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Family Functioning and Weight Loss in a Sample of African Americans and Whites

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Abstract

Background—Traditionally, weight management behavioral research has focused on individual-level influences, with little attention given to interpersonal factors that relate to the family behavioral context.

Purpose—This research examines the association between baseline family functioning scores and weight loss success in a sample of African Americans and Whites enrolled in a 20-week weight loss program with a weight loss goal of ≥ 4 kg.

Methods—Baseline surveys measuring six family functioning constructs were completed by 291 participants in a trial of weight loss maintenance. Analysis was limited to 217 participants in households with at least one other family member, and providing final weight measurements. We evaluated associations of family functioning, family composition, and demographic variables with weight loss success defined as losing $\geq 5\%$ of initial body weight. Baseline predictors of weight loss success were determined using logistic regression analysis.

Results—Participants were on average 61 years of age with BMI of 34 kg/m^2 ; 57% were female and 75% self-identified as African American. Sixty-two percent lost at least 5% of initial body weight. In bivariate analysis, weight loss success was associated with higher income and education ($p < 0.01$ and $p = 0.05$, respectively), ethnicity ($p < 0.01$), and the presence of a spouse ($p = 0.01$). After adjusting for socio-demographic covariates in a multivariable model, the odds of weight loss success were independently influenced by a significant interaction between ethnicity and family cohesion ($p < 0.01$).

Conclusions—These findings suggest that family context factors influence weight loss behaviors.

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Keywords

Weight loss; Family functioning; African American; Family cohesion; Behavioral intervention

Introduction

Behaviors associated with weight loss among adults are influenced by individual as well as interpersonal and environmental factors. Traditionally, the focus of both research and clinical interventions has been on individual level influences, with less attention given to interpersonal influences—particularly those occurring in the family context. While there has been some research in chronic disease management that looks at aspects of family functioning and disease adaptation [1–3], only limited research has been done in weight management among adults. Research on family functioning has primarily focused on children and adolescent behaviors, especially disordered eating and other weight-related health behaviors [4–6]. Most family-focused adult weight management research has involved evaluating the role of concurrent participation of family members (primarily spouses/partners) in intervention studies [7–12], with less of a focus on measuring different aspects of family functioning that may influence the behavioral context and outcomes. These family context factors may differentially affect different populations, yet to date, most family intervention studies have been among white middle class families [13].

Among African Americans, a population group disproportionately affected by the obesity epidemic [14], the importance of family as a cultural value is often reported [15,16] and factors such as family care-giving and family support are considered important in understanding lifestyle behaviors in this population [17–20]. In the context of weight management interventions, which generally emphasize lifestyle behavior change (i.e., diet, physical activity, and stress management), we know very little about how the family context influences the behaviors of individuals, or how these influences may differ by racial/ethnic group.

This research examines the association between measures of family functioning and weight loss outcomes in a bi-ethnic sample (African Americans and Whites) enrolled in a 20-week weight loss intervention, with a study weight loss goal of ≥ 4 kg as eligibility for continuation in a weight loss maintenance trial [21]. In this study, we examine whether baseline family functioning scores predict weight loss success (defined as losing at least 5% of initial weight at the end of a 20-week intervention) while taking ethnicity and other demographic and family factors into account. Even though in this study sample, the study weight loss goal of at least 4 kg is 4% of the average start weight and represents a modest yet clinically meaningful weight loss outcome [22,23], we selected $\geq 5\%$ of initial weight, the more commonly accepted criterion of clinically significant weight loss, to represent success. We also report secondary findings from our multivariable analysis of predictors of weight loss as a continuous outcome variable. Additionally, we include findings from our bivariate analysis of the associations between baseline family functioning measures and demographic and family characteristics, as well as ethnic differences in family functioning.

Methods

This study was ancillary to the Weight Loss Maintenance Trial [21], and all data analysis was conducted separately from that of the main trial. Weight Loss Maintenance was a multicenter trial of strategies for maintaining weight loss after it has been achieved with a 20-week behavioral weight loss intervention [24]. All study participants received the behavioral intervention. Participants in Weight Loss Maintenance were overweight or obese adults with a body mass index (BMI) of 25–45 kg/m², and taking medication for hypertension and/or

dyslipidemia. Major exclusion criteria were: diabetes mellitus; a recent cardiovascular event; medical conditions that would preclude weight loss; weight loss of >9 kg in the last 3 months, recent use of weight loss medications or weight loss surgery. Weight Loss Maintenance participants at the Duke clinical site who had not yet started the weight loss intervention were eligible for inclusion in this ancillary study. The Duke University Medical Center Institutional Review Board approved the study, and each participant provided written informed consent.

