exercise, substance abuse, and suicide risk) among the three ethnicity/race groups.

**Results.** Each health behavior scale yielded significant between-group differences according to ethnic/racial identity: Hispanic/Latino adolescents scored significantly lower than both multiracial groups on the measure of cigarette smoking, lower than multiracial Hispanic adolescents on the substance abuse scale, and lower than multiracial non-Hispanic adolescents on the measure of exercise. The multiracial Hispanic group was also at marginally increased risk for suicide compared to the Hispanic/Latino group.

**Conclusions.** The results support the hypothesis that multiracial Hispanic adolescents have more behavioral health problems than monoracial Hispanic adolescents. The second hypothesis—that multiracial Hispanic adolescents are more similar to multiracial non-Hispanic adolescents—was also supported. The implications of these findings for the classification of Hispanic adolescents in terms of ethnicity and race in relation to health behaviors are discussed.

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The 2000 Census was the first time that citizens of the United States could select multiple racial categories for self-identification apart from Hispanic ethnicity in a census. From 1993 to 1997, the Office of Management and Budget (OMB) led a federal interagency group to revise Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting.<sup>1,2</sup> Their charge was to provide guidance on (1) the collection of aggregate data on race when agencies request information from businesses, schools, and other organizations; and (2) the allocation by agencies of multiple race responses when individual or aggregate for use in civil rights monitoring and enforcement.<sup>1</sup> The 1996 Racial and Ethnic Targeted Test (RAETT)<sup>2</sup> was a mail survey to select populations to determine how U.S. citizens would respond to the new racial categories. Based on the findings of the RAETT, it was estimated that 1% to 2% of the national population would choose multiple racial categories on the 2000 census.<sup>2</sup>

A number of scholars have written about the public health implications of this new classification scheme. The *American Journal of Public Health (AJPH)* ran a series of articles in its November 2000 issue on the implications of this change in racial classification for the collection, management, and analysis of health data.<sup>1,3-5</sup> The implications of the change for public health were also addressed in a review on classification of ethnicity and race in the 2003 volume of the *Annual Review of Public Health*.<sup>6</sup> Tashiro asserted that a major limitation of these discussions is their focus on the implications of multiracial classification for the collection, management, and analysis of health data, rather than addressing the “deeper questions mixed race raises about the meaning of race and its relevance to health.”<sup>7</sup>

A few of the *AJPH* papers focused on the implications for specific ethnic racial groups such as African Americans and Hispanics/Latinos.<sup>3,5</sup> With respect to the Hispanic/Latino population, Amaro and Zambrana made the point, “Unless there is a concerted effort to grapple with the question of how to clarify multiple race identification among Hispanics, we will continue to see a lack of attention to racial identification among Hispanics.”<sup>3</sup> There is growing awareness in the social sciences that racial classification is a significant factor in the lives of Hispanics residing in the U.S. For example, sociological research on patterns of residential segregation indicated that Hispanics who described themselves as black live in substantially poorer and less white neighborhoods than Hispanic whites, with Hispanics who describe their race as “other” in the intermediate position between blacks and whites.<sup>8</sup> Alba et

al.<sup>8</sup> concluded that prejudice and discrimination based on skin color in the U.S. cannot be overcome by ethnicity. At the very least, such a conclusion raises a question about the relative importance of ethnicity vs. race in identity development and health behaviors.

Using data from the National Longitudinal Study of Adolescent Health, Udry, Li, and Hendrickson-Smith<sup>9</sup> conducted a study of the effects of a “mixed-race” or multiracial identity on health problems among adolescents. There were two noteworthy findings from this study. First, multiracial adolescents had significantly more emotional and behavioral problems than their counterparts who self-identify with a single race/ethnicity. This finding is consistent with clinical hypotheses, case studies, and qualitative research with small convenience samples in the mental health literature.<sup>10-15</sup> Second, Udry et al.<sup>9</sup> found that the results were the same regardless of the particular combination of ethnic/racial identities used in the comparison. One limitation of the Udry et al. study is that it does not include Hispanic/Latino ethnicity among the identities studied.<sup>9</sup> Thus, the role of Hispanic/Latino in multiracial identity has not yet been examined. Another limitation was that all of the measures of behavioral health focused on negative or adverse health outcomes.

