



## Eating disorder behaviors of ethnically diverse urban female adolescent athletes and non-athletes

DEBORAH J. RHEA

This study compared Caucasian, Hispanic, and African-American urban adolescent athlete and non-athlete females for relative frequency of behavioral and psychological indices of eating disorders, while controlling for physical size. High school female athletes ( $n=571$ ) and non-athletes ( $n=463$ ) completed the Eating Disorder Inventory (EDI) composed of eight subscales that measure behavioral and psychological indices common in anorexia nervosa and bulimia nervosa. The MANCOVA for the main effect of ethnicity showed Caucasians and Hispanics scored significantly higher than African-Americans on six of the eight behavioral and psychological subscales of the EDI ( $p < 0.05$ ). A MANCOVA for the main effect of athletic status showed no significant differences between athletes and non-athletes on the behavioral subscales of the EDI ( $p > 0.05$ ). This study suggests that Hispanic and Caucasian urban adolescent females are comparably more at-risk for eating disorders than African-American urban adolescent females. In addition, athletes were no more at-risk than non-athletes for eating disordered behaviors.

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### Introduction

Anorexia nervosa and bulimia nervosa have been the focus of increasing research attention during the past decade (Klemchuk *et al.*, 1990; Petrie and Stoeber, 1993; Lester and Petrie, 1995; Petrie, 1996). Clinicians who treat eating disorders have noted that abnormal eating attitudes and weight concerns are affecting large numbers of females in non-clinical settings (Fisher *et al.*, 1994). Among the significant findings established by recent research about females in non-clinical settings has been the prevalence of eating disorders (Garner and Rosen, 1991; Rhea, 1992) and personality and physical correlates of the disorders, such as body dissatisfaction (Burckes-Miller and Black, 1988; Klemchuk *et al.*, 1990; Paxton *et al.*, 1991), body mass (Davis and Cowles, 1989; Rhea, 1992), and endorsement of societal values concerning attractiveness (Rosen, *et al.*, 1986; Striegel-Moore, Silberstein, and Rodin, 1986; Petrie, 1993).

A major limitation of such research, however, has been the almost exclusive focus on Caucasian females. Often, the racial-ethnic background of participants is excluded or not reported, including subpopulations like athletes (e.g. Klemchuk *et al.*, 1990). As a consequence, Caucasian females (>90% representation) have been identified as the most affected at-risk group for possible eating disorders (Brooks-Gunn *et al.*, 1988; Warren *et al.*, 1990; Taub and Blinde, 1992; Sundgot-Borgen, 1994). Of the few studies that do examine non-Caucasian populations, controversy exists regarding the frequency of occurrence (e.g., Fisher *et al.*, 1994). For example, some studies have suggested that African-American females are less affected by socio-cultural pressures to be thin (Gray *et al.*, 1987; Rosen and

Reprint requests and correspondence should be addressed to D. J. Rhea, Ed.D., Texas Christian University, Kinesiology Department, TCU Box 297730, Ft. Worth, TX 76125, U.S.A.

Gross, 1987; Dolan, 1991) and perceive their body size to be more appropriate than Caucasians (Rhea, 1992; Rucker and Cash, 1992; Crago, *et al.*, 1996). Other studies have shown African-American and Caucasian females are equally at-risk for eating disorders (e.g. Pumariega *et al.*, 1994). Likewise, African-American and Hispanic adolescents have been found to score similarly to Caucasian students on the Eating Attitudes Test (EAT; Garner and Garfinkel, 1979) suggesting increasing concerns regarding weight and dieting in adolescent populations (Fisher *et al.*, 1994; Pumariega *et al.*, 1994; Robinson *et al.*, 1996; Striegel-Moore *et al.*, 1995). Lester and Petrie (1995) also reported that Hispanic college females' body mass and endorsement of U.S. societal values concerning attractiveness were positively related to bulimic symptomatology, whereas body satisfaction was unrelated to bulimic symptomatology.