The ancillary study reported herein was implemented after the first cohort of participants had already completed the behavioral intervention. Thus, all participants enrolled at Duke after the first cohort were eligible for this analysis ($N=332$). These participants were asked to complete a 42-item survey measuring six family constructs (family functioning, emotional involvement, perceived criticism, problem solving, communication, and cohesion), and family composition (two items). Since the survey defined family as “*people who live in your household (spouse/significant other, children, extended family members)*”, the results of this study are limited to data from participants with at least one other person living in the household ($N=234$). Baseline surveys were collected from study participants during enrollment or no later than 2 weeks after the weight loss intervention began; baseline data collection occurred between September 2003 and June 2004.

Weight Loss Intervention

The Weight Loss Maintenance behavioral weight loss intervention included 20 weekly group sessions given over a 26-week period, and led by nutrition and behavioral counselors. Details of the intervention design, implementation, and outcomes have been published [24].

Weight Measurement

Weight was measured in duplicate using a high-quality, calibrated digital scale, with the participant wearing light indoor clothing and no shoes. At baseline, weight was measured on two separate days and averaged; at the end of the 20-week weight loss program, two final weights were also taken. Final weights were taken by study staff not involved in the intervention delivery. Weight loss was calculated as the difference between the average baseline and post-intervention weights.

Family Context Measurement Instruments

Family APGAR is a five-item survey developed by Smilkstein et al. [25] that measures global satisfaction with family life and family functioning in the areas of adaptation, partnership, growth, affection, and resolve (hence the acronym APGAR). The reported internal consistency (coefficient alpha (α)) for this measure is 0.86 [26]. Two scales from the McMaster Family Assessment Device [27] were selected to measure family communication (six items) and problem solving (five items). The family communication and problem-solving scales measure the ways family members exchange information and their ability to solve family problems. Internal reliabilities for these two Family Assessment Device scales ranged from 0.72 to 0.83. For family APGAR, a higher score means better family functioning, while lower scores in the two Family Assessment Device scales mean better family functioning in the areas targeted.

We measured family cohesion with a ten-item scale from the Family Adaptability and Cohesion Evaluation Scale III instrument [28] and selected the Family Emotional Involvement and Criticism Scale [29] to measure two constructs—family emotional involvement (seven items; $\alpha=0.76$) and perceived criticism (seven items; $\alpha=0.82$). These scale items measure perception of criticism received from family members (with higher scores meaning more perceived criticism), and the intensity of shared emotions or emotional involvement among family members (higher scores indicating more family involvement).

Before evaluating the differences in family functioning by ethnicity, we re-assessed the internal reliability of each measure, given the ethnic composition of this study sample differed from the validation samples. All measures, except one, retained acceptable internal validity (as measured by Cronbach's coefficient alpha) in the range of 0.74–0.87. Only with the Family Assessment Device communication scale, did we find a less than acceptable reliability coefficient in our sample. To improve the scale's internal reliability, two of the original six items (items #9 and #12) with the lowest factor loadings and item-total correlations were dropped, and a four-item revised scale ($\alpha=0.74$) was used in analysis.

Statistical Analysis

This study reports the relationships among family context, demographic, and weight loss outcome variables. We were primarily interested in the association between baseline family functioning and success in losing $\geq 5\%$ at the end of a 20-week program. We evaluated overall- and within-ethnicity group bivariate associations between weight loss success and baseline family functioning and socio-demographic variables using chi-square tests for categorical and *t* tests for continuous variables. In order to obtain stable estimates in the logistic regression, binary variables were created based on the distribution of values for household income (dichotomized at \$75,000), highest attained education level (dichotomized at college level), and family size (dichotomized at 3). Variables and their interactions with ethnicity found to be significantly related to weight loss success in bivariate analyses were then used in multivariable logistic regression models (the initial model) to assess the independent association of family functioning variables with weight loss success, while adjusting for socio-demographic covariates. From the initial model, interaction terms were considered for elimination one at a time at a 0.20 significance level. After all the interaction terms were considered, the socio-demographic variables which were not involved in the interaction terms were considered. These variables were eliminated one at a time if they did not change the estimates of the regression coefficients related to the family functioning variables by more than 10%. Using a similar analysis approach as described for the binary outcome of weight loss success, we examined associations between family functioning and weight loss (outcome in kilogram) using multivariable linear regression models. All statistical analyses were conducted using SAS 9.2 software (SAS Institute, Cary, NC, USA) and all reported *p* values are two-sided.