Given the current interest in multiracial classification on the one hand, and in the relationship between race and Hispanic ethnicity on the other, the purpose of the present study was twofold: (1) to determine whether adolescents who self-identify as multiracial have more adverse health behaviors than their counterparts who select a single race/ethnicity, and (2) to examine the role of Hispanic/Latino ethnicity in racial identification. In particular, the second goal was to determine whether adolescents who are multiracial and Hispanic are more similar to those who identify as Hispanic only or those who are multiracial and non-Hispanic. The current study extends past research in significant ways. First, it addresses the relation between ethnicity and race by examining health variables in multiracial adolescents with and without Hispanic ethnicity. The present study also includes a measure of positive behavioral health. The inclusion of a positive behavioral health measure broadens our understanding of the relationship between multiracial identity and adolescent behavioral health. Based on past research, it was hypothesized that multiracial adolescents will report more emotional and behavioral problems than monoracial adolescents in the current study. It was also hypothesized that Hispanic/Latino multiracial adolescents will differ significantly from Hispanic/Latino-only adolescents, but not from non-Hispanic

multiracial adolescents, on the measures of behavioral health.

**METHODS**

**Sample**

The 2001 Youth Risk Behavior Survey (YRBS)<sup>16</sup> is a nationally representative school-based study of the prevalence of health risk behaviors among high school students in grades 9–12. The survey design uses a three-stage cluster sampling procedure. One hundred and fifty schools participated, yielding a final nationwide sample of 13,601 adolescents with an overall response rate of 63%. Each case in the sample is weighted to adjust for the probability of selection, as well as for nonresponse and the oversampling of black and Hispanic youth. Brener et al. reported the test-retest reliability of the YRBS to be moderate to substantial with kappas ranging from 0.24 to 0.91, with a mean of 0.61 and a median of 0.60.<sup>16</sup> The reader is also referred to Brener et al.<sup>16</sup> for a more detailed description of the sampling and data collection procedures.

The present study used the 3,704 (27.2%) adolescents who identified as Hispanic-Latino, multiracial Hispanic, or multiracial non-Hispanic from the original sample of 13,601 participants. It is important to note that, unlike the OMB approach of separating ethnicity and race, the YRBS includes Hispanic ethnicity as one of the racial categories. Field testing during the development of the YRBS questionnaire indicated that some adolescents did not distinguish between the two concepts, resulting in missing data.<sup>17</sup> In the sample,

2,974 respondents (80.3%) identified as Hispanic-Latino, 352 (9.5%) identified as multiracial Hispanic, and 378 (10.2%) identified as multiracial non-Hispanic. The distribution of the study subsample by gender, age, and grade point average (GPA) are presented in Table 1.

**Measures**

*Dependent variables.* Four scales were created to measure behavioral health: smoking, exercise, substance abuse, and suicide risk. The content areas for scale development were chosen based on several factors: (1) the items were available for a content area on the YRBS; (2) the items have been found to have good test-retest reliability;<sup>1</sup> (3) the content areas have been studied in past research on multiracial populations;<sup>9</sup> (4) the content areas are within the researchers' areas of interest; and (5) the final scale has an internal consistency reliability coefficient greater than or equal to 0.60.

The cigarette smoking scale consisted of two items ( $\alpha=0.66$ ): "During the past 30 days, on how many days did you smoke cigarettes?" and "During the past 30 days, on how many days did you smoke cigarettes on school property?" Each item was scored on a 7-point scale ranging from 1 ("0 days") to 7 ("all 30 days"). Total scores were computed by summing the items and dividing by the number of items; the results also ranged from 1 to 7. High scores reflect more days smoking cigarettes.