Another limitation of existing research on eating disorders is the study of predominately collegiate populations (Rosen *et al.*, 1986; Burckes-Miller and Black, 1988; Rosen and Hough, 1988; Warren *et al.*, 1990). A meta analysis of eating disorder studies found only 8% of the literature focused on high school populations (Hausenblas and Mack, 1995). This is unfortunate, since the adolescent female is comparably as vulnerable to anorexia and bulimia as the college female (Garner and Rosen, 1991). Researchers have found as many as 4% of selected populations of female high school students suffer from eating disorders (Garner and Rosen, 1991; Rhea, 1992). Furthermore, many college females have reported that their eating disorders often began at a younger age (Dummer *et al.*, 1987; Taub and Blinde, 1992).

A subpopulation, female athletes, has received increasing attention regarding eating disorders due to health risks involved in extreme dieting behavior and extensive exercise (Wooley and Lewis, 1987; Szekely, 1989; Sundgot-Borgen, 1994). To determine the relative frequency of eating disorder disturbances employed, researchers have compared varying samples of athletes and non-athletes, although few have examined ethnic differences. The findings of the varying samples, however, have been equivocal (e.g. Borgen and Corbin, 1987; Davis and Cowles, 1989; Warren *et al.*, 1990). Of the studies using the Eating Disorder Inventory (EDI; Garner and Olmstead, 1984), athletes have demonstrated more at-risk behaviors than non-athletes on the subscales of perfectionism (Rhea, 1992; Taub and Blinde, 1992), drive for thinness (e.g. Davis, 1992), and bulimia (Borgen and Corbin, 1987; Burckes-Miller and Black, 1988; Kurtzman *et al.*, 1989; Warren *et al.*, 1990; Taub and Blinde, 1992). In contrast, non-athletes have scored higher on scales that measure body dissatisfaction (Davis and Cowles, 1989; Warren *et al.*, 1990), ineffectiveness (Davis and Cowles, 1989), and interoceptive awareness (Warren *et al.*, 1990). Some studies, however, have found female athletes and non-athletes scoring similarly on eating disorder measures, suggesting no psychological or behavioral risk associated with athletic participation (Borgen and Corbin, 1987; Warren *et al.*, 1990; Petrie, 1996).

An explanation for the discrepancies in the literature regarding the relative frequency of eating disorders among athletes and non-athletes, and African-Americans, Hispanics, and Caucasians has been suggested by Petrie (1996), who believes that an important factor is failure to consider physical size (as operationalized by body mass index) as a covariate. Physical size has been found to be a strong predictor of performance on the EDI subscales, drive for thinness, bulimia, and body dissatisfaction (Davis and Cowles, 1989; Robinson *et al.*, 1996), as well as an independent measure of bulimic symptomatology (Lester and Petrie, 1995). Controlling for physical size might be a significant step in understanding varying racial and athletic populations at-risk of eating disorders. On the basis of limited, and at times contradictory research on diverse populations, eating disorders appear to be an

emerging health issue for not only Caucasian adolescent females but girls of varying ethnic backgrounds.

The purpose of this study was to compare Caucasian, Hispanic, and African-American urban adolescent females for relative frequency of behavioral and psychological indices of eating disorders (as measured by the EDI), while controlling for physical size. A secondary purpose of this study was to compare athlete and non-athlete adolescent females on the EDI indices while controlling for physical size.

## Method

### *Participants*

Participants in this study consisted of 571 female high school athletes and 463 non-athletes from eight high schools in three school districts in a large ethnically diverse southern metropolitan city. These schools were all classified as "5-A division", meaning that they had enrollments of over 1800 students. The participants ranged in age from 13–19 years ( $M=15.5$ ,  $S.D.=1.1$ ), identifying 291 (34%) African-American, 235 (28%) Hispanic, 185 (22%) Caucasian, 52 (6%) Asian, 14 (2%) Native American, and 73 (8%) other. This population was highly representative of the demographic composition of the city. Due to the small number of Asians, Native American, and mixed ethnic groups, they were eliminated from the analysis. Those classified as athletes had at least 3 years of competitive experience in structured public school athletic programs. They represented a wide diversity of sport involvement: volleyball ( $n=104$ ), basketball ( $n=115$ ), cross-country ( $n=38$ ), track ( $n=30$ ), swimming ( $n=22$ ), tennis ( $n=35$ ), and softball ( $n=39$ ). One hundred and twenty-four were classified as multi-sport athletes who participated in more than one sport. Non-athletes volunteered from the required physical education and health classes and had never, nor were currently participating in any organized competitive sports in or outside of school.