Results

Surveys were completed by 88% (291/332) of eligible participants. In comparing respondents to non-respondents, only age was significantly different between groups ($p=0.01$), with respondents being older. About 80% (234/291) of the sample lived in households with at least one other family member; among these, 217 (93%) had final weight data and were included in the analysis. Table 1 shows characteristics of the participants and their households. Over half lived in households with at least two family members (family size ≥ 3), and were females. Three fourths ($N=162$) self-described as African Americans; the remainder self-described as Non-Hispanic Whites. Participants were on average 61 years of age, with a mean BMI of 34 kg/m². African Americans were significantly younger ($p<0.01$) than Whites by 3.8 years, and had a higher initial body weight ($p<0.05$), but there were no significant differences in BMI, education, or income category. Educational attainment was high, on average, with over two thirds having a college degree or higher and over half had an annual household income of \$75,000 or more.

Most households (80%) included a spouse, about one third included adult children, and about the same included minor children. Both family size and composition differed by ethnicity. Compared to Whites, African Americans had larger families that included a spouse less often ($p<0.05$), but more often included children under 18 years of age ($p<0.01$), and other adults

($p<0.05$). Among the scores for family functioning, we observed significant ethnic differences in only one measure—family emotional involvement was lower in African Americans.

Before investigating the multivariable associations of family functioning, family composition, and demographic factors with weight loss success, we assessed the overall (non-stratified by ethnicity) bivariate relationships between these variables (Table 2). Both family emotional involvement and cohesion related significantly to a number of demographic and family composition factors. Overall, higher family emotional involvement and cohesion scores were observed among participants with higher income. Family emotional involvement, but not cohesion, was significantly related to family size (lower scores with larger families), and was higher in families with a spouse, but lower in families with minor children. Family cohesion scores were, however, significantly lower in families with other adults ($p<0.05$). The presence of adult children in the household influenced family problem solving; significantly higher problem solving scores were found with adult children present ($p<0.05$).

We next compared participants who succeeded in losing $\geq 5\%$ of their initial weight, with those who did not. Sixty-two percent (134/217) succeeded (57% of African Americans and 76% of Whites). Bivariate analysis showed weight loss success was not influenced by gender, family size, or family functioning. Weight loss success of $\geq 5\%$ was, however, associated with higher income and education ($p<0.01$ and $p=0.05$, respectively), ethnicity ($p<0.01$), and the presence of a spouse ($p=0.01$). Additionally, we found that the presence of minor children or other adults in the household was negatively associated with losing $\geq 5\%$ of initial weight, but statistical significance was only marginal ($p=0.06$ and $p=0.07$, respectively).

When stratified by ethnicity, African Americans who succeeded at weight loss of $\geq 5\%$ had higher income ($p<0.001$), and higher family APGAR ($p<0.05$) and family cohesion scores ($p<0.05$) compared to African Americans who did not. The presence of a spouse in African American households was also positively associated ($p=0.02$) with weight loss success. No demographic factors were associated with successful weight loss in Whites, but family cohesion scores were lower ($p<0.01$) among those successfully losing $\geq 5\%$, compared to those who did not. It should be noted here that the direction of the association between weight loss success and family cohesion was positive for African Americans and negative for Whites, thus no significant association was detected in the full mixed sample.

For the multivariable regression analysis (Table 3), the initial model variables included the main effects of family cohesion, education level, ethnicity, having a spouse, and two-way interactions between ethnicity and the main effect variables except for having a spouse. The interaction of ethnicity and having a spouse was not considered because there were only five Whites without a spouse, which were too few to provide reliable estimates. Household income was not included in the initial model because income and education were highly correlated ($r=0.32$, $p<0.0001$), there were more participants with missing income data ($n=12$), and we assumed the self-report bias would be less with education level than household income.

Our final model (Table 3) shows that after adjusting for socio-demographic covariates, the odds of weight loss success were independently influenced by the interaction between ethnicity and family cohesion. Higher family cohesion scores among African Americans, in contrast to lower scores among Whites, were significantly associated with greater odds of weight loss success.

