



Race/Ethnicity as a Moderator of the Association Between Weight-Related Abuse and Disordered Eating

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Received: 14 April 2023 / Revised: 3 August 2023 / Accepted: 21 August 2023
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Abstract

Objectives Extant research supports a positive relationship between weight-related abuse (WRA) and disordered eating constructs. Individuals who face marginalization and who are more likely to live in larger bodies, such as Black and Hispanic individuals in the United States (U.S.), may be at a heightened risk of WRA. This study is aimed at understanding whether the relationship between WRA and disordered eating constructs varies by race/ethnicity. We hypothesized that individuals from marginalized backgrounds would have differential levels of dietary restraint, body dissatisfaction, and shape/weight overvaluation with increased experiences of WRA compared to non-Hispanic White individuals.

Methods Two thousand one hundred sixteen undergraduates were recruited from two U.S. universities for a survey-based study assessing psychosocial functioning. Participants completed a demographics questionnaire assessing race/ethnicity, the Weight-Related Abuse Questionnaire assessing WRA experiences, and the Eating Disorders Examination-Questionnaire assessing disordered eating constructs.

Results Results showed positive relationships between verbal (vWRA) and physical (pWRA) WRA and disordered eating behaviors and cognitions. Moreover, at higher levels of vWRA, Asian and multiracial individuals showed greater dietary restraint compared to White individuals. No other tested models were moderated by race/ethnicity.

Conclusion WRA is positively associated with disordered eating behaviors and cognitions across racial/ethnic identities, and vWRA may be differentially related to increased dietary restraint in Asian and multiracial individuals compared to White individuals. Further research utilizing intersectional analyses (e.g., examining how this relationship varies according to the intersection of race/ethnicity, gender, and weight status) would help clarify this relationship.

Keywords Weight-based discrimination · Weight-related abuse · Weight stigma · Disordered eating · Race/ethnicity

Public Significance Statement People from marginalized racial/ethnic backgrounds are more likely to live in larger bodies and may be at heightened risk of experiencing weight-related abuse and disordered eating. This study examined whether the relationship between weight-related abuse and disordered eating differs between White, Black, Asian, Middle Eastern or North African (MENA), Hispanic, and multiracial individuals. Results suggest that both verbal and physical weight-related abuse are related to increased levels of disordered eating across racial/ethnic identities, and verbal weight-related abuse may be differentially related to increased dietary restraint in Asian and multiracial individuals compared to White individuals.

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Verbal and physical weight-related abuse (WRA) have been linked to adverse psychosocial outcomes during childhood into adulthood, including depression, anxiety, and disordered eating behaviors and cognitions (e.g., body dissatisfaction; [4, 18]). Extant literature suggests an association between WRA and disordered eating behaviors and cognitions, as those who are verbally and/or physically abused due to their weight become (more) critical of their bodies and engage in unhealthy weight control behaviors [12, 23, 29].

An important next step is to identify individuals who are at increased risk of disordered eating behaviors and cognitions related to WRA. Global epidemiological studies illustrate that full-threshold eating disorders typically develop in late adolescence through young adulthood, suggesting that young adults may be a particularly important population to investigate [32]. Further, in the United States (U.S.),

individuals who face marginalization and who are more likely to live in larger bodies, such as Black and Hispanic individuals [24], may be at increased risk of experiencing WRA. While race/ethnicity are not biological factors that predispose an individual to weight status or WRA, they are social constructs that may act as proxies for social determinants of health (e.g., structural racism and social disadvantage; [3]). Therefore, race/ethnicity may be useful in understanding how WRA and disordered eating are related.

Most published research in the eating disorder field has been conducted in non-Hispanic, White populations, with recent estimates indicating that White participants made up approximately 70% of study samples in research published in the flagship eating disorder journal [11]. As such, individuals from marginalized racial/ethnic backgrounds are typically underrepresented in the eating disorder literature. Further, individuals from underserved racial/ethnic backgrounds are less likely to be screened for eating disorders by their doctor [6] and experience other barriers to treatment access, such as lower referrals to treatment and underrepresentation in eating disorder treatment trials [8, 16, 22, 33]). Extant research supports that certain eating disorder risk factors may be more strongly linked to eating pathology in particular racial/ethnic groups (e.g., [9, 17]). Therefore, it is critical to assess how the relationship between WRA and disordered eating differs across race/ethnicity. These results could have meaningful impacts on how clinical providers conceptualize the relationship between eating disorder risk factors, such as WRA, and disordered eating for patients with varying racial/ethnic identities.