### *Instrumentation*

*Disordered eating.* The Eating Disorder Inventory (EDI; Garner and Olmstead, 1984) is a 64-item, self-report eight subscale measure designed for the assessment of psychological and behavioral traits common in anorexia and bulimia nervosa. The subscales of the EDI include: drive for thinness (DT; excessive concern with dieting, preoccupation with weight, extreme pursuit of thinness), bulimia (BUL; tendency to engage in bingeing that may be followed by impulse to induce vomiting), body dissatisfaction (BD; dissatisfaction with the shape of body parts such as hips, buttocks, and the belief that these parts are too big or fat), ineffectiveness (INEFF; feelings of general inadequacy, insecurity, worthlessness, and not being in control of one's life), perfectionism (PERF; excessive personal expectations of superior achievement), interpersonal distrust (ID; sense of alienation and general reluctance to form close relationships), interoceptive awareness (IA; lack of confidence in recognizing and accurately identifying emotions or visceral sensations of hunger or satiety), and maturity fears (MF; wish to retreat to the security of preadolescence because of being overwhelmed by the demands of adulthood).

In the present study, the degree of reliability (Cronbach's alpha) of the eight EDI subscales was comparable to that obtained in other non-patient studies (Garner *et al.*, 1983): (1) Drive for Thinness (0.78), (2) Bulimia (0.75), (3) Body Dissatisfaction (0.83), (4) Ineffectiveness (0.78), (5) Perfectionism (0.65), (6) Interpersonal Distrust (0.66), (7) Interoceptive

Awareness (0.73), and (8) Maturity Fears (0.62). Item scoring treats the 6-point frequency scale as a "0" to "3" scale (where "never", "rarely", and "sometimes" = 0, "often" = 1, "usually" = 2, and "always" = 3).

*Demographic and weight information.* The participants also provided information concerning their current weight and height, age, ethnic status, and athletic status. From this information, body mass index (BMI; weight(kg)/height(m)<sup>2</sup>) scores were computed.

### *Procedure*

Human Subjects approval was secured both from the University committee for the protection of human subjects and from the school districts. Informed consent also was secured from the student, coach or supervisor, and a parent or legal guardian. No schools were eliminated from the project for reasons of insufficient consent. The questionnaire was completed in the physical education and athletic classes by all of the participants with the researcher present. Prior to participating, all individuals received information on the voluntary, anonymous, and confidential nature of the study as well as on its general purpose; less than 1% were excluded from the study due to lack of parental consent.

## **Results**

The main effects in the statistical analysis of these data are the distinction between athletes ( $n=477$ ) and non-athletes ( $n=383$ ), and ethnic group, with participants grouped as Caucasian ( $n=185$ ), Hispanic ( $n=235$ ), and African-American ( $n=291$ ). Multivariate tests for homogeneity of regression (slopes) for the groups were non-significant (Wilks' Lambda=0.78,  $F(96, 2529) = 0.99, p=0.49$ ), suggesting that it was appropriate to proceed with the planned  $2 \times 3 \times 8$  (athletic status  $\times$  ethnicity  $\times$  EDI subscales) multivariate analysis of covariance (Tabachnick and Fidell, 1989).