In exploratory analyses (data not shown), we also examined how family and socio-demographic factors related to a continuous weight loss outcome measured in kilograms. Ethnicity, education, income, and presence of a spouse were all significantly associated with weight loss, following the same patterns observed with the outcome of losing $\geq 5\%$ initial weight. Men lost significantly more weight than women (6.5 vs. 5.1 kg, $p=0.02$), and Whites

more than African Americans (6.9 vs. 5.3 kg, $p=0.02$). Moreover, African Americans with a spouse were more successful at losing 5% of their initial weight and lost more weight on average (5.8 kg with a spouse vs. 3.9 kg without a spouse; $p=0.02$). African American males with a spouse in the household had a mean weight loss of 6.3 kg vs. 1.9 kg with no spouse. Females with a spouse lost 5.2 kg on average vs. 4.1 kg without a spouse. Because of small sample size, neither of these differences in the association between having a spouse and weight loss was statistically significant.

Although none of the family functioning variables reached statistical significance in bivariate analysis, family cohesion and emotional involvement showed the strongest associations, with similar observed ethnic differences for cohesion. Similar to the final logistic regression model, the final linear regression model included ethnicity, the interaction between family cohesion and ethnicity, and gender; these variables explained 8% of the variation in weight loss ($df=4$; $F=4.5$; $p<0.01$). No gender by family functioning interaction was significant.

Discussion

In this middle- to high-income sample of weight loss intervention participants, we observed that baseline assessment of family characteristics and functioning provided some meaningful information in predicting short-term weight loss success. Among our measures of family functioning, family cohesion appears to be the most meaningful construct. Our findings also suggest that among African American families, a number of other demographic and family characteristics may also be associated with weight loss outcomes.

The opposite effects on weight loss success of family cohesion by ethnicity were not expected, and explanations for these observed differences are not readily apparent. Family cohesion, as measured, included items about family members asking each other for help, doing things together, feeling close to each other, and valuing family togetherness. Since family cohesion was not related to family household characteristics associated with weight loss success (e.g., presence of a spouse and absence of minor children), the observed opposite relationship of family cohesion with weight loss success through its interaction with ethnicity, points to possible differences in behaviors, values, or beliefs of these two ethnic groups. For example, the cultural value of individualism has been used to characterize European Americans, whereas African Americans have been characterized by values of interdependence or collectivism [30]. These values taken in the context of weight loss could mean that for the European American, family interactions that place higher value on individualism (and translate into lower family cohesion scores) may lead to weight loss success when reliance on self and not needing the help of others is valued. In contrast, for African Americans who begin a weight loss program with a strong sense of family togetherness (where help from the family is expected and family members are included in the weight loss activities), higher family cohesion scores could be picking up on these characteristic cultural values. In a recent family trial of family and friend support for weight loss among African Americans, Kumanyika et al. [12] found that weight loss program participants benefited most from family participation when family members participated more and lost more weight themselves. Additionally, because of a general orientation and preference for thinness in the European American culture [31], engaging in the prescribed health behaviors for the purpose of losing weight may have been consistent with the norm or expectations of the European American family members. This type of orientation would not require additional adjustment of family attitudes or the need to engender support for weight loss activities from family members. On the contrary, the orientation of African American families toward a preference for large body image and few expectations for thinness may have required significant adjustments by family members for African American participants to achieve success. Without a supportive environment in which to accomplish the prescribed changes, African American participants may have had more difficulty succeeding;

those with higher family cohesion scores may have been more successful in engendering family support and adjusting cultural perceptions related to health, body image, or healthy lifestyle behaviors.

We focused our research on different aspects of family functioning and examined the extent to which baseline values could provide information about short-term weight loss outcomes. Even though our study sample limits what can be concluded about ethnic differences in family functioning, and this was not our primary research focus, there are some secondary findings relative to weight loss that are interesting enough to warrant further investigation. In the families of African American participants, compared to Whites, there was more often the absence of a spouse, and the presence of minor children and other adults. In explaining differences in weight loss outcomes, the presence of a spouse was most significant (and only among African Americans); our data also point to the possibility of a gender effect, with differences in weight loss associated with the spouse's gender. These findings suggest that characteristics of the family household may have an impact on weight loss behaviors even when family members are not directly involved or targeted as part of the weight loss intervention, and may help to explain the inconsistent findings from studies evaluating family involvement (particularly that of spouses) in weight loss [11–13,32].