Indeed, one study reported that Hispanic women were more likely to engage in disordered eating in response to WRA compared to White women [30]. Other studies have found that the relationship between WRA and disordered eating behaviors and cognitions exists regardless of race/ethnicity [13, 14, 18, 19, 35]. Yet, with one exception [35], most studies utilized a unidimensional, unvalidated measure of WRA that only assessed for weight-related teasing, which does not capture the full range of WRA that one might experience. Consequently, physical WRA (pWRA) or other types of verbal WRA (vWRA) have not been examined in relation to disordered eating behaviors and cognitions [13, 14, 18, 19]. Multi-item measures [10] and measures that have well-documented reliability and validity are more psychometrically sound [20], further bolstering support for the use of a more comprehensive and validated measure of WRA.

Further, when examining race/ethnicity, most studies have significant limitations. For instance, they have either grouped racial/ethnic identities together (e.g., conducted analyses between White and non-White individuals;

[14]) or did not examine differences between racial/ethnic identities [19, 35], which prevents our understanding of factors relevant to the development of disordered eating between racial/ethnic groups [11]. The present study includes participants who identified as White, Black, Asian, Middle Eastern or North African (MENA), Hispanic, and multiracial, which provides a unique perspective. Further exploration into differential risk between racial/ethnic identities for disordered eating related to vWRA and pWRA is imperative for establishing disordered eating prevention targets in populations who are most vulnerable.

The purpose of the present study was to understand how the relationship between vWRA and pWRA and disordered eating behaviors and cognitions varies by race/ethnicity in White, Black, Asian, MENA, Hispanic, and multiracial young adults. The present study is unique in that it is the first to use a validated measure of both vWRA and pWRA to understand the relationship between WRA and disordered eating by race/ethnicity. We hypothesized that race/ethnicity would moderate the relationship between both vWRA and pWRA and disordered eating constructs. Specifically, individuals of marginalized races/ethnicities, versus a White, non-Hispanic race/ethnicity, who experience higher levels of WRA would endorse differential levels of disordered eating constructs.

Method

Participants

Participants were recruited from two U.S. universities. Across both sites, participants were recruited via SONA, a software program used by universities to enroll students into research studies (described in more detail below). Due to differences in university size, with site one having a student population that is more than twice that of site two, the majority (87.9%) of participants were from site one. Participants were eligible to participate if they were young adults between the ages of 18–30 and fluent in English.

A total of 2116 participants completed the study, though some participants had missing data (see Table 1 for descriptive statistics). On average, participants were 19.83 (SD = 2.11; range = 18–30) years old. Most participants identified as female (80.88%). Regarding race/ethnicity, participants identified as White (49.0%); Black (15.5%); Asian (14.9%); Hispanic (10.6%); MENA (1.18%); or multiracial (4.82%). Participants who identified as American Indian/Alaska Native (0.09%), Native Hawaiian/Pacific Islander (0.14%),

Table 1 Descriptive characteristics of participants in the total and analytic samples

