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THE ROLES OF ETHNICITY AND CULTURE IN THE DEVELOPMENT OF EATING DISTURBANCE AND BODY DISSATISFACTION: A META-ANALYTIC REVIEW☆

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ABSTRACT. *This meta-analysis involved 35 studies examining eating disturbance and body dissatisfaction in white and non-white populations and the role of acculturation in the development of eating-related psychopathology. While the role of acculturation in predisposing non-whites to eating disorders remains to be determined, mean effect sizes indicate that whites report more eating disturbance than non-whites. Differences are greatest when studies compare black and white college samples on measures of subclinical eating pathology, like dietary restraint, ideal body shape, and body dissatisfaction. They are weakest when non-clinic populations and clinical forms of eating disturbance, like bulimia nervosa, are examined. These findings suggest that the current literature may be incorrect in its view that subclinical and clinical forms of eating disturbance represent the poles of a single continuum. In addition, they call into question the belief that SES influences the development of eating pathology.* © *2001 Elsevier Science Ltd. All rights reserved.*

KEY WORDS. Eating disorders, Ethnicity, Culture, Body dissatisfaction, Meta-analysis.

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IT IS A commonly held belief among those who study psychopathology that eating disorders (anorexia nervosa, bulimia nervosa, and their variants) arise with greatest frequency in Western, Caucasian, female populations (Crago, Shisslak, & Estes, 1996; Dolan, 1991; Parker et al., 1995; Pate, Pumariega, Hester, & Garner, 1992). Synonymous with this point of view is the belief that these disturbances develop rapidly among women who immigrate from unaffected cultures to Western environments (Bowen, Tomoyasu, & Cauce, 1991; Davis & Yager, 1992). Eating disorders have been referred to in recent literature as ''culture-bound syndromes,'' unique because culture appears to play a significant role in their development (Crago et al., 1996; Pate et al., 1992). However, very little is known about the true prevalence of eating disturbance in non-Western and non-white populations. Most research examining preoccupation with slimness has focused predominantly upon white, middle-class populations living in Western societies (le Grange, Telch, & Tibbs, 1998). Furthermore, although some literature has suggested that eating disorders are less common among ethnic minority populations living in Western environments than among white populations (Crago et al., 1996), no conclusive findings exist with regard to the prevalence of eating disorders in these groups (le Grange, Telch, & Agras, 1997; Striegel-Moore & Smolak, 1996).

CROSS-CULTURAL TERMINOLOGY IN EATING DISORDER RESEARCH

One reason for the lack of consensus among researchers examining the relationship between cultural and ethnic factors and eating disorders may be the general confusion within the cross-cultural literature regarding appropriate terminology. A review of recent empirical studies and qualitative reviews reveals that researchers in this area frequently apply the terms race, ethnicity, and culture interchangeably without providing clear definitions for their meanings (Crago et al., 1996; Dolan, 1991; Mumford, 1993; Striegel-Moore & Smolak, 1996). This is of particular concern given that race, ethnicity, and culture are not, as some may believe, synonymous terms (Atkinson, Morten, & Sue, 1998). In fact, race is actually considered by many to be an inappropriate term for use in cross-cultural research (Atkinson et al., 1998). Its place as a biological category has not been supported by scientific evidence (Alvidrez, Azocar, & Miranda, 1996), and the psychological characteristics attributed to racial identification are neither consistent nor specific (Beutler, Brown, Crothers, Booker, & Seabrook, 1996). Most cross-cultural researchers argue that race should be replaced by the term ethnicity (Beutler et al., 1996). These individuals point out that as a scientific term, ethnicity allows researchers to distinguish groups of people by their ancestry, language, customs, religion, culture, or nationality without relying upon the physical characteristics that are central to the definition of race (Atkinson et al., 1998). Finally, culture may be the most complex term of all. ''Every society that shares and transmits behaviors to its members has a culture'' (Atkinson et al., 1998, p. 6). Thus, culture may be shared by a large society, like all individuals living in the United States, or by smaller groups within a larger society; Jewish Americans, for example.

REVIEWS EXAMINING ETHNIC AND CULTURAL DIFFERENCES IN EATING DISORDERS

Ample research has shown that ethnic and cultural differences exist in the importance of weight in appearance and the prevalence of eating disorders.

Reviews of empirical literature from the United States and around the world have shown that non-white women and women who do not subscribe to a Westernized body ideal develop eating disorders with considerably less frequency than their white and Western counterparts. For example, Pate et al. (1993) concluded an extensive review of the literature examining eating disorders in Western and non-Western cultures by boldly stating that there is, ''little question of the importance of cultural factors'' in the development of eating disturbance (p. 807). They cited variations in the occurrence of these disorders among American ethnic groups and differences between nationalities as proof that cultural ideals within specific ethnic groups influence women's attitudes toward their bodies and toward food.

Studies conducted in the United States support this premise. Recent reviews of empirical literature comparing eating-related psychopathology in European and non-European Americans suggest that black American women diet less and experience less weight concern and body dissatisfaction than white American women (Crago et al., 1996; Fitzgibbon et al., 1998). In concluding one of these reviews, Crago et al. suggest that this difference may be due to greater weight tolerance, less body dissatisfaction, and less reliance on restrictive dieting for weight control in non-white ethnic groups (Crago et al., 1996). However, the researchers noted that variations exist in the rates of eating disturbance reported by researchers examining different minority samples. They concluded that although African American and Asian American women appear to be less likely than European American women to develop eating disorders, Hispanic American women are equally likely and Native American women are more likely to develop patterns of eating pathology than their Caucasian counterparts (Crago et al., 1996). Such findings suggest that the role of non-white ethnic group membership in the development of eating disturbance is unclear. It appears to serve a protective function for some groups, while increasing the risk of eating related psychopathology in others.

Observations like these coupled with epidemiological findings showing an increase in eating related psychopathology among women around the world (Wakeling, 1996) have led some researchers to propose that ethnic differences in the prevalence of eating disorders are overemphasized (King, 1993; Mumford, 1993). In their review of this literature, Striegel-Moore and Smolak (1996) concluded that while anorexia and bulimia nervosa appear to be rare in black women, binge eating disorder occurs at rates, ''comparable to those observed among white women.'' (p. 264). Similarly, Weiss (1995) points out that despite reports that blacks experience fewer symptoms of eating-related psychopathology than whites, the rates of anorexia and bulimia nervosa are rising among black American women. Moreover, he finds that eating disturbance is highly prevalent among a broad range of ethnic and socioeconomic groups once thought to be protected from these conditions. In particular, he cites increases in the rates of eating disturbance among working-class women and among ethnic groups living in non-Western environments.

Some reviewers have suggested that differences in reported eating disturbance among ethnic and cultural groups are merely artifacts caused by culturally inappropriate definitions of eating disorders. In two separate reviews, Mumford (1993) and King (1993) caution against concluding that a cultural emphasis on slimness and dieting, found predominantly in Western societies, is necessary for the development of eating pathology. King suggests that although fear of gaining weight as a reason for anorexia nervosa is significantly more pronounced in Western samples, this observation may be the result of biases in Western diagnostic criteria. This is similar to

Mumford's conclusion that methodological problems resulting from a diagnostic system defined by Western ideals account for the majority of differences in the prevalence rates of eating pathology. Both researchers propose that while eating disorders as defined by Western criteria are rare in developing countries, this finding may be caused by the failure of Western diagnostic tools, like the DSM, to take into account religious, cultural, and beauty practices of non-Western groups (King, 1993; Mumford, 1993).