A three-item scale ( $\alpha=0.68$ ) for exercise asked adolescents to indicate how often they exercised in

**Table 1. Unweighted and weighted frequency distributions for gender, age, and school grades by racial/ethnic identity**

Variables	Hispanic/Latino		Multiracial Hispanic		Multiracial non-Hispanic	
	Unweighted count	Weighted count	Unweighted count	Weighted count	Unweighted count	Weighted count
Gender						
Female	1,489	693.66	189	121.71	216	201.65
Male	1,475	690.44	161	98.08	161	164.39
Age (years)						
14 and younger	2	0.70	3	1.90	1	0.67
15	4	1.25	1	0.48	0	0
16	258	152.19	41	30.17	40	53.35
17	2,178	1,046.28	259	164.58	291	278.11
18 and older	529	184.80	46	23.01	45	33.91
School grades						
As	472	231.18	72	42.70	80	77.74
Bs	1,152	546.19	147	92.34	157	147.40
Cs	904	387.02	94	59.88	102	100.69
Ds/Fs	245	107.88	16	9.65	17	21.01

the last seven days. For example, “On how many of the past 7 days did you do exercise to strengthen or tone your muscles, such as push-ups, sit-ups, or weight-lifting?” Each item was scored on a 8-point scale ranging from <1 (“0 days”) to 8 (“7 days”). Total scores were computed by summing the items and dividing by the number of items representing a range similar to item scores, with higher scores indicating more days of exercise.

The substance abuse (without smoking) scale consisted of five items ( $\alpha=0.79$ ) that asked on how many days or occasions in the last 30 days the respondent had at least one drink of alcohol, had five or more drinks in a row, used marijuana, used cocaine, or sniffed glue. These items were scored on 6-point scale where 1 was “0 times” and 6 was “40 or more times.” Items were summed into a total score and divided by number of items, yielding a range from 1 to 6 with high scores representing more substance abuse.

Suicide risk was measured with three items ( $r=0.73$ ), with two items focusing on suicide and one on depression. Sample items include, “During the past 12 months, did you ever seriously consider attempting suicide?” and “During the past 12 months, did you make a plan about how you would attempt suicide?” These items were dichotomously coded 1 for “yes,” and 0 for “no.” Total scores ranged from 0 to 1 and were arrived at by summing the items and dividing by three. Higher scores reflected greater suicide risk.

*Independent variable.* The ethnic/racial identity question on the YRBS asks, “How do you describe yourself?” and allows respondents to select more than one answer from six response options: American Indian or Alaska Native, Asian, black or African American, Hispanic or Latino, Native Hawaiian or other Pacific Islander, or white. There are three groups of interest within the ethnicity/race variable: Hispanic/Latino only, multiracial Hispanic, and multiracial non-Hispanic. The Hispanic/Latino group reflects those students who selected this response only. Students who checked Hispanic/Latino and one or more other responses comprise the multiracial-Hispanic variable, and students who checked more than one response but did not include Hispanic/Latino ethnicity constitute the multiracial non-Hispanic group. An earlier examination of the YRBS’s new approach to the classification of ethnicity/race, particularly multiracial identity, found it to be highly reliable.<sup>17</sup>

### Statistical analyses

Because the YRBS uses a complex, stratified, multi-stage sampling design, SUDAAN 9.0 was used for statistical analyses.<sup>18</sup> This software corrects for the ten-

dency of complex sampling designs to underestimate the standard errors of the regression coefficients. Weighted analyses decrease the probability of Type I errors resulting from inaccurate estimates of these standard errors. Linear regression models were tested with the behavioral health variables as the dependent variables and race/ethnicity as the independent variable.

## RESULTS

The Hispanic/Latino, multiracial Hispanic, and multiracial non-Hispanic categories were cross-tabulated with age, sex, and grade point average (GPA) to determine the need to control for these additional demographic variables in subsequent analyses. Chi-square tests of independence between ethnicity/race and sex ( $X^2=2.73$ ; degrees of freedom [df]=2;  $p=0.27$ ), age ( $X^2=18.22$ ; df=12;  $p=0.16$ ), and GPA ( $X^2=7.91$ ; df=8;  $p=0.46$ ) were not significant, suggesting that ethnic/racial identity is statistically independent. The distributions of the sample across the categories for sex, age, and GPA in the unweighted and weighted sample sizes are presented in Table 1. As a result, these additional demographic variables were not included as independent variables in subsequent analyses.