Variable	Total (<i>N</i> = 2116)	Verbal WRA (<i>N</i> = 1219)	Physical WRA (<i>N</i> = 508)
Age, <i>M</i> (<i>SD</i>)	19.83 (2.11)	19.87 (2.15)	19.95 (2.35)
Site, <i>n</i> (%)			
Site 1	1860 (87.90%)	1038 (85.15%)	422 (83.07%)
Site 2	256 (12.10%)	181 (14.85%)	85 (16.73%)
Gender identity, <i>n</i> (%)			
Male	386 (18.88%)	224 (18.38%)	136 (26.77%)
Female	1654 (80.88%)	975 (79.98%)	359 (70.67%)
Other*	4 (0.20%)	4 (0.33%)	2 (0.39%)
Prefer not to say	1 (0.05%)	1 (0.08%)	1 (0.20%)
Missing	71 (3.36%)	15 (1.23%)	10 (1.97%)
Race and ethnicity, <i>n</i> (%)			
White	1037 (49.0%)	661 (54.7%)	267 (52.6%)
Black	328 (15.5%)	166 (13.7)	67 (13.2%)
Asian	315 (14.9%)	163 (13.5%)	72 (14.2%)
American Indian/Alaska Native	2 (0.09%)	0 (0.00%)	0 (0.00%)
Native Hawaiian/Pacific Islander	3 (0.14%)	2 (0.17%)	1 (0.20%)
Hispanic	224 (10.6%)	140 (11.6%)	68 (13.4%)
Multiracial	106 (5.01%)	62 (5.09%)	26 (5.12%)
MENA	22 (1.04%)	11 (0.90%)	2 (0.39%)
West Indian	1 (0.05%)	1 (0.08%)	1 (0.20%)
Other	7 (0.33%)	4 (0.33%)	3 (0.59%)
Missing	72 (3.40%)	10 (0.82%)	2 (0.39%)
Parent income overall, median (range)	\$100,000 (0–\$1,000,000)	\$100,000 (0–\$1,000,000)	\$100,000 (0–\$1,000,000)
Parent income by race and ethnicity, median (range)			
White	\$100,000 (0–\$1,000,000)	\$110,000 (0–\$1,000,000)	\$120,000 (0–\$1,000,000)
Black	\$60,000 (0–\$800,000)	\$61,000 (0–\$800,000)	\$65,000 (0–\$800,000)
Asian	\$70,000 (0–\$1,000,000)	\$75,000 (0–\$1,000,000)	\$80,000 (\$6000–\$1,000,000)
Hispanic	\$75,000 (\$2,600–\$600,000)	\$77,500 (\$2,600–\$600,000)	\$90,000 (3500–\$500,000)
MENA	\$50,000 (0–\$260,000)	\$50,000 (0–\$100,000)	\$30,000 (0–\$600,000)
Multiracial	\$80,000 (0–\$700,000)	\$67,500 (0–\$700,000)	\$100,000 (\$35,000–\$700,000)
Weight-related abuse, <i>M</i> (<i>SD</i>)			
Verbal weight-related abuse	1.05 (1.29)	1.05 (1.29)	1.22 (1.42)
Physical weight-related abuse	0.37 (0.78)	0.38 (0.79)	0.37 (0.78)
Eating Disorder Examination-Questionnaire, <i>M</i> (<i>SD</i>)			
Dietary restraint	1.67 (1.90)	1.80 (1.95)	1.84 (1.96)
Body dissatisfaction	2.70 (2.03)	2.94 (2.01)	2.94 (1.96)
Shape/weight overvaluation	2.64 (2.11)	2.93 (2.08)	2.94 (2.05)

MENA, Middle Eastern or North African

West Indian (0.05%), or another unspecified race (0.33%) were excluded from the analyses due to insufficient sample sizes within these groups. Median reported parent income was \$100,000. The median income of the whole sample is equal to the median parental household income of White participants, and, consistent with national data, the median incomes of other races/ethnicities, with the exception of Asian individuals, are significantly lower than that of White participants [31].

Measures

Demographic Questionnaire. Basic demographic information, including age, gender, and parent income, was collected.

Race/ethnicity. Participants were able to select from five racial (American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, Black or African American,

White) and two ethnic (Hispanic or non-Hispanic¹) groups based on the U.S. Census. Participants were able to select as many groups with which they identified. However, many Hispanic individuals often do not identify with any of the racial groups that are listed on the U.S. Census—approximately 44% of Hispanic individuals did not respond to the race question or indicated that they were some other race in the 2020 Census [25]. Thus, Hispanic individuals were separated from the racial groups and placed into a Hispanic (of all races) participant group. Participants were also able to select an “Other” race and/or “Other” ethnicity group. Those who selected “Other” were instructed to write in their responses (see Online Resource 1 for responses). Arab, Middle Eastern, or North African participants were placed into a MENA group. Participants who were identified as Hispanic, multiracial, Black, South Asian, and White were added to the Hispanic, multiracial, Black, Asian, and White racial/ethnic groups, respectively. Groups with a sufficient sample size ($n > 10$) were included in the analyses. Therefore, American Indian/Alaska Native ($n = 5$), Native Hawaiian/Pacific Islander ($n = 5$), and West Indian ($n = 2$) participants, and the individuals who did not specify their race ($n = 10$), were excluded from the analysis given the small sample size of individuals who were identified as such. The final racial/ethnic groups assessed within the present analyses included participants who identified as White, Black, Asian, Hispanic, MENA, or multiracial. See Table 2 for a summary of the distribution of races/ethnicities within the multiracial group.