THE PRESENT STUDY

A review of recent literature reveals that researchers disagree about the importance of ethnic group membership and culture in influencing the development and course of eating disorders (Crago et al., 1996; Mumford, 1993; Pate et al., 1992; Weiss, 1995). This finding coupled with the fact that despite over a decade of research, the true prevalence figures for anorexia and bulimia nervosa in non-white ethnic groups remain undetermined (Dolan, 1991) indicates a need for a quantitative review of this literature. Although many qualitative reviews of the literature examining the relationship between ethnicity, culture, and eating disturbance exist, no meta-analysis has been attempted to date. Hence, the purpose of the current study was to quantitatively examine the relationship between ethnicity, culture, and eating disorders in order to determine whether or not ethnic and cultural factors play a significant role in the development of eating related psychopathology.

The first goal of the study was to determine the impact of ethnic group membership on the prevalence of eating disorders. It was hypothesized, based on prior reviews, that women belonging to non-white ethnic groups, particularly black women living in the United States, would report fewer symptoms of eating disturbance and body dissatisfaction than their white counterparts. In addition, white women were expected to report higher levels of eating related clinical symptomatology than non-white women. The relationship between culture and reported eating disturbance was also examined by reviewing literature investigating the role of acculturation in the development and course of eating disorders. Acculturation, defined as the process of psychosocial change that occurs when a group or individual acquires the cultural values, language, norms, and behaviors of a dominant society (Alvidrez et al., 1996; Atkinson et al., 1998), was determined by the present authors to be the best measure of the effect of Western and white culture on the development of eating disturbance in women not born into Western or white cultural groups. By examining the relationship between this factor and reported eating pathology, the present researchers hoped to determine how strongly acceptance of general Western and white culture influences acceptance of Western and white norms regarding thinness and weight. It was expected that women who were more acculturated into Western and white culture would report greater levels of eating pathology than their non-acculturated counterparts.

The relationship between ethnicity, culture, and eating disturbance may vary by ethnic group and by country. Consequently, the present study examined differences in the rates of reported eating pathology among different samples of ethnic minorities and in different countries. However, as few studies have compared women living in

non-Western countries with their Western counterparts, quantitative figures will be reported mostly for studies conducted in Western environments.

METHOD

Selection of Studies

Studies were located through searches of the computerized databases, *Psychlit, PsycINFO*, and *Medline*. To locate studies examining eating disturbance and body dissatisfaction, key word searches for clinical (anorexia nervosa, bulimia nervosa, and eating disorders) and subclinical (restraint, dieting, eating problems, etc.) eating pathology were conducted. Studies examining these variables in non-white ethnic groups were then located by combining keywords for eating disturbance with key words for culture and ethnicity (culture, ethnicity, non-white, black, Asian, Hispanic, etc.). This strategy yielded 78 studies and reviews examining eating disturbance and body dissatisfaction in non-white populations. When this method was combined with the use of reference sections from literature reviews, a total of 90 articles were located.

Each study included in the meta-analysis had to meet four criteria. First, studies had to contain at least one sample of non-white individuals and, with the exception of studies examined only for effects of acculturation, a comparison sample of white women. Second, the studies were required to include female participants in both their experimental and control groups. Studies that contained samples of men and women together were not excluded from the meta-analysis; however, studies that examined only men were not included in this study.[1] A third criterion stipulated that studies were required to include at least one quantitative measure of eating disturbance or body dissatisfaction. These measures included scores on tests and scales, ratings, and epidemiological percentages. Finally, data in studies had to be presented in a form that allowed for the calculation of at least one effect size.

As noted earlier, studies examined only for effects of acculturation were exempt from the requirement of a white comparison sample. In place of this requirement, these studies were expected to meet one additional criterion specific to their subject matter. Acculturation studies had to contain at least one quantitative measure of acculturation. Unfortunately, these measures varied widely. Two studies assessed acculturation using questionnaires designed to measure the level of integration their subjects felt towards a dominant culture (Furnham & Patel, 1994; Pumariega, 1986), while five studies assessed subjects' levels of identity with nondominant cultural groups (Abrams, Allen, & Gray, 1993; Akan & Grilo, 1995; Pemberton, Vernon, & Lee, 1996; Pumariega, Gustavson, Gustavson, Motes, & Ayers, 1994; Yoshimura, 1995). Three studies assessed acculturation by measuring ''cultural orientation'' (Hill & Bhatti, 1995; Mumford, Whitehouse, & Platts, 1991; Wardle, Bindra, Fairclough, & Westcombe, 1993), and, finally, one researcher measured the effects of Western culture on

[1] In the rare case in which a study containing a combined male/female sample was obtained, every effort was made to separate the female participants' results from the male participants' results. When this was not possible, studies including mixed sex samples were included in the present analyses.

reported eating pathology by comparing women living in their country of origin with women of the same ethnic group living in a Western country (Nasser, 1986). This lack of standardization of assessment is problematic (Alvidrez et al., 1996), but at the present it is the only way to examine the effects of acculturation on eating disturbance.

Thirty-eight studies that met either the criteria for eating disturbance and body dissatisfaction or the criteria for acculturation were located. Two of these studies were subsequently excluded from analysis because they contained overlapping samples (Rogers, Resnick, Mitchell, & Blum, 1997; Story, French, Resnick, & Blum, 1995). A third study was excluded because its requirements for inclusion in the non-white sample were significantly different from those reported by the studies included in the meta-analysis. Specifically, participants included in this particular study's non-white ethnic group would have met criteria for the white comparison group in most other studies (Wichstrom, Skogen, & Oia, 1994). Twenty of the included studies met only the criteria for eating disturbance and body dissatisfaction. Four studies met only the criteria for acculturation, and 11 studies met the criteria for both eating disturbance/body dissatisfaction and acculturation. Collectively, these studies included a total of 20,191 white and non-white women and men, 17,781 of whom were included in the present meta-analysis.

Sample Characteristics

Characteristics of each sample included in the meta-analysis were coded for demographic comparison. Of the 17,781 participants whose responses were examined by the present study, 16,214 were female. Their mean ages ranged from 9.51 years to 73.00 years with a mean age for the present study of 22.42 years ($SD = 12.46$). In the original studies, 9937 of the participants were described as white or Caucasian, 5997 participants were described as black or African in descent, 1004 participants were described as Asian, and 843 participants belonged to other ethnic groups. Of those participants classified as black, 5441 were originally listed as African American, 394 were Ghanaian, and 207 were described as African Caribbean. Of those participants classified as Asian, 324 were originally described as Asian American (of Chinese, Japanese, Vietnamese, Korean, or Filipino origin) and 680 were originally described as Asian British (of Indian, Pakistani, or Bangladeshi origin). Finally, of the participants classified by the present study as members of the ''other'' non-white ethnic group, 110 were originally described as Arab, 138 were Hispanic, 95 were Russian, and 500 were originally listed as ''non-white.''

Calculation of Effect Sizes

Effect sizes were calculated in a number of different ways. The most direct method of calculating effect sizes involves subtracting the mean score on the dependent variable for the experimental group from the mean score for the control group and dividing by the pooled within-group standard deviation (Rosenthal & Rosnow, 1991). In the present study, this meant subtracting the mean scores for non-white participants from the mean scores for white participants and dividing by the pooled within-group standard deviation. This method of computing effect sizes was applied in cases in which the necessary information was supplied in the original article. However, the majority of studies included in the present meta-analysis failed to provide the reader

with means and standard deviations, so this method was not frequently applied. Instead, effect sizes were calculated using formulas provided by Rosenthal (1984) and Rosenthal and Rosnow (1991). *F* ratios, *t* values, and chi-square values were transformed into correlation coefficients and, then, converted to Cohen's *d* values using Rosenthal's formulas. Results reported as correlation coefficients were directly converted to Cohen's *d*s. Percentage differences were converted to *z*-scores in order to calculate effect sizes. Occasionally, only probability values were reported, so *r* was calculated using the *z*-score corresponding to the probability value and formulas provided by Rosenthal and Rosnow.

In the present study, nonsignificant findings were considered to be as important as significant findings. Therefore, results reported to be nonsignificant were assigned an effect size of zero, assuming a *p* value of .50.