### *Ethnic differences and prevalence of eating disorders*

Table 1 presents the ages, BMI scores and adjusted means and standard deviations of the Caucasians', Hispanics', and African-Americans' EDI subscales. Independent analyses of variance (ANOVAS) demonstrated that the three ethnic groups were of similar ages,  $F(2711) = 1.54, p=0.21$ , but differed significantly on body mass,  $F(2681) = 11.96, p < 0.0001$ , indicating African-Americans were larger than Hispanics and Caucasians.

Results of the  $2 \times 3 \times 8$  (athletic status  $\times$  ethnicity  $\times$  EDI subscales) multivariate analysis of covariance with BMI as the covariate produced a significant main effect for ethnicity, Wilks' Lambda=0.82,  $F(16, 1344) = 8.76, p < 0.0001$ . Subsequent univariate analyses of covariance (ANCOVAS) showed no significant differences among the three ethnic groups on the two subscales for bulimia (BUL) and interoceptive awareness (IA). These findings suggest that Caucasians, Hispanics, and African-Americans were similar in their reported likelihood of engaging in binge/purge behaviors (BUL) and their ability to recognize emotions and physical sensations of hunger (IA).

The ANCOVAS for the main effect of ethnicity were, however, significant for the remaining six EDI subscales: drive for thinness,  $F(2678) = 18.44, p < 0.0001$ ; body dissatisfaction,  $F(2678) = 35.56, p < 0.0001$ ; ineffectiveness,  $F(2678) = 10.02, p < 0.0001$ ; perfectionism,  $F(2678) = 10.53, p < 0.0001$ ; interpersonal distrust,  $F(2678) = 4.43, p < 0.01$ ; and maturity

**Table 1** Age, BMI, and adjusted means and standard deviations of EDI subscales† by ethnic group

| Variable* | Caucasian<br>(n = 185) |                     | Hispanic<br>(n=235) |                     | African-American<br>(n=291) |                     |
|-----------|------------------------|---------------------|---------------------|---------------------|-----------------------------|---------------------|
|           | M                      | S.D.                | M                   | S.D.                | M                           | S.D.                |
| Age       | 15.51                  | (1.18)              | 15.57               | (1.07)              | 15.52                       | (1.13)              |
| BMI       | 21.83                  | (3.96) <sup>b</sup> | 22.54               | (4.12) <sup>b</sup> | 23.92                       | (5.12) <sup>a</sup> |
| DT        | 6.02                   | (5.75) <sup>a</sup> | 6.71                | (5.40) <sup>a</sup> | 4.61                        | (5.00) <sup>b</sup> |
| BUL       | 2.19                   | (3.14)              | 2.28                | (3.06)              | 1.99                        | (3.07)              |
| BD        | 11.14                  | (7.73) <sup>a</sup> | 10.74               | (7.05) <sup>a</sup> | 7.72                        | (6.15) <sup>b</sup> |
| INEFF     | 4.88                   | (5.90) <sup>a</sup> | 5.24                | (4.61) <sup>a</sup> | 3.58                        | (4.43) <sup>b</sup> |
| PERF      | 6.41                   | (4.42) <sup>b</sup> | 6.61                | (4.21) <sup>b</sup> | 7.92                        | (4.09) <sup>a</sup> |
| ID        | 3.92                   | (3.92) <sup>b</sup> | 5.24                | (3.65) <sup>a</sup> | 5.26                        | (3.64) <sup>a</sup> |
| IA        | 4.95                   | (5.26)              | 6.54                | (5.76)              | 5.31                        | (4.78)              |
| MF        | 4.32                   | (3.46) <sup>b</sup> | 5.67                | (4.12) <sup>a</sup> | 5.85                        | (4.05) <sup>a</sup> |

\*Age is presented in years; body mass as kg/m<sup>2</sup>; DT = drive for thinness; BUL = bulimia; BD = body dissatisfaction; INEFF = ineffectiveness; PERF = perfectionism; ID = interpersonal distrust; IA = interoceptive awareness; MF = maturity fears.

†Higher scores for the eight EDI subscales indicate higher levels of the variable.