The findings from this research are intended to foster new and expanded conversations about what might be important aspects of the family behavioral context to target in family intervention research. In the case of African Americans, family-related factors may have more relevance from a cultural perspective because of the large social networks and multiple generations typically found in African American households [33]. In the context of weight loss intervention, there is general agreement that interventions capable of improving the weight loss outcomes of African American women are a priority area. Designing such interventions can only happen after we gain much more knowledge about whom and what to target in families, and how to involve families in behavior change. The study of family interventions to improve physical health in adults is still in its infancy with very few studies and a need for greater diversity in racial, ethnic and socioeconomic characteristics among study populations [13]. This future research in family interventions represents an opportunity for collaborations between family therapists and behavioral intervention researchers [13] as we search for more effective approaches to promote health through weight management.

There are a number of limitations to this observational research worth mentioning. Generalizability is limited by the small sample size, relatively high income and educational levels, and other sample characteristics associated with eligibility criteria for the trial. As such, the observed associations may be limited to chronic medical conditions of hypertension and dyslipidemia, and may differ by age (this sample population included primarily older adults and family interactions may be quite different among younger and healthier weight loss participants). Observed associations may also differ by socioeconomic status within each racial/ethnic group. Other characteristics of a group willing to self-monitor food intake and participate in a 3-year trial may have also biased our study sample.

In addition, although our measures of family functioning were all validated, many have not been validated in African Americans, and there may be other relevant constructs that are important in the context of weight management behaviors. We conducted limited cognitive response testing to assess how survey items were being interpreted and reassessed internal reliability, but these actions do not eliminate all threats to validity. More importantly, our definition of family was restricted to those living in the household of the participant, and as others have suggested [15], within the African American culture, the extended family outside the household with whom there is regular contact also represents an important part of this 'family context'. As more research is conducted to better understand the family behavioral

context and social relationships relative to health behaviors, these preliminary findings may be better interpreted and limitations minimized.

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Table 1
Participant demographics and family characteristics

Characteristic	Total (N=217)	African Americans (N=162)	Whites (N=55)	P value
Age, year, mean (SE)	60.8 (0.61)	59.8 (0.66)	63.6 (1.30)	<0.01
Initial weight, kg, mean (SE)	97.7 (1.15)	99.1 (1.37)	93.7 (2.05)	<0.05
BMI, mean (SE)	34.1 (0.35)	34.4 (0.40)	33.3 (0.69)	0.17
Female, (n) %	(124) 57	(89) 55	(35) 64	0.10
Education (n) % N=210				0.73
<College degree	(66) 31	(48) 31	(18) 33	
≥College degree	(144) 69	(108) 69	(36) 67	
Income (n) % N=205				0.33
<\$75,000	(97) 47	(75) 49	(22) 42	
≥\$75,000	(108) 53	(77) 51	(31) 58	
Household family size and composition: N (%)				
Family size				<0.01
Family size <3	(93) 43	(61) 38	(32) 58	
Family size ≥3	(124) 57	(101) 62	(23) 42	
Composition				
Spouse	(173) 80	(123) 76	(50) 91	0.02
Adult Children	(73) 34	(54) 33	(19) 35	0.87
Children <18	(75) 35	(64) 40	(11) 20	<0.01
Other adults	(28) 13	(26) 16	(2) 4	0.02
Family functioning scores: mean (SE)				
Family APGAR	3.93 (0.05)	3.94 (0.05)	3.89 (0.09)	0.67
McMaster Family Assessment Device				
Communication ^a	2.75 (0.03)	2.78 (0.04)	2.67 (0.06)	0.14
Problem solving	2.89 (0.03)	2.92 (0.04)	2.81 (0.05)	0.12
Family Emotional Involvement and Criticism Scale				
Emotional involvement	3.11 (0.05)	2.99 (0.05)	3.45 (0.08)	<0.0001
Perceived criticism	1.66 (0.04)	1.68 (0.04)	1.59 (0.10)	0.36
Family Adaptability and Cohesion Evaluation Scale III ^b				
Cohesion	3.84 (0.04)	3.82 (0.05)	3.90 (0.08)	0.44

Values are percentages unless otherwise indicated; mean (SE). Whites are self-described as Non-Hispanic Whites