Signs were affixed to effect sizes to reflect reported eating disturbance and body dissatisfaction. A negative sign indicated that the white sample reported less eating disturbance and body dissatisfaction than the non-white sample or that a more acculturated sample reported less eating pathology than a non-acculturated sample. A positive sign indicated the opposite effect.

Separate effect sizes were calculated for each report of eating disturbance in a study. In most cases these effect sizes corresponded to one or more variables included in the meta-analysis. In studies in which two or more effect sizes corresponded to one variable in the meta-analysis, the mean of the effect sizes was taken. In cases in which an effect size corresponded to one or more variables in the study, the experimenter assigned the effect size to the variable most closely corresponding to the original report of eating pathology.

Variables

Outcome measures of eating disturbance and body dissatisfaction were coded into the following eight categories: (a) bulimia (diagnosed by DSM-IV criteria); (b) eating disorder (as defined by the researcher; not diagnosed by DSM-IV); (c) weight and dieting concerns (reported dieting, expressed concern about weight); (d) dietary restraint (restrictive eating); (e) drive for thinness; (f) body dissatisfaction; (g) smaller ideal body; and (h) lower reported weight. Anorexia nervosa was excluded from examination due to a lack of research comparing the rates of anorexia in white and non-white populations (although six studies examining anorexia in non-white populations were located, none of these studies provided a unique comparison sample). Several reviewers have commented on the absence of research examining anorexia nervosa in non-white groups (Davis & Yager, 1992; Pike & Walsh, 1996). The findings of the present study add further support to the observation that researchers interested in the processes involved in anorexia nervosa have neglected to examine the illness in non-white ethnic groups.

Effect sizes for each of the eight variables were calculated and compared separately. Additionally, the effect sizes for the eight variables were collapsed together into one composite measure called eating disturbance/body dissatisfaction. This measure allowed for the quantitative comparison of all studies examining eating and dieting pathology in white and non-white samples. It also permitted the identification of trends within this domain of research.

The relationship between eating disturbance and acculturation was examined separately. Effect sizes for acculturation were coded by ethnic sample into three

variables: (a) acculturation — black; (b) acculturation — Asian; and c) acculturation — other. In addition, the three acculturation variables were collapsed together into one large outcome measure of the effects of acculturation on the development of eating disturbance in non-white populations.

Because one purpose of a meta-analysis is to search for sources of variation in effect sizes between studies (Amato & Keith, 1991), a variety of study characteristics were coded. Recent reviews of the literature examining eating pathology in non-white populations have suggested that methodological weaknesses resulting from the use of Western diagnostic tools with non-Western samples may account for differences in the rates of eating disturbance in white and non-white populations (Mumford, 1993). In order to consider the effects of diagnostic tools on the outcomes of empirical research, measures of eating disturbance and body dissatisfaction (the Eating Disorders Inventory (EDI; Garner, Olmsted, & Polivy, 1983), the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979), diagnostic interview, Body Mass Index, and others) were recorded. To determine the effects of other methodological differences between studies, information on the following variables was also included in the meta-analysis: the year in which a study was published, the type of sample a study used (college, high school, non-clinic, clinic, or random sample), and where the study was conducted (the United States, the United Kingdom, Western country (not U.S. or U.K.), industrialized non-Western country, or non-industrialized, non-Western country).

RESULTS

Significance testing requires that effect sizes be independent (Rosenthal & Rosnow, 1991). Consequently, no more than one effect size per sample per outcome was included in the meta-analysis. Individual samples were often included in several different outcome categories; however, no sample was represented more than once in any given category. This selection process resulted in a total of 104 effect sizes corresponding to reported ethnic differences on measures of eating disturbance and body dissatisfaction.

An initial examination of the data revealed that almost 80% of the effect sizes calculated for this study were positive. This indicates that white samples reported greater eating disturbance and body dissatisfaction than non-white samples in more than three fourths of the recorded outcomes included in the present meta-analysis.

A second trend evident from the initial analysis of the data is the weak to moderate magnitude of the effect sizes. The mean effect size for all outcome measures of eating disturbance and body dissatisfaction was .29 ($SD = .41$), and the corresponding median effect size was .34. This indicates that across all studies and all outcome measures of eating disturbance and body dissatisfaction, white samples scored approximately one quarter of a standard deviation above non-White samples.

Effect Sizes Across Measures of Eating Disturbance and Body Dissatisfaction

To calculate the overall effect size for each outcome measure of eating disturbance and body dissatisfaction, the mean effect sizes for each category were computed. The results are presented in Table 1. These data reveal that the mean effect sizes for the various measures of eating disturbance and body dissatisfaction were all positive and

TABLE 1. Comparison of White and Non-White Samples on Measures of Eating Disturbance and Body Dissatisfaction

Measure of Eating Disturbance/Body Dissatisfaction	*N*	Mean Effect Size	*SD*	Median Effect Size	Weighted Mean Effect Size	Minimum Fail-Safe *N*
Eating disturbance/ body dissatisfaction (composite measure)	31	.24***	.37	.32	.17***	1300
Bulimia	7	.19***	.32	.01	.24***	65
Eating disorder	10	.15**	.35	.16	.09	0
Weight and dieting concerns	12	.16***	.33	.17	.10***	73
Dietary restraint	6	.41***	.73	.55	.61***	77
Drive for thinness	9	.33***	.43	.37	.23***	110
Body dissatisfaction	15	.41***	.37	.38	.29***	504
Smaller ideal body	6	.63***	.46	.75	.65***	77
Lower reported weight	8	.36***	.51	.56	.40***	86

* $p<.05$.
** $p<.01$.
*** $p<.001$.

significant ($p<.01$), indicating that whites reported more symptoms of eating pathology than non-whites in the majority of studies included in the present meta-analysis.

Cohen (1988) defines effect sizes in terms of their magnitude as small ($d=.2$), moderate ($d=.5$), and large ($d=.8$). By these definitions, the mean effect sizes for the present study range from small to moderate. The largest mean effect sizes indicate differences in the order of almost two thirds of a standard deviation between whites and non-whites on measures of eating disturbance and body dissatisfaction. However, the smallest mean effect sizes, especially those for bulimia ($M=.19$, $SD=.32$), eating disorder ($M=.15$, $SD=.35$), and weight and dieting concerns ($M=.16$, $SD=.33$), are rather weak and suggest that differences between whites and non-whites on these measures are not particularly strong.

Of particular interest in the present study are mean effect sizes for eating disturbance/body dissatisfaction. This variable represents the mean of all effect sizes in any given study. It is designed to reflect differences between whites and non-whites on all measures of eating pathology. That the mean effect size for this variable was positive and significant ($p<.001$) indicates that white samples reported greater eating disturbance and body dissatisfaction than non-white samples across all measures examined by the present study.

In addition to computing unadjusted mean effect sizes for each category, weighted means were also calculated. This procedure involved weighting each effect size by its respective sample size and computing means following Rosenthal and Rosnow's (1991) guidelines. As shown in Table 1, the weighted mean effect sizes differed from the unweighted mean effect sizes in all cases. For example, in the categories eating disturbance/body dissatisfaction, eating disorder, weight and dieting concerns, drive for thinness, and body dissatisfaction, the weighted means were smaller than their unweighted counterparts. However, for the variables

bulimia, dietary restraint, smaller ideal body, and lower reported weight, the opposite effect occurred. In most cases, these differences were not particularly large and in no case did the direction of the weighted mean effect size for a category differ from the direction of the unweighted mean effect size. Consequently, no new conclusions may be drawn from the weighted data about the relationship between ethnicity and eating pathology.