Weight-Related Abuse Questionnaire (WRAQ; [28]). The WRAQ is a self-report measure that assesses if someone has experienced vWRA and pWRA before age 21. The measure begins with questions to determine if vWRA or pWRA was experienced. If prior abuse is reported, 15 questions are asked regarding negative weight-related events that individuals may have experienced, subdivided into two subscales: vWRA (8 items; sample item: “someone laughed at you because of your weight”) and pWRA (7 items; sample item: “someone grabbed you because of your weight”). Questions are rated on a seven-point scale (0 = “never” to 6 = “more than 20 times per year”) and averaged for the final score. The vWRA and

Table 2 Racial/ethnic breakdown of multiracial individuals

Multiracial identity categories ($n = 106$)	n (%)
American Indian/Alaska Native and Asian	1 (0.9%)
American Indian/Alaska Native, Asian, Black, and White	1 (0.9%)
American Indian/Alaska Native and Black	5 (4.7%)
American Indian/Alaska Native, Black, and White	6 (5.7%)
American Indian/Alaska Native and White	3 (2.8%)
Asian and Native Hawaiian/Pacific Islander	4 (3.8%)
Asian and Black	4 (3.8%)
Asian, Black, and White	3 (2.8%)
Asian and White	32 (30.2%)
Black and White	38 (35.8%)
Black and MENA	2 (1.9%)
Black and other (unspecified race)	1 (0.9%)
White and MENA	2 (1.9%)
White and Muslim (unspecified race)	1 (0.9%)
Native Hawaiian/Pacific Islander and White	1 (0.9%)
Kazakh and Russian	1 (0.9%)
Unspecified	1 (0.9%)

MENA, Middle Eastern or North African

pWRA subscales have a maximum possible average score of six. For analyses, a mean score was calculated using all eight items from the vWRA subscale and all eight items from the pWRA subscale, respectively. The WRAQ has been shown to have strong internal consistency (vWRA: $\alpha = .93$, pWRA: $\alpha = .89$) and good convergent validity with measures assessing teasing, abuse, and psychopathology [28]. In the present sample, both vWRA and pWRA subscales had excellent internal consistency (vWRA: $\alpha = .90$, pWRA: $\alpha = .90$).

The Eating Disorder Examination Questionnaire (EDE-Q; [15]). The EDE-Q is a 22-item measure that assesses frequency of disordered eating behaviors over the past month. Items are rated on a seven-point scale, from zero (“no days”) to six (“every day”). While the original scoring of the EDE-Q was based on a four-factor model [15], recent research has suggested that a seven-item three-factor structure (dietary restraint, body dissatisfaction, and shape/weight overvaluation) has a better factor structure [34], particularly in racial/ethnic minority samples. Thus, the three-factor structure was used in all analyses. The three-factor model of the EDE-Q has good internal consistency (α range = .83–.94; [5]). In the present sample, internal consistency was good (dietary restraint: $\alpha = .87$, body dissatisfaction: $\alpha = .89$) to excellent (shape/weight overvaluation: $\alpha = .93$).

Procedure

Participants were recruited through their university’s SONA platform, which is an online recruitment website available to students enrolled in psychology courses. At each university,

¹ Individuals who identified as Hispanic selected White ($n = 95$, 42.4%), Black ($n = 39$, 17.4%), Asian ($n = 2$, 0.9%), multiracial ($n = 26$, 11.6%), American Indian/Alaska Native ($n = 3$, 1.3%), Native Hawaiian/Pacific Islander ($n = 2$, 0.9%), West Indian ($n = 1$, 0.5%), “not White” ($n = 1$, 0.5%), or prefer not to say ($n = 7$, 3.1%) as their racial identity. Eighteen (8.0%) individuals who were identified as Hispanic wrote in their racial identity as Hispanic or Latinx instead of choosing from the five Census groups. Twenty-seven (12.1%) individuals who were identified as Hispanic did not respond to the race question. Three (1.3%) individuals who were identified as Hispanic answered “Other” to the race question but did not write in a response.

students enrolled in certain psychology courses (e.g., Foundations of Psychology) are required to complete research credits. One way that these research credits can be obtained is by participating in a research study through the SONA website. Once participants enrolled in the present study via SONA, they were provided a survey link, which included the consent form followed by the battery of self-report measures. Participants received research credits upon completion of the survey. Study procedures were approved by the Institutional Review Boards of both study sites. Data collection spanned from January 2020–July 2022. Data and study materials may be made available to other researchers upon reasonable request.