All family functioning scores are calculated as mean scores, with a minimum value of 1 and a maximum value of 5, except for Family Assessment Device—communication and problem solving scores, where the maximum score is 4

BMI body mass index, calculated as weight (kg)/height (m)²

^aRevised scale (four items)

^bTo convert mean score to sum score, multiply by 10

Table 2
Differences in family functioning scores by income, education, and family characteristics

Family Functioning Scores, mean (SE) ^a							
	Family APGAR	Family communication	Family problem solving	Family emotional involvement	Family perceived criticism	Family cohesion	
Income							
<\$75,000	3.86 (0.07)	2.77 (0.05)	2.90 (0.04)	2.95 (0.07)	1.72 (0.06)	3.71 (0.07)	
≥\$75,000	3.96 (0.06)	2.76 (0.04)	2.90 (0.04)	3.25 (0.07)*	1.60 (0.05)	3.96 (0.06)*	
Education							
<College degree	3.92 (0.08)	2.69 (0.06)	2.85 (0.05)	3.00 (0.10)	1.67 (0.07)	3.72 (0.09)	
≥College degree	3.93 (0.06)	2.79 (0.04)	2.92 (0.04)	3.16 (0.05)	1.64 (0.04)	3.89 (0.05)	
Family size							
<3	3.96 (0.07)	2.70 (0.05)	2.87 (0.05)	3.26 (0.07)	1.64 (0.06)	3.93 (0.07)	
≥3	3.90 (0.06)	2.79 (0.04)	2.91 (0.04)	3.00 (0.06)*	1.67 (0.04)	3.77 (0.05)	
Family composition							
Spouse–Yes	3.95 (0.05)	2.77 (0.04)	2.90 (0.03)	3.15 (0.05)	1.67 (0.04)	3.87 (0.05)	
No	3.82 (0.11)	2.69 (0.07)	2.85 (0.06)	2.92 (0.10)**	1.62 (0.08)	3.74 (0.09)	
Adult children–Yes	3.99 (0.06)	2.79 (0.05)	2.97 (0.04)	3.05 (0.08)	1.58 (0.06)	3.77 (0.07)	
No	3.90 (0.06)	2.73 (0.04)	2.85 (0.04)**	3.14 (0.06)	1.70 (0.05)	3.88 (0.05)	
Minor children–Yes	3.84 (0.08)	2.77 (0.05)	2.86 (0.05)	2.93 (0.08)	1.69 (0.06)	3.74 (0.07)	
No	3.98 (0.06)	2.74 (0.04)	2.91 (0.04)	3.20 (0.05)**	1.64 (0.05)	3.90 (0.05)	
Other adults–Yes	3.74 (0.15)	2.74 (0.08)	2.79 (0.09)	2.97 (0.12)	1.75 (0.10)	3.58 (0.12)	
No	3.96 (0.05)	2.75 (0.03)	2.91 (0.03)	3.13 (0.05)	1.64 (0.04)	3.88 (0.04)**	

^aFamily APGAR [25], family communication and problem solving measured by Family Assessment Device [27]; family emotional involvement and perceived criticism measured by Family Emotional Involvement and Criticism Scale [29]; family cohesion measured by Family Adaptability and Cohesion Evaluation Scale III [28]. Maximum score=5 except for Family Assessment Device scales (maximum=4)

* $p<0.01$

** $p<0.05$

Table 3
Multivariable model of $\geq 5\%$ weight loss predictors

Effect	Coefficient β (SE)	Wald χ^2	P value
Education group ^a	0.56 (0.32)	3.09	0.08
Ethnicity ^a	-10.0 (3.35)	8.93	<0.01
Family cohesion ^b	-1.75 (0.76)	2.17	0.14
Family cohesion \times ethnicity (interaction)	2.30 (0.81)	8.07	<0.01
Odds ratio estimates and Wald 95% CI			
Effect	Estimate	95% CI	
Education group	1.76	0.94–3.32	
Ethnicity (at family cohesion score=3.84 (total sample mean))	0.31	0.13–0.75	
Family cohesion in Whites	0.18	0.04–0.78	
Family cohesion in African Americans	1.74	1.03–2.95	

$N=209$ observations used in model; $n=8$ with missing values for response or explanatory variables. Model: $df=4$; Wald $\chi^2=16.2$, $p<0.01$

^a Education group—reference=<college education; ethnicity—reference=White

^b Measured by Family Adaptability and Cohesion Evaluation Scale III