In psychological research, a bias exists toward publishing only those studies that report significant findings. In order to avoid drawing conclusions based upon an unrepresentative sample of the literature, a fail-safe N was calculated for each unweighted mean effect size (Rosenthal & Rosnow, 1991). According to Rosenthal and Rosnow (1991), the value for any given fail-safe *N* represents the number of studies averaging null results ($z = 0.00$) that are required to bring the overall probability of a type I error to a desired level of significance ($p = .05$). If this value is small enough, it may challenge a researcher's ability to draw conclusions based upon the results of a meta-analysis. Table 1 reveals a wide range of fail-safe N values corresponding to the variables in the present study. The fail-safe N values for eating disturbance/body dissatisfaction and body dissatisfaction are very large. For example, it is highly unlikely that 1300 studies of eating disturbance in white and non-white populations exist that yield null findings. However, the fail-safe N for eating disorder is very small. A value of zero for this measure indicates that the reported mean effect size for this variable should not be considered reliable.

The Relationship Between Acculturation and Eating Disturbance

The relationship between acculturation and eating pathology was examined separately from the relationship between ethnicity and eating pathology. Initial analyses revealed that effect sizes tended to be positive. Only 1 study out of 11 reported findings that translated into a negative effect size. However, additional analyses revealed that many of the studies included in the present meta-analysis reported findings that indicated no relationship between acculturation and eating disturbance. Of the 11 effect sizes included in the analyses, 7 were equal to zero. This resulted in weak mean ($M = .03$, $SD = .36$) and median ($MD = 0.00$) effect sizes, indicating that across all studies and all outcome measures of the relationship between acculturation and eating pathology, acculturated women and nonacculturated women did not significantly differ.

Mean effect sizes were calculated for each of the four categories examining the relationship between acculturation and eating pathology in non-white populations. The results are reported in Table 2. The data reveal that the effect sizes across the variables were heterogeneous. The mean effect sizes for studies in the categories non-white, black, and other were all positive ($d = .03, .23, .15$). However, the mean effect size for studies examining the effect of acculturation on eating disturbance in Asian samples was negative ($d = -.14$). Furthermore, none of the mean effect sizes was particularly strong. In fact, the overall mean effect for the relationship between acculturation and eating disturbance in non-white populations was quite weak ($M = .03$, $SD = .36$).

Weighted mean effect sizes were calculated for the acculturation variables using the same procedures that were applied to the eating disturbance and body dissatisfaction variables (Rosenthal & Rosnow, 1991). As shown in Table 2, the weighted mean effect

TABLE 2. The Relationship Between Acculturation and Eating Disturbance in Different Minority Groups

Group	*N*	Mean Effect Size	*SD*	Median Effect Size	Weighted Mean Effect Size	Minimum Fail-Safe *N*
Non-White	11	.03	.36	.00	.04	0
Black	3	.23	.39	.00	.15	0
Asian	6	−.14	.34	.00	−.07	0
Other	3	.15**	.20	.08	.06	4

* $p<.05$.
** $p<.01$.
*** $p<.001$.

sizes tended to be smaller than the unweighted mean effect sizes, and they all failed to reach statistical significance.

Finally, fail-safe *N* values were calculated for each unweighted mean effect size by following the procedures outlined by Rosenthal and Rosnow (1991). Table 2 reveals that the fail-safe Ns for all of the effect sizes were very small, suggesting that the mean effect sizes reported for acculturation are not particularly robust and that few conclusions may be drawn from the results of this study. Too few studies reported on the relationship between acculturation and eating pathology for the mean effect sizes to offer conclusive evidence of the role of acculturation in the development of eating disturbance. As a result, no further analyses of this data were performed.

Between-Studies Comparisons

A meta-analysis provides researchers with the opportunity to assess the effects of specific study characteristics on quantitative outcomes (Rosenthal, 1995). Such analysis allows for the determination of methodological factors that may influence research findings. The following tables present mean effect sizes separated by various study characteristics for each outcome measure of eating disturbance and body dissatisfaction[2].

Effect Sizes Comparing Whites and Three Minority Groups (Blacks, Asians, other) on Measures of Eating Disturbance and Body Dissatisfaction

Table 3 presents comparisons of effect sizes based on the ethnicities of the non-white samples that studies examined: black, Asian, or other. An examination of the

[2] Consistent with the aims of the present study, differences in rates of report of eating disturbance will be examined among different non-white ethnic groups. The effects of diagnostic instruments and sample type upon study outcomes will also be examined. However, rates of eating disturbance reported by studies conducted in different countries will not be compared. The vast majority of articles collected for the present study were published in the United States ($n=25$). As a result, quantitative comparisons based upon the countries in which studies were conducted seemed inappropriate.

distributions indicates that the ethnicity of the non-white sample played a significant role in determining the magnitude and direction of the mean effect sizes for every outcome category. For all measures of eating disturbance and body dissatisfaction, effect sizes were largest when studies compared black and white samples. The effect sizes for these samples were all positive and significant ($p<.001$), indicating that white samples reported more symptoms of eating pathology and body dissatisfaction than black samples. Of particular interest are the mean effects reported for dietary restraint ($M=.93$, $SD=.34$), body dissatisfaction ($M=.46$, $SD=.34$), smaller ideal body ($M=.81$, $SD=.16$) and lower reported weight ($M=.61$, $SD=.18$). These values indicate moderate to very large differences between whites and blacks on measures pertaining to dietary pathology and body dissatisfaction. Furthermore, the mean effect size for lower reported weight suggests that not only do black samples display fewer concerns about weight and dieting than whites samples, but they also weigh more than white samples.

Effect sizes were considerably smaller when studies compared eating disturbance in white and Asian samples. They also tended to be negative rather than positive, thus contradicting the hypothesis of the present study that non-whites would report fewer symptoms of eating pathology than whites. As shown in Table 3, the mean effect sizes for these samples were negative and statistically significant ($p=.05$), with the exceptions of bulimia, which was positive and statistically significant ($p=.01$), and eating disturbance/body dissatisfaction, eating disorder, and dietary restraint, which were negative but not statistically significant. The negative mean effect size for eating disturbance/body dissatisfaction is particularly important, as it indicates that, unlike black samples, Asian samples reported more eating disturbance and body dissatisfaction than their white counterparts in the majority of studies sampled for the present meta-analysis.

The results for studies comparing whites to ''other'' non-white ethnic groups were similar in direction to the results for studies comparing black and white samples. Effect sizes tended to be positive; however, as Table 3 reveals, some values are missing and four mean effect sizes are based upon the results of single studies. Consequently, few conclusions may be drawn from these particular analyses.

Weighted mean effect sizes were computed for all of the categories listed in Table 3. In general, these values corresponded with the unweighted mean effect sizes. For example, for studies comparing black and white samples, the weighted means, like their unweighted counterparts, were moderate to large in size, positive, and statistically significant ($p<.001$). Furthermore, for studies comparing white and Asian samples, the weighted mean effect sizes were negative and statistically significant ($p<.05$) with the exceptions of bulimia, which was positive and statistically significant ($p<.01$) and eating disturbance/body dissatisfaction, which was negative but not significant. These exceptions are similar to those noted for the unweighted mean effect sizes and, therefore, do not seem to be cause for concern. Finally, the results for studies comparing white samples to ''other'' non-white groups follow trends that are similar to those already discussed. The weighted mean effect sizes for these studies, like the unweighted means, were all positive, indicating that the effects initially reported for this category are robust across different sample sizes.