Regression models were conducted to assess the effect of ethnic/racial identity on each dependent variable. Unweighted means, weighted means, and standard errors for the dependent variables are presented in Table 2. There were significant model effects for ethnic/racial identity on cigarette smoking ( $R^2=0.017$ ;  $F=7.60$ ;  $p=0.001$ ), exercise ( $R^2=.007$ ;  $F=4.54$ ;  $p=0.017$ ), substance abuse ( $R^2=0.010$ ;  $F=5.20$ ;  $p=0.010$ ), and suicide risk ( $R^2=0.005$ ;  $F=4.81$ ;  $p=0.013$ ). These results suggest that ethnic/racial identity is a significant predictor of these four health behaviors. Finally, pairwise t-tests were used to determine differences in means among the three racial/ethnic groups on each health behavior. Mean difference scores are presented in Table 3 for the pairwise comparisons. A Bonferroni correction was conducted to adjust for multiple comparisons ( $p<0.017$ ). Hispanic/Latino youth scored significantly lower on the measure of cigarette smoking than multiracial Hispanic and multiracial non-Hispanic youth. Hispanic/Latino adolescents’ scores on the substance abuse scale were also significantly lower than those of multiracial Hispanic adolescents. Scale scores on the measure of exercise were significantly lower for Hispanic/Latino adolescents compared to multiracial non-Hispanic adolescents. Finally, multiracial Hispanic and multiracial non-Hispanic adolescents did not significantly differ from one another on any of these measures of health behavior.

**Table 2. Unweighted means, weighted means, and standard errors for measures of health behaviors by ethnic/racial identity**

Variables	Hispanic/Latino			Multiracial Hispanic			Multiracial non-Hispanic		
	Unweighted mean	Weighted mean	SE	Unweighted mean	Weighted mean	SE	Unweighted mean	Weighted mean	SE
Smoking	1.43	1.45	0.05	1.69	1.89	0.13	1.63	1.71	0.08
Exercise	3.90	3.85	0.07	4.08	4.20	0.14	4.25	4.23	0.15
Substance abuse	1.48	1.46	0.03	1.60	1.69	0.07	1.56	1.60	0.06
Suicide risk	0.21	0.22	0.01	0.27	0.28	0.03	0.26	0.25	0.02

SE=standard error

**DISCUSSION**

The results of the present study support our hypothesis that multiracial Hispanic youth have more behavioral health problems than monoracial Hispanic youth. Compared to Hispanic/Latino adolescents, multiracial Hispanic adolescents were at increased risk for cigarette smoking and substance abuse, and multiracial non-Hispanic adolescents were also at increased risk of cigarette smoking. Although the risk of suicide in the current study is only marginally elevated for the multiracial groups, it is still noteworthy because of its congruence with the other negative health behaviors. The findings of increased smoking, substance abuse, and suicide risk for multiracial youth compared to monoracial youth is consistent with those of Udry et al.<sup>9</sup> The consistency of the two sets of findings is notable because our study used a different measurement

approach for the three negative health behaviors. For instance, our global measure of substance abuse included alcohol, marijuana, cocaine, and sniffing glue, while Udry et al. measured marijuana and alcohol use separately. Both sets of findings are consistent with the mental health literature that indicates adjustment problems among adolescents who self-identify as multiracial.<sup>10-15</sup> A common theme in the mental health literature is that difficulties of multiracial adolescents are a product of the combination of identity problems typical of adolescence and the demands of living in a racially polarized society.<sup>14</sup> The second hypothesis that multiracial Hispanic youth are more similar to multiracial non-Hispanic youth was also supported. These two groups of multiracial adolescents did not differ significantly on any measure of behavioral health.