Data Analytic Plan

Approximately 12% of participants were missing data on the vWRA and pWRA subscales, less than 1% of participants were missing data on race/ethnicity, 6.5% of participants were missing data on dietary restraint, 6% of participants were missing data on body dissatisfaction, and 5.7% of participants were missing data on shape/weight overvaluation. Participants with missing data were excluded from the analyses using listwise deletion.

One-way analysis of variance (ANOVA) tests were conducted in RStudio [26] to investigate differences in vWRA, pWRA, dietary restraint, body dissatisfaction, and shape/weight overvaluation by race/ethnicity. Pairwise comparisons using Tukey's HSD test were conducted when the assumption of homogeneity of variances was met, whereas the Games-Howell test was used when the assumption of homogeneity of variances was not met.

Linear regression models (estimated using ordinary least squares) were conducted in RStudio [26] examining whether race/ethnicity modified the relationship between vWRA or pWRA and dietary restraint, body dissatisfaction, and/or shape/weight overvaluation subscales of the EDE-Q, while controlling for age, site, and gender. White individuals were analyzed as the reference group, such that results of Black, Asian, Hispanic, MENA, and multiracial individuals were compared to those of White individuals. Six separate moderated linear regression models were conducted, such that interaction terms between each racial/ethnic group (coded as a factor variable) and continuous vWRA and pWRA scores were included in models examining dietary restraint, body dissatisfaction, and shape/weight overvaluation as outcome variables. For the models examining the association between race/ethnicity, vWRA, and each disordered eating outcome, the following predictor terms were included: vWRA, Black, Asian, Hispanic, MENA, multiracial, Black \times vWRA, Asian \times vWRA, Hispanic \times vWRA, MENA \times vWRA, and multiracial \times vWRA, in addition to covariates (age, site, and gender). For the models examining the association between

race/ethnicity, pWRA, and each disordered eating outcome, the following predictor terms were included: pWRA, Black, Asian, Hispanic, MENA, multiracial, Black \times pWRA, Asian \times pWRA, Hispanic \times pWRA, MENA \times pWRA, and multiracial \times pWRA, in addition to covariates (age, site, and gender). Only complete data were used for each analysis. Prior to conducting the analyses, independent (vWRA and pWRA) and dependent variables (dietary restraint, body dissatisfaction, and shape/weight overvaluation) were investigated for non-normality. Kurtosis values were greater than two for dietary restraint, vWRA, and pWRA scores. Skewness values were greater than one for vWRA and pWRA scores. However, log transformations of dietary restraint, vWRA, and pWRA, did not improve model fit nor regression model diagnostics, and the direction of the results remained unchanged. Thus, the analyses were conducted with the original, untransformed variables.

Results

Analytic Sample Characteristics

Over half of participants (57.61%) endorsed at least one incident of vWRA, and 24.01% of participants endorsed at least one incident of pWRA. Therefore, the sample size for analyses examining vWRA was 1219, and the sample size for analyses examining pWRA was 508. Scores on the vWRA subscale ranged from 0 to 6, and scores on the pWRA subscale ranged from 0 to 5.86. Participant characteristics for the analytic sample are listed in Table 1. Analysis of variance results comparing experiences of vWRA, pWRA, and EDE-Q scores by race/ethnicity are listed in Table 3. There were significant differences for each EDE-Q subscale by race/ethnicity, with general patterns suggesting that White participants endorsed higher levels of disordered eating behaviors and cognitions compared with Asian and Black individuals. Hispanic individuals endorsed higher levels of shape/weight overvaluation than Asian and Black individuals.