A fail-safe N was calculated for each mean effect size included in Table 3. For studies comparing black and white samples on measures of eating disturbance and body dissatisfaction, these values tended to be fairly large. The finding that 903

TABLE 3. Comparison of Whites and Three Minority Groups (Blacks, Asians, and Other) on Measures of Eating Disturbance and Body Dissatisfaction

Measure of Eating Disturbance/Body Dissatisfaction	*N*	Mean Effect Size	*SD*	Median Effect Size	Weighted Mean Effect Size	Minimum Fail-Safe *N*
Comparison of White Samples and Black Samples						
Eating disturbance/ body dissatisfaction (composite measure)	20	.39***	.30	.34	.22***	903
Bulimia	4	.25***	.36	.11	38***	19
Eating disorder	3	.26***	.46	.50	.31***	17
Weight and dieting concerns	8	.23***	.23	.17	.11***	139
Dietary restraint	3	.93***	.34	1.11	.90***	17
Drive for thinness	8	.33***	.46	.44	.22**	86
Body dissatisfaction	13	.46***	.34	.38	.30***	220
Smaller ideal body	5	.81***	.16	.84	.91***	52
Lower reported weight	6	.61***	.18	.62	.56***	77
Comparison of White Samples and Asian Samples						
Eating disturbance/ body dissatisfaction (composite measure)	9	−.05	.42	−.19	−.03	0
Bulimia	2	.16**	.46	.16	.18***	3
Eating disorder	4	−.05	.29	−.10	−.14**	0
Weight and dieting concerns	3	−.08**	.54	−.34	−.27***	4
Dietary restraint	3	−.11	.63	−.22	−.15**	0
Drive for thinness	0	–	–	–	–	–
Body dissatisfaction	1	−.29*	–	–	−.29*	0
Smaller ideal body	1	−.27*	–	–	−.27*	0
Lower reported weight	2	−.42***	.14	−.42	−.37***	7
Comparison of White Samples and Other Samples						
Eating disturbance/ body dissatisfaction (composite measure)	4	.33***	.22	.38	.19**	32
Bulimia	1	.03	–	–	.03	0
Eating disorder	3	.32**	.29	.39	.14	4
Weight and dieting concerns	1	.37***	–	–	.37***	1
Dietary restraint	0	–	–	–	–	–
Drive for thinness	1	.37***	–	–	.37***	1
Body dissatisfaction	1	.50*	–	–	.50*	0
Smaller ideal body	0	–	–	–	–	–
Lower reported weight	0	–	–	–	–	–

* $p<.05$.
** $p<.01$.
*** $p<.001$.

studies yielding null results is required in order to discredit the mean effect size for eating disturbance/body dissatisfaction is particularly promising. However, the fail-safe Ns for studies comparing whites to Asians and whites to other minorities tended to be quite small. Fail-safe Ns of 7, 3, and 1 indicate that few studies yielding null results in these areas are required to discredit the findings of the present research.

The results of the analyses comparing blacks, Asians, and ''other'' non-white individuals to whites on measures of eating related psychopathology reveal that membership in a specific ethnic group may influence a woman's susceptibility to the development of eating disordered behavior. In particular, it appears that blacks and Asians differ markedly in their incidence of eating-related psychopathology. In order to avoid confounding any additional between-group comparisons by combining data from studies that examined black samples with data from studies that examined Asian samples, the following analyses will be performed only on data from studies that compared blacks and whites on measures of eating disturbance and body dissatisfaction.

The Influence of Diagnostic Instruments on Effect Sizes

Table 4 presents mean effect sizes in relation to the three types of measures the majority of studies comparing eating pathology in black and white samples used to diagnose eating disturbance: the EDI, the EAT, and other measures (including BMI and experimenter-created measures of body shape preference and eating pathology). Examination of the mean effect sizes for the composite variable, eating disturbance/body dissatisfaction, indicates that, overall, these studies displayed a preference for the EDI and other measures over the EAT as diagnostic instruments. Specifically, only 1 out of 20 studies employed the EAT as a research tool. As a result, the majority of the comparisons focus on differences between studies using the EDI and studies using other diagnostic tools.

It is interesting to note that all of the mean effect sizes calculated for eating disturbance/body dissatisfaction were positive and significant ($p<.001$), a finding which indicates that, in general, studies using all three instruments found more eating pathology in white samples than in black samples. Of additional interest is the striking difference between the mean effect size calculated for the EDI and the mean effect size calculated for ''other'' instruments. Specifically, the mean effect size for studies using the EDI ($M=.46$) is almost two tenths of a standard deviation larger than the mean effect size for studies using other measures ($M=.28$). This finding suggests that the EDI may be more sensitive to eating pathology in whites than to such disturbances in blacks. Interestingly, this pattern holds true for every variable in which both of these types of instruments were used (bulimia, dietary restraint, and body dissatisfaction).

Table 4 provides one additional source of information about the relationship between reported eating disturbance and diagnostic instruments. Particular diagnostic tools seem to have been favored as measures of certain types of eating pathology by the studies included in the present analyses. For instance, studies examining drive for thinness and body dissatisfaction relied heavily upon the EDI, while studies examining differences in ideal body and reported weight relied entirely upon ''other'' diagnostic tools. One explanation for this finding is that researchers may tend to rely upon preexisting internal subscales as outcome

TABLE 4. Mean Effect Size by Diagnostic Measure of Eating Disturbance and Body Dissatisfaction: Studies Comparing Black and White Samples Only

Outcome Measure and Diagnostic Measure	*N*	Mean Effect Size	*SD*	Median Effect Size
Eating disturbance/body dissatisfaction (composite measure)				
EDI	10	.46***	.31	.46
EAT	1	.55***	–	–
Other	9	.28***	.26	.18
Bulimia				
EDI	3	.28***	.43	.06
EAT	0	–	–	–
Other	1	.16	–	–
Eating disorder				
EDI	0	–	–	–
EAT	1	.55***	–	–
Other	2	.12	.54	.12
Weight and dieting concerns				
EDI	0	–	–	–
EAT	0	–	–	–
Other	8	.23***	.23	.17
Dietary restraint				
EDI	1	1.11***	–	–
EAT	0	–	–	–
Other	2	.84***	.43	.84
Drive for thinness				
EDI	8	.32***	.46	.44
EAT	0	–	–	–
Other	0	–	–	–
Body dissatisfaction				
EDI	8	.52***	.39	.42
EAT	0	–	–	–
Other	5	.35***	.21	.33
Smaller ideal body				
EDI	0	–	–	–
EAT	0	–	–	–
Other	5	.81***	.16	.84
Lower reported weight				
EDI	0	–	–	–
EAT	0	–	–	–
Other	6	.61***	.18	.62

* $p<.05$.
** $p<.01$.
*** $p<.001$.

TABLE 5. Mean Effect Size by Type of Sample: Studies Comparing Black and White Samples Only

Outcome Measure and Sample	*N*	Mean Effect Size	*SD*	Median Effect Size
Eating disturbance/body dissatisfaction (composite measure)				
College	10	.56***	.25	.59
High school	3	.29***	.35	.18
Non-clinic	6	.13***	.17	.03
Bulimia				
College	3	.33***	.39	.16
High school	0	–	–	–
Non-clinic	1	.00	–	–
Eating disorder				
College	2	.53***	.03	.53
High school	0	–	–	–
Non-clinic	1	– .24**	–	–
Weight and dieting concerns				
College	5	.35***	.19	.35
High school	2	.09***	.10	.09
Non-clinic	1	– .11**	–	–
Dietary restraint				
College	3	.93***	.34	1.11
High school	0	–	–	–
Non-clinic	0	–	–	–
Drive for thinness				
College	5	.62***	.22	.64
High school	0	–	–	–
Non-clinic	3	– .16***	.28	.00
Body dissatisfaction				
College	7	.59***	.36	.45
High school	2	.44***	.34	.44
Non-clinic	4	.22***	.18	.25
Smaller ideal body				
College	4	.85***	.15	.86
High school	0	–	–	–
Non-clinic	0	–	–	–
Lower reported weight				
College	3	.73***	.12	.76
High school	0	–	–	–
Non-clinic	3	.50***	.16	.52

* $p<.05$.
** $p<.01$.
*** $p<.001$.

measures. For example, drive for thinness is a scale included within the EDI (Garner et al., 1983).

The Influence of Type of Sample (College, High School, or Non-Clinic) on Effect Sizes

Table 5 presents comparisons of mean effect sizes based on the three major types of samples studies comparing blacks and whites used: college, high school, and non-clinic. Results from clinic and random samples were excluded from analysis due to the small number of studies that fit into these categories ($n=2$).