This is the first study, to our knowledge, that has examined the association between Hispanic/Latino

**Table 3. Pairwise comparisons of between-group differences by ethnic/racial identity**

COMPARISON	Mean difference	Standard error	95% CI for difference		p
			Lower	Upper	
Multiracial Hispanic vs. Hispanic					
smoking	0.44	0.13	0.18	0.70	0.001
exercise	0.35	0.17	0.01	0.70	0.042
substance abuse	0.23	0.08	0.08	0.39	0.005
suicide risk	0.07	0.03	0.01	0.02	0.022
Multiracial Hispanic vs. multiracial non-Hispanic					
smoking	0.18	0.13	-0.08	0.44	0.164
exercise	-0.03	0.21	-0.45	0.39	0.892
substance abuse	0.09	0.08	-0.06	0.25	0.234
suicide risk	0.03	0.04	0.12	0.67	0.508
Multiracial non-Hispanic vs. Hispanic					
smoking	0.26	0.09	0.08	0.44	0.006
exercise	0.38	0.15	0.07	0.69	0.017
substance abuse	0.14	0.06	0.02	0.26	0.027
suicide risk	0.04	0.03	0.02	0.09	0.196

NOTES. The mean difference is based on estimated marginal means. Adjustments were made for multiple comparisons using a Bonferroni correction ( $p < .017$ ).

ethnicity and multiracial identity in relation to health behaviors. Amaro and Zambrana<sup>3</sup> made the point that Hispanic/Latino ethnicity is itself a multiracial phenomenon. Moreover, the CDC reclassified multiracial Hispanic students as Hispanic-only to conduct trend analyses for the 1999 and 2001 YRBS.<sup>17</sup> The current findings suggest that Hispanic/Latino ethnicity and multiracial identity are fundamentally different. In fact, the finding of ethnic/racial patterns of adolescent health behaviors revealing more similarity between multiracial Hispanic and multiracial non-Hispanic adolescents suggests that racial identity is more important to health behaviors than ethnicity in self-labeling for the former group. These findings are consistent with research that shows a greater impact of race than ethnicity on sociological outcomes among Hispanic/Latino populations in the United States.<sup>8</sup> These ethnic/racial patterns of behavioral health outcomes may help clarify Amaro and Zambrana's question of how to summarize and classify health data from multiracial Hispanic populations.<sup>3</sup>

Our inclusion of the positive health behavior of exercise adds another new dimension to this research area. We found significant differences between multiracial non-Hispanic and Hispanic/Latino adolescents on our measure of exercise. Moreover, multiracial non-Hispanic adolescents scored significantly higher on the measure of exercise than their Hispanic/Latino counterparts. Given that the exercise measure is self-report rather than behavioral, these findings should be interpreted with caution. Nevertheless, this was the only outcome on which multiracial adolescents did not have the more negative behavior pattern. This finding suggests that the presence of negative health behaviors does not necessarily mean the absence of positive health behaviors. Because we cannot infer that patterns of negative and positive health behaviors are diametric opposites, future examinations of racial identity and health should include more positive health outcomes to offer a more balanced representation of adolescent health.

Future studies could also be improved by including objective and more standardized measures of behavioral health to rule on subjective reporting bias, as well as using a nationally representative community sample rather than a school-based sample. This research should also examine which specific ethnic/racial categories constitute a multiracial identity for adolescents to better understand the interplay between ethnicity and race. Those data were not available for the public-use YRBS dataset. It is important to note, however, that Udry et al. did not find any differences among different compositions of multiracial identity,<sup>9</sup> so the need for such specificity may not be absolute.

Additional variables not included in the YRBS were socioeconomic status (SES) and measures of acculturation. These variables may moderate the association between racial identity and behavioral health for the different race/ethnicity groups, so they should be measured in future research. Finally, future studies would benefit from longitudinal analyses to learn if multiracial identity remains associated with negative behavioral health into adulthood. Based on her findings, Brown concluded that interracial identity becomes more integrated, leading to less psychological conflict, when individuals enter young adulthood.<sup>12</sup> The implications of this developmental shift for health behaviors would be a logical next step in this line of research.

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