Race/Ethnicity as a Moderator of the Relationship Between vWRA and EDE-Q Scores

There was a main effect of vWRA on dietary restraint (beta = 0.26, SE = 0.06, 95% CI [0.14, 0.38], $t(1156) = 4.29$, $p < 0.001$; standardized beta = 0.17, SE = 0.04, 95% CI [0.09, 0.25]), body dissatisfaction (beta = 0.54, SE = 0.16, 95% CI [0.43, 0.65], $t(1161) = 9.31$, $p < 0.001$; standardized beta = 0.34, SE = 0.04, 95% CI [0.27, 0.41]), and shape/weight overvaluation (beta = 0.53, SE = 0.06, 95% CI [0.41, 0.65], $t(1163) = 8.74$, $p < 0.001$; standardized beta = 0.32, SE = 0.04, 95% CI [0.25, 0.39]), such that

Table 3 Weight-related abuse (WRA) and Eating Disorder Examination-Questionnaire (EDE-Q) scores by race/ethnicity

	<i>M</i> (<i>SD</i>)						Analysis of variance results	
	White	Black	Asian	Hispanic	MENA	Multiracial	<i>F</i> (<i>df</i>)	Pairwise comparisons
Verbal weight-related abuse	1.01 (1.26)	1.07 (1.33)	1.02 (1.30)	1.29 (1.35)	1.09 (1.41)	0.84 (1.11)	$F(5, 1197) = 1.45$	
Physical weight-related abuse	0.31 (0.70)	0.54 (1.08)	0.37 (0.81)	0.47 (0.79)	0.5 (0.71)	0.30 (0.67)	$F(5, 496) = 1.26$	
Dietary restraint	1.79 (1.93)	1.34 (1.83)	1.47 (1.83)	1.81 (1.89)	1.73 (1.92)	1.82 (1.98)	$F(5, 1942) = 3.75^*$	W > B
Body dissatisfaction	2.86 (2.02)	2.45 (2.10)	2.47 (1.97)	2.9 (2.06)	1.95 (2.28)	2.53 (1.87)	$F(5, 1960) = 4.19^{**}$	W > A, W > B
Shape/weight over-valuation	2.87 (2.09)	2.22 (2.11)	2.28 (1.98)	2.92 (2.19)	2.31 (2.36)	2.58 (2.04)	$F(5, 1960) = 7.56^{**}$	H > A, W > A, H > B, W > B

* $p < .05$; ** $p < .001$

MENA, Middle Eastern or North African; *W*, White; *B*, Black; *A*, Asian; *H*, Hispanic; Tukey's HSD test was used to conduct pairwise comparisons when the assumption of homogeneity of variances was met. The Games-Howell test was used to conduct pairwise comparisons when the assumption of homogeneity of variances was not met. The reported pairwise comparisons were significant at $p < .05$

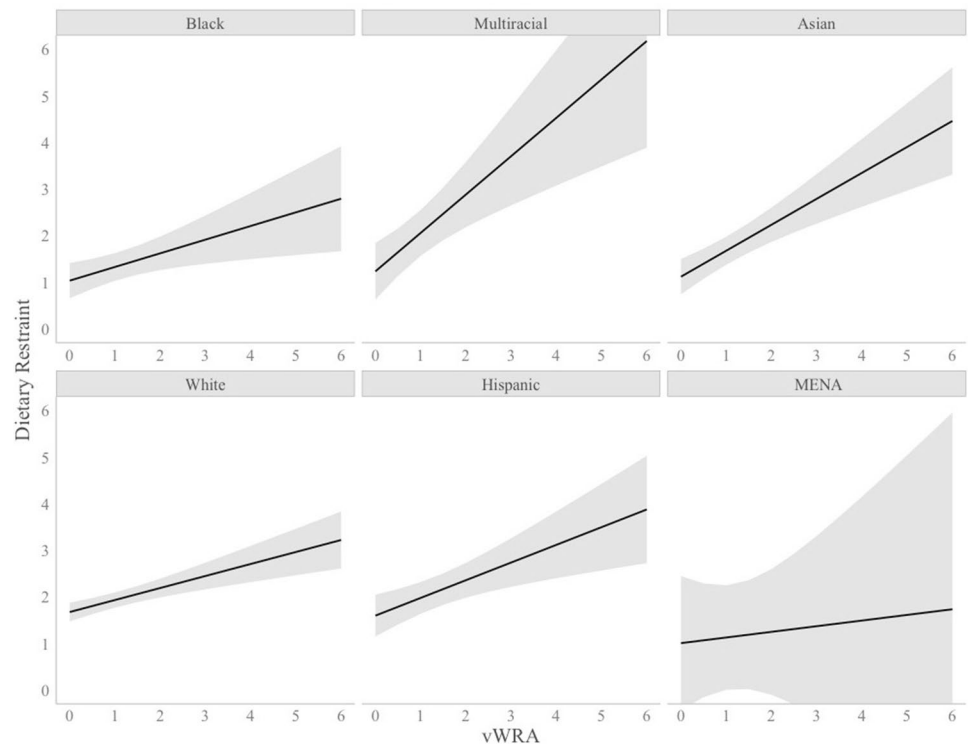
more severe vWRA was associated with more negative disordered eating outcomes, holding gender, site, and race constant. Further, the positive relationship between vWRA and dietary restraint was potentiated in Asian (beta = 0.30, SE = 0.13, 95% CI [0.05, 0.55], $t(1156) = 2.32$, $p = 0.02$; standardized beta = 0.20, SE = 0.09, 95% CI [0.03, 0.37]) and multiracial individuals (beta = 0.57, SE = 0.23, 95% CI [0.12, 1.02], $t(1156) = 2.47$, $p = 0.01$; standardized beta = 0.17, SE = 0.04, 95% CI [0.09, 0.25]) compared with White individuals; see Fig. 1 for a depiction of this result. The model explained a small proportion of variance in dietary restraint ($R^2 = 0.07$, $F(13, 1156) = 7.04$, $p <$