The distribution in Table 5 reveals distinct differences in the mean effect sizes calculated for the three types of samples. For college samples, mean effect sizes were moderate to large in magnitude, positive, and statistically significant ($p<.001$). This effect was particularly strong in the categories dietary restraint ($M=.93$), smaller ideal body ($M=.85$), and lower reported weight ($M=.73$), although it was also quite large for the composite measure, eating disturbance/body dissatisfaction ($M=.56$). Effect sizes of these magnitudes suggest that in college samples, white participants report significantly greater levels of eating disturbance and body dissatisfaction than black participants. Interestingly, this relationship was much weaker in studies using high school samples. Specifically, the composite mean effect size for eating disturbance/body dissatisfaction in studies using high school samples was approximately half as large as the composite mean effect size for studies using college samples ($M=.29$, $SD=.35$). Moreover, this relationship remained consistent across all measures of eating disturbance and body dissatisfaction included in the present study. In studies using college and high school samples, whites reported significantly more symptoms of eating disturbance and body dissatisfaction than blacks. However, this relationship was much stronger in college samples than in high school samples, suggesting that black high school women may be at greater risk for eating related psychopathology than black college women.

Of additional interest are the mean effect sizes calculated for studies using non-clinic samples. Contrary to the hypotheses of the present study, in several categories (e.g. eating disorder, weight and dieting concerns, and drive for thinness), these effect sizes were negative. Furthermore, the composite mean effect size for studies using non-clinic samples was very small ($M=.13$). These findings are of considerable interest, as the subjects recruited for non-clinic samples were frequently older than those included in high school and college samples. Although it is difficult to draw substantial conclusions from the results of so few studies ($n=6$), it may be the case that, contrary to popular wisdom, eating disorders are more prevalent among older black women than younger black women. It is possible that as all women, not just white women, age, they feel increasing pressure to diet in order to attain the ''thin body standard.''

DISCUSSION

The present findings, which are based on data from over 17,000 participants, indicate that, as a whole, white women living in Western countries experience greater eating disturbance and body dissatisfaction than non-white women. Although recent research has suggested that eating pathology is increasing in non-white groups (Striegel-Moore & Smolak, 1996; Wakeling, 1996; Weiss, 1995),

the belief that no substantial differences exist between whites and non-whites in rates of reported eating disturbance (King, 1993) is simply not supported by quantitative analysis. With this in mind, it is important to note that several of the hypotheses proposed by the present study were not supported by a quantitative review of the literature. For example, contrary to expectation, white women were not shown to experience significantly greater levels of clinical symptomatology (anorexia and bulimia nervosa) than non-white women. In addition, a review of the acculturation literature offered little insight into the effects of Western and white culture on non-white women's reported eating disturbance. Comparison of the non-white ethnic groups included in the present study suggested that, as expected, black women report significantly fewer symptoms of eating related psychopathology than white women. However, the opposite effect was found for Asian women, and a deficit in literature occluded the present investigators' ability to closely examine eating disturbance in other ethnic groups. Finally, the present findings suggest that methodological characteristics of research studies, like the types of instruments and samples that are used, may influence findings. However, lack of variability within the literature sampled for the present study limits the generalizability of these observations.

Across all measures of eating pathology, white populations appear to report greater levels of eating disturbance than non-white populations. In the present study, the mean effect size for eating disturbance/body dissatisfaction reflects approximately one quarter of a standard deviation between the two groups. Furthermore, comparisons of participants reporting levels of eating disturbance at or above the 90th percentile reveal that approximately 14% more whites report eating disturbance in this ''severe'' range than non-whites. Interestingly, these effects are not consistent across the body of literature examined by the present study. Specifically, effect sizes for this area of research tend to be greatest for measures of subclinical eating disturbance and weakest for measures clinical eating disturbance.

The weakest mean effect sizes reported by the present study are for clinical measures of restrictive eating, especially bulimia nervosa. Comparisons of whites and non-whites reporting disturbance at or above the 99th percentile, the level at which one would expect to see clinical eating pathology, reveal that differences between the two groups are in the order of less than one percent. These results suggest that sociocultural variables, like ethnic group membership, play a more significant role in influencing the development of subclinical eating disturbance than they do in influencing the development of clinical eating pathology.

One explanation for the present findings may be that clinical eating disorders and subclinical eating disorders represent different types of psychopathology. Subclinical or ''subthreshold'' eating disorders seem unusual when viewed from the traditional eating disorder framework because their symptoms, comorbid conditions, and etiological pathways often differ from those presented by individuals meeting criteria for anorexia and bulimia nervosa (Smolak, Levine, & Striegel-Moore, 1996). While some people meeting criteria for subthreshold eating disturbance will eventually develop anorexia or bulimia nervosa, many will continue at subthreshold levels, and still others will recover (Smolak et al., 1996). Given the cultural and ethnic differences in the development of subthreshold eating disturbance shown by the present study, it appears that cultural factors play a significant role in this process. Cultural variables like exposure to a thin body ideal in the media (Levine & Smolak, 1996) and pressure to be thin from their peers (Parker et al., 1995) may influence the

development of subclinical eating disorders in young white women. Protection from these variables in non-white cultures, particularly black cultures in which female role models are often larger and pressure to be thin may not be as great (Parker et al., 1995), may prevent development of subclinical eating pathology.

Clinical eating disorders seem to be very different. The results of the present study suggest that thin body images and pressures to be thin from family and friends do not play a significant role in the development and course of anorexia and bulimia nervosa. Traditional theories of etiology, like those of self-control (Bruch, 1982) and family dynamics (Humphrey, 1987; Yates, 1989), may provide a better means of understanding these disturbances. In addition, the results of recent twin studies indicate that genetic factors may be involved in the onset and course of clinical eating pathology (Allison & Faith, 1997; Strober, 1991). Such findings suggest the possibility that ethnic differences in the development of clinical eating disorders may have more to do with physiology than culture.

One goal of the present study was to examine the role of acculturation in influencing the development of eating disturbance in non-white populations. Many researchers who study psychopathology believe that women who identify with white or Western cultures report more symptoms of eating pathology than women who do not identify with these cultures (Bowen et al., 1991; Davis & Yager, 1992; Nasser, 1988). However, the results of the present study indicate that very little research has been conducted in this area and that what research exists does not support a relationship between acculturation and eating pathology.

Several explanations may be offered for this finding. It is possible that acculturation simply does not play a role in the development of eating related psychopathology. Some reviewers have suggested that claims of a relationship between eating disturbance and acculturation remain to be substantiated (King, 1993). More likely, however, the present findings are a result of methodological weaknesses in the eating disorders and acculturation literature. The 11 articles included in the present analysis that claimed to examine the effects of culture or acculturation on eating disturbance employed a variety of measures and operational definitions. Only two studies used measures of acculturation to examine their participants' levels of integration into a dominant cultural group (Furnham & Patel, 1994; Pumariega, 1986). Other studies examined integration into nondominant cultures (Abrams et al., 1993; Akan & Grilo, 1995; Pemberton et al., 1996; Pumariega et al., 1994; Yoshimura, 1995), cultural orientation (Hill & Bhatti, 1995; Mumford et al., 1991; Wardle et al., 1993), and even rates of eating disturbance among women living in non-Western countries (Nasser, 1986). Of additional concern was the tendency by some researchers to use the terms acculturation, assimilation, and ethnic orientation interchangeably (Abrams et al., 1993; Akan & Grilo, 1995). These are not synonymous terms. Assimilation and acculturation, in particular, have very different meanings with acculturation referring to an acquisition of dominant cultural norms by a member of a nondominant group and assimilation referring to a more interactive process in which members of both groups interact with one another equally (Atkinson et al., 1998). Inconsistencies like these undoubtedly contributed to the present findings. Any future attempt to compare findings in this area must be based upon research using similar measures and constructs.

Research has suggested a relationship between ethnicity, culture, and eating disturbance such that certain ethnic groups, most notably black Americans, appear to be less prone to the influence of the thin body standard than others (Crago et al.,

1996). The results of the present study provide support for this observation. Even for variables like eating disorder and bulimia, which generally seem to be equally prevalent in white and non-white populations, differences between black and white women emerge. Furthermore, for variables reflecting subclinical levels of eating pathology, mean effect sizes in the present study reveal differences between these populations in the order of four fifths to nine tenths of a standard deviation.

Interestingly, Asian women do not seem to share their black peers' protection against the development of eating related psychopathology. The results of the present analysis suggest that Asians report similar and, in some cases higher, levels of eating dysfunction than whites. Notably, Asians, who report weighing significantly less than their white counterparts, differ from whites on measures of body dissatisfaction in the magnitude of one third of a standard deviation. They also report slightly greater dietary restraint, weight and dieting concerns, and eating disorder symptomatology than their white counterparts. Recent research with Asian populations has suggested that Asian women living in Western countries may feel additional pressure to be thin due their inability to meet other white beauty standards like fair skin, blonde hair, and delicate bone structure (Hall, 1995). Additionally, it has been proposed that the typically smaller size of Asian women places them at increased risk for feelings of overweight and body dissatisfaction (Hall, 1995). Given the findings of the present research, it seems prudent to consider that Asian women, like their Caucasian counterparts, are a high-risk group for eating related psychopathology.

Differences between whites and non-black and non-Asian ethnic groups remain to be substantiated. The present analysis found that, overall, white women report more eating disturbance than non-black and non-Asian women. However, so few studies have examined the relationship between ethnicity, culture, and eating disturbance in groups like Hispanics, Arabs, and Native Americans that it seems imprudent to attempt to draw conclusions from the results of the current analysis.

Recent reviews have suggested that methodological weaknesses in the existing literature may account for differences between white populations and non-white populations in reported eating pathology (Mumford, 1993). One goal of the present study was to determine whether or not the use of particular diagnostic instruments affects the outcomes of quantitative research. The results are inconclusive. On the surface, it does appear that studies using the EDI and the EAT find more differences in reported eating disturbance than studies using other diagnostic measures. However, most studies included in the present meta-analysis used either the EDI, or the EAT, or other measures, not a combination of the three. In the absence of comparisons within samples, it is difficult to draw conclusions from the present analysis. Future research must address this issue.

Finally, the results of the present study suggest that the type of sample (college, high school, or non-clinic) a study uses is related to reported differences between whites and non-whites on measures of eating disturbance and body dissatisfaction. In particular, studies using college samples to compare eating pathology in blacks and whites find significantly greater differences than studies using other types of samples. The results of the present analysis suggest that black college women experience significantly fewer symptoms of eating disturbance and body dissatisfaction than their white counterparts. However, black women included in high school and non-clinic samples appear to report levels of eating related psychopathology that are similar to those reported by whites. In fact, on measures relating to clinical symptomatology

(bulimia and eating disorder) and weight and dieting concerns, black women in non-clinic samples have an equal to greater prevalence than white women.

Although these findings are limited only to studies comparing black and white samples, they are striking because they challenge the notion that socioeconomic status and educational attainment are related to eating disturbance. Many researchers believe that non-white women who attend college identify with the upper-middle class, white standard of thinness and, therefore, report greater eating pathology than other non-white women (for review, see Gard & Freeman, 1996). The present findings suggest that this simply is not true. In fact, studies using high school and non-clinic samples, that may be expected to contain a greater variety of socio-economic backgrounds than college samples, report fewer differences between whites and non-whites and more eating pathology in non-whites than studies using college samples. This suggests that current beliefs about the role of economic attainment in influencing the development of eating disturbance in non-white populations require further examination in order to determine their utility as models of understanding eating pathology.

The greatest limitation of the present study lies in the fail-safe N values (Rosenthal & Rosnow, 1991) reported for some of the variables. While a fail-safe N of 1300 for eating disturbance/body dissatisfaction suggests that the mean effect size for this variable is robust, a fail-safe N of zero for eating disorder in the overall comparison suggests that few studies reporting null findings are required to discredit the present results. Furthermore, fail-safe Ns of 0, 1, 3, and 4 for variables comparing eating disturbance and body dissatisfaction in white and Asian samples and white and ''other'' non-white samples indicate that some of the specific ethnic group comparisons are rather weak. Tentative conclusions about the relationship between non-black ethnic group status and eating disturbance may be drawn from the present analyses, but small fail-safe N values do indicate an absence of substantial research findings.

An additional concern specific to the present analysis centers on the wide variety of samples included in the black, Asian, and ''other'' non-white groups. Within the Asian group alone, women of eight distinct ethnic backgrounds are represented. The black group includes women of at least three ethnic descents, and the ''other'' group includes women representing at least four ethnic backgrounds. In general, one of the strengths of meta-analysis is its ability to group together research findings in a particular domain in order to compute ''overall effects.'' However, in the present case, this methodology may cloud over actual ethnic differences. The present researchers have little reason to believe that Indian women and Chinese women or Ghanaian women and African American women will respond similarly to questions about eating disturbance and body dissatisfaction. Similarly, no method was available to account for the possible effects of within group differences in variables such as generational status, language ability, immigration experience, education level, or adherence to traditional gender roles. Any one of these variables may interact with ethnic group membership to influence women's attitudes towards their bodies and food. Thus, these limitations must be kept in mind when conclusions are drawn from the present findings.

Other concerns center around theoretical issues in cross-cultural eating disorder research. For example, although previous research has cautioned against the use of Western diagnostic instruments as measures of eating related psychopathology in non-white and non-Western groups (King, 1993; Mumford, 1993), the majority of

studies included in the present meta-analysis relied upon existing diagnostic tools. Moreover, virtually all of the studies examined for inclusion in the present analysis failed to take into account different definitions of beauty and ideas about food. Western diagnostic instruments, like the DSM, often fail to take into account religious and cultural practices of non-Western groups that may be related to weight and dieting (King, 1993). They tend to be standardized using white samples and, thus, may not generalize to non-white groups living in Western countries. It is entirely possible that the ethnic similarities and ''differences'' reflected in the present study and in the relevant literature are nothing more than artifacts resulting from inappropriate definitions of dysfunction in non-white groups. Future research must address this issue. Given the considerable weaknesses inherent in Western diagnostic instruments, a re-evaluation of their utility in non-white groups should be undertaken. Future researchers may wish to revise the exiting tools or create new ones that will be better equipped to address eating disturbance in non-white populations.

One disappointing finding of the present research is the relative lack of studies that have been conducted outside of the United States, Canada, and Great Britain. Of the 35 studies included in the present meta-analysis, only one compared rates of eating disturbance in Western and non-Western countries. The rest relied upon the scores of non-white samples living in Western countries as indicators of the rates of eating disturbance in non-Western populations. Studies comparing samples living in Western countries with samples living in non-Western countries may provide answers to researchers' questions about the relationship between ''Westernization'' and eating pathology. Recent research conducted in non-Western countries suggests that eating pathology may be on the rise in developing parts of the world (Lee, Leung, Lee, Yu, & Leung, 1996; Nasser, 1994). Future research should replicate this work and extend it by comparing individuals living in Western countries with those living in non-Western parts of the world.

An additional direction for future researchers is the examination of changes over time in reported eating disturbance among non-white women. Recent research has suggested that the rate of eating pathology in non-white populations is increasing (Weiss, 1995). Yet, little is known about what factors may be influencing this change. One theory is that exposure to white standards of thinness through popular media is influencing beauty ideals throughout the world. Another possibility centers on the changing economic and professional status of women in many ethnic and cultural groups. Proponents of the theory that socioeconomic status influences the development of eating pathology might argue that as women achieve greater economic status and opportunity, their risk of succumbing to unrealistic standards of beauty increases. Although the results of the present research suggest that the role of socioeconomic status in the development of eating pathology may be more complex than was originally speculated, little is known about how economic and professional factors specific to non-white women may relate to increases in eating pathology. The majority of previous research has been based on the assumption that parental socioeconomic status and career status translates directly to a child's development of eating disorders (Gard & Freeman, 1996). However, it seems equally plausible that a woman's individual social and economic status plays a more significant role in influencing eating attitudes. Future research should tackle this question both as a means of understanding eating pathology in all women and as a method of explaining its increase among populations previously thought to be protected from such disturbance.