.001, adjusted $R^2 = 0.07$). Race/ethnicity did not moderate the relationship between vWRA and body dissatisfaction or shape/weight overvaluation (p 's > .05).

Race/Ethnicity as a Moderator of the Relationship Between pWRA and EDE-Q Scores

There was a main effect of pWRA on body dissatisfaction (beta = 0.50, SE = 0.17, 95% CI [0.17, 0.83], $t(474) = 3.01$, $p = 0.003$; standardized beta = 0.19, SE = 0.06, 95% CI [0.07, 0.32]) and shape/weight overvaluation (beta = 0.42, SE = 0.17, 95% CI [0.08, 0.76], $t(474) = 2.42$, $p = 0.02$;

Fig. 1 Interaction effect of race/ethnicity on vWRA and EDE-Q dietary restraint. Note: vWRA, verbal weight-related abuse scores; EDE-Q, Eating Disorder Examination-Questionnaire; MENA, Middle Eastern or North African. The shaded gray area represents 95% confidence intervals



standardized beta = 0.16, SE = 0.06, 95% CI [0.03, 0.28]), such that more severe pWRA was associated with greater endorsement of body dissatisfaction and shape/weight overvaluation, holding gender, site, and race constant. There was not a significant main effect of pWRA on dietary restraint ($p > .05$). Race/ethnicity did not moderate the relationship between pWRA and dietary restraint, body dissatisfaction, or shape/weight overvaluation (p 's $> .05$).

Discussion

The goal of the present study was to quantify the extent to which the relationship between vWRA and pWRA and disordered eating behaviors and cognitions varied by race/ethnicity. Consistent with our hypotheses and previous literature on the relationship between WRA and disordered eating behaviors and cognitions, vWRA was positively associated with dietary restraint, body dissatisfaction, and shape/weight overvaluation, and pWRA was positively associated with body dissatisfaction and shape/weight overvaluation [4, 18].

Additionally, though we hypothesized that the relationship between vWRA and pWRA and disordered eating would be stronger among individuals belonging to marginalized racial/ethnic identities relative to White individuals, our hypotheses were only supported when comparing Asian and multiracial individuals with White individuals. Specifically, there was a stronger relationship between vWRA and dietary restraint among Asian and multiracial individuals compared to White individuals. This result appears in contrast to previous research, which has suggested that the relationship between WRA and disordered eating exists regardless of race/ethnicity [13, 14, 18, 19, 35]. One possible explanation for this discrepancy is that previous studies are limited by the use of one-item or unvalidated measures of WRA, lacking robust and nuanced assessment of the construct.

Regarding the significant interaction between vWRA and dietary restraint in Asian individuals, studies indicate that receiving maternal weight or shape-related criticism is more significantly associated with disordered eating pathology than body dissatisfaction among Asian young adults, relative to White and Hispanic young adults [36]. The authors describe that East Asian individuals, who typically adhere to a collectivist cultural orientation that values communal over individual needs [27], may place greater importance on the criticisms of others relative to White individuals from individualistic cultures (e.g., the U.S.; [36]). Asian individuals may thus be increasingly likely to engage in disordered eating behaviors, such as dietary restraint, in response to such criticism, relative to other racial/ethnic groups. However, the Asian population in the U.S. is heterogenous, including individuals from different Asian countries with various

levels of acculturation to U.S. culture [21]. Future research would benefit from examining differences in the relationship between vWRA and disordered eating constructs within Asian and other racial/ethnic minority groups.