APPENDIX. Studies included in the meta-analysis: sample size for the meta-analysis, original outcome measures, corresponding variables in the meta-analysis, and effect sizes

Study	*N*	Original outcome measure	Variable in meta-analysis	Effect size
Abrams et al. (1993)	200	Dietary restraint	Dietary restraint	1.11
		Binge eating behavior	Eating disorder	.50
		Drive for thinness	Drive for thinness	.67
		Body dissatisfaction	Body dissatisfaction	1.02
		Assimilation to white racial identity	Acculturation	.68
Akan and Grilo (1995)	98	Body Mass Index	Lower reported weight	.76
		EAT score	Eating disorder	.56
		Body dissatisfaction	Body dissatisfaction	.50
		Dietary restraint	Dietary restraint	.57
		Eating concern	Weight and dieting concerns	.53
		Effect of acculturation	Acculturation	0.00
Allan, Mayo and Michel (1993)	67	Ideal for self	Smaller ideal body	.64
Chandler, Abood, Lee, Cleveland, and Daly (1994)	640	EAT score	Eating disorder	.55
		Dieting	Weight and dieting concerns	.17
		Body dissatisfaction	Body dissatisfaction	.24
Cogan, Bhalla, Sefa-Dedeh, and Rothblum (1996)	568	Dieting	Weight and dieting concerns	.51
		Ideal body size	Smaller ideal body	1.01
		Restrained eating	Dietary restraint	1.14
		Drive for thinness	Drive for thinness	.88
		Body dissatisfaction	Body dissatisfaction	1.18
		Bulimia	Bulimia	.77

Dacosta and Wilson (1996)	102	Drive for thinness	Drive for thinness	.00
		Bulimia	Bulimia	.00
		Body dissatisfaction	Body dissatisfaction	.00
Desmond, Price, Hallinan, and Smith (1989)	169	View self as overweight	Body dissatisfaction	.68
Dolan, Lacey, and Evans (1990)	479	EAT-26 score	Eating disorder	−.19
Emmons (1992)	1269	Classification as a ''dieter''	Weight and dieting concerns	.02
Furnham and Patel (1994)	96	EAT score	Eating disorder	.00
		Effect of integration	Acculturation	.00
Gray, Ford, and Kelly (1987)	561	Bulimia (*DSM-III* criteria)	Bulimia	.16
		Consider self overweight	Weight and dieting concerns	.16
Henriques, Calhoun, and Cann (1996)	117	Body satisfaction	Body dissatisfaction	.36
		Drive for thinness	Drive for thinness	.64
		Reported weight	Lower reported weight	.84
		Ideal weight	Smaller ideal body	.89
Hill and Bhatti (1995)	97	Weight	Lower reported weight	−.52
		Dietary restraint	Dietary restraint	−.68
		Ethnic orientation	Acculturation	−.83
Klem, Klesges, Bene, and Mellon (1990)	497	Dietary restraint	Dietary restraint	.53
		Concern for dieting	Weight and dieting concerns	.35

Lucero, Hicks, Bramlette, Brassington, and Welter (1992)	273	Eating problems	Eating disorder	.32
McCourt and Waller (1995)	336	Attitudes toward eating	Weight and dieting concerns	– .44
Mumford et al. (1991)	559	Diagnosis of bulimia nervosa	Bulimia	– .17
		EAT score	Eating disorder	– .33
		Acculturation	Acculturation	0.00
Nasser (1986)	110	Comparison of Arab women living in Western and non-Western countries	Acculturation	.08
Neff, Sargent, McKeown, Jackson, and Valois (1997)	4080	Perceiving oneself as overweight	Body dissatisfaction	.20
		Trying to lose weight	Weight and dieting concerns	.17
Nevo (1985)	653	Bulimic behavior	Bulimia	.48
Pemberton et al. (1996)	684	Bulimia nervosa	Bulimia	.03
		Disordered behavior	Eating disorder	0.00
		Relationship between race/ethnicity and bulimic behavior	Acculturation	0.00
Powell and Kahn (1995)	97	Preferred body	Smaller ideal body	.84
		Discrepancy between current and ideal body size	Body dissatisfaction	.38
		Weight and dieting concerns	Weight and dieting concerns	.56
Pumariega (1986)	138	Acculturation correlated with high EAT-26 score	Acculturation	.37

Pumariega et al. (1994)	600	Black identity correlated with EAT-26 score	Acculturation	0.00
Reiss (1996)	328	Body Mass Index	Lower reported weight	.32
		Mean BITE symptom score	Eating disorder	.26
Rosen et al. (1991)	167	Body dissatisfaction	Body dissatisfaction	.54
		Drive for thinness	Drive for thinness	.28
		Bulimia	Bulimia	.06
Rucker and Cash (1992)	104	Body Mass Index	Lower reported weight	.60
		Prefer thinner body	Smaller ideal body	.65
		Body dissatisfaction	Body dissatisfaction	.45
		Drive for thinness	Drive for thinness	.60
Schmolling (1988)	203	EAT score	Eating disorder	.39
Schreiber et al. (1996)	2379	Dissatisfaction With body shape	Body dissatisfaction	.16
		Chronic dieting	Weight and dieting concerns	−.11
Stevens et al. (1997)	250	Body Mass Index	Lower reported weight	.22
		Concern about weight	Weight and dieting concerns	.37
		Consider thinness a concern	Drive for thinness	.37
		Ideal body size	Smaller ideal body	.22
Stevens, Kumanyika, and Keil (1994)	404	Satisfaction With one's body	Body dissatisfaction	.33
Striegel-Moore, Schreiber, Pike, Wilfley, and Rodin (1995)	613	Drive for thinness	Drive for thinness	−.48
		Body Mass Index	Lower reported weight	.52
Wardle et al. (1993)	274	Body Mass Index	Lower reported weight	−.32
		Desire to lose weight	Weight and dieting concerns	.34

		Dietary restraint	Dietary restraint	.22
		Dissatisfaction With body shape	Body dissatisfaction	− .29
		Slimmer ideal body	Smaller ideal body	− .27
		Cultural identity	Acculturation	.00
Wilfley et al. (1996)	538	Body Mass Index	Lower reported weight	.65
		Drive for thinness	Drive for thinness	0.00
		Body dissatisfaction	Body dissatisfaction	.39
Yoshimura (1995)	31	Acculturation and eating disorder symptomatology	Acculturation	0.00

EAT = Eating Attitudes Test; BITE = The Bulimic Investigatory Test; DSM-III = Diagnostic and Statistical Manual of Mental Disorders (3rd ed.).

CONCLUSION

The results of the present study indicate that, contrary to suggestions that ethnic differences in the prevalence of eating disorders are over-emphasized (Mumford, 1993), whites experience greater eating disturbance and body dissatisfaction than their non-white counterparts. However, a number of related and unrelated factors are also involved in predisposing individuals to weight and dieting concerns. Certain ethnic groups may be less prone to the development of eating pathology than others and differences between whites and non-whites on measures of eating disturbance may vary by sample type even within Western countries. As this analysis concludes, many questions remain unanswered, and many important etiological considerations remain unresolved. At this point, it seems reasonable to conclude that the literature in this area indicates that differences do exist between whites and non-whites on measures of eating pathology. It is the responsibility of future researchers to determine how and why these differences come about and to dispel any myths that the field of psychology may hold regarding the relationship between culture, ethnicity, and eating disturbance.

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