The relationship between vWRA and dietary restraint was also significantly potentiated in multiracial individuals compared to White individuals. Previous work has suggested both increased disordered eating for individuals with multiracial identities, as well as the need to reflect on individuals with multiracial identities in a more nuanced manner [7]. In the present sample, the majority of multiracial individuals identified as Black or African American and White (36%) and Asian and White (30%). Burke et al. [7] observed that multiracial individuals identifying as Black or African American and White had greater levels of eating pathology than expected across gender identities, whereas multiracial individuals identifying as Asian and White had lower levels of eating pathology than expected. Given considerable variability in the prevalence of eating pathology within individuals identifying as multiracial, further research should investigate the mechanisms by which risk factors for eating pathology differ within each multiracial identity.

Contrary to our hypotheses, race/ethnicity did not moderate the association between vWRA and body dissatisfaction or shape/weight overvaluation, and race/ethnicity did not moderate the association between pWRA and any disordered eating behavior or cognition. This supports findings obtained by studies that have used one-item or unvalidated measures of WRA that indicate vWRA and pWRA are robustly related to disordered eating behaviors and cognitions, regardless of race/ethnicity. However, future work should consider socio-cultural nuances between weight-based stigma and resulting WRA (e.g., appearing overweight in a culture that values a thin body type). Ideal body type varies by factors, such as race/ethnicity, regionality, and culture (i.e., “systems of knowledge, concepts, rules, and practices”; [2]), and, as such, is socially determined. Thus, it is possible that an intersectional framework better accounts for the variability in the relationship between WRA and disordered eating by race/ethnicity. Studies incorporating intersectional analyses accounting for one’s multiple social identities that, in combination, contribute to individuals’ lived experiences (e.g., considering how WRA relates to eating pathology for individuals across intersections of weight status, race/ethnicity, and gender) may better capture populations who are at greater risk for disordered eating in response to WRA.

Strengths and Limitations

This study has several strengths, including a large sample size, the use of a comprehensive, validated measure of WRA, and a large proportion of individuals belonging to marginalized racial/ethnic groups relative to previous

research. Limitations of this study include the retrospective nature of the WRAQ and exclusion of individuals who identify as American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and West Indian due to small sample sizes within these groups. Further, while the social constructs of race/ethnicity are helpful proxies, providing some context for understanding one's lived experience, variables, such as racial discrimination, ethnic identity, marginalization, and resource deprivation, should be incorporated into future research as they may more precisely pinpoint the factors underlying racial/ethnic similarities and differences. In addition, the sample was college students, whose lived experiences can be quite different than those of similar ages who are not attending college [1]. The sample also consisted of majority female students, and the median household income was higher than that of the average U.S. household; therefore, generalizability of our findings beyond these groups is limited. This study was also cross-sectional and utilized self-report data, which may be subject to recall error.

Conclusion

To conclude, the present study identified that race/ethnicity significantly moderated the relationship between vWRA and dietary restraint when comparing Asian and multiracial individuals with White individuals but not when comparing Black, MENA, or Hispanic individuals with White individuals. However, race/ethnicity did not significantly moderate the relationship between vWRA and body dissatisfaction or shape/weight overvaluation, and race/ethnicity did not significantly moderate the relationship between pWRA and dietary restraint, body dissatisfaction, or shape/weight overvaluation. Our study also found that both verbal and pWRA were significant predictors of disordered eating behaviors and cognitions, and this relationship may exist regardless of race/ethnicity. A notable strength of this study is that it is one of the first to examine pWRA as a predictor of disordered eating behaviors, namely, body dissatisfaction and shape/weight overvaluation. These findings provide important implications for the prevention of maladaptive disordered eating behaviors and cognitions and suggest that WRA may be an important risk factor to explore in future longitudinal analyses. Future research using an intersectional approach (e.g., looking at the intersection of race, ethnicity, and/or weight status) may also provide further clarity on populations who may be at greater risk of disordered eating in response to WRA.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s40615-023-01775-3>.

Data Availability Data and study materials may be made available to other researchers upon reasonable request.

Declarations

Ethics Approval This study was approved by the Institutional Review Boards at both universities.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Competing Interests The authors declare no competing interests.

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