<sup>a,b</sup> Mean scores for Caucasian, Hispanic, and African-American groups that do not share common superscripts are significantly different at  $p < 0.05$ . Unadjusted means are similar to adjusted mean scores for the EDI subscales.

fears,  $F(2678)=4.86$ ,  $p < 0.008$ . Scheffé *post-hoc* analyses showed that Caucasians and Hispanics did not differ significantly from one another on drive for thinness, body dissatisfaction, ineffectiveness, and perfectionism, but did differ from African-Americans. However, African-Americans and Hispanics did not differ significantly from one another on interpersonal distrust and maturity fears, but did differ from Caucasians.

Compared to African-Americans, Caucasians and Hispanics reported feeling more preoccupied with their weight and concerned about dieting (DT); significantly higher levels of dissatisfaction with the size and shape of their bodies (BD); more insecurity, inadequacies, and worthlessness (INEFF); and lower expectations of superior performance/achievement (PERF). African-Americans and Hispanics were similar, but scored significantly higher than Caucasians in their sense of alienation and general reluctance to form close relationships (ID); and higher insecurity due to the overwhelming demands of adulthood (MF).

Due to the significant differences found among the three ethnic groups on the behavioral subscales of drive for thinness and body dissatisfaction, individual scores for these subscales were computed for each respondent to identify those who might be at-risk of having an eating disorder. Individuals scoring greater than 14 on the drive for thinness subscale were identified as at-risk for non-patient samples (Garner and Olmstead, 1984). The cut-off scores for this sample showed 12% ( $n=28$ ) of Caucasian, 12% ( $n=34$ ) of Hispanic, and 5% ( $n=20$ ) of African-American females were at-risk for an eating disorder. These scores corroborate the behavioral EDI results that Caucasians and Hispanics are at significantly greater risk than African-American adolescents of having an eating disorder.

### Female athletes vs. non-athletes

Table 2 presents the ages, BMI values and adjusted means and standard deviations of the athletes' and non-athletes' EDI subscales. Univariate ANOVAs indicated that the two groups

**Table 2** Age, BMI, and adjusted means and standard deviations and unadjusted means of EDI subscales† by athletic status

| Variable* | Adjusted means      |                     |                         |                     | Unadjusted means    |                     |                         |                     |
|-----------|---------------------|---------------------|-------------------------|---------------------|---------------------|---------------------|-------------------------|---------------------|
|           | Athletes<br>(n=477) |                     | Non-Athletes<br>(n=383) |                     | Athletes<br>(n=477) |                     | Non-Athletes<br>(n=383) |                     |
|           | M                   | S.D.                | M                       | S.D.                | M                   | S.D.                | M                       | S.D.                |
| Age       | 15.69               | (1.12)              | 15.47                   | (2.67)              |                     |                     |                         |                     |
| BMI       | 22.08               | (3.70) <sup>b</sup> | 23.76                   | (5.34) <sup>a</sup> |                     |                     |                         |                     |
| DT        | 5.57                | (5.40)              | 5.84                    | (5.38)              | 5.50                | (5.30)              | 5.80                    | (5.40)              |
| BUL       | 2.16                | (3.20)              | 2.21                    | (3.15)              | 2.10                | (3.10)              | 2.20                    | (3.10)              |
| BD        | 9.42                | (7.16)              | 9.82                    | (6.89)              | 9.01                | (6.92) <sup>b</sup> | 10.11                   | (6.91) <sup>a</sup> |
| INEFF     | 4.11                | (4.83)              | 4.94                    | (5.02)              | 3.83                | (4.54) <sup>b</sup> | 5.01                    | (5.32) <sup>a</sup> |
| PERF      | 7.41                | (4.34) <sup>a</sup> | 6.51                    | (4.13) <sup>b</sup> | 7.63                | (4.41) <sup>a</sup> | 6.52                    | (4.20) <sup>b</sup> |
| ID        | 4.54                | (3.82) <sup>b</sup> | 5.39                    | (3.62) <sup>a</sup> | 4.40                | (3.71) <sup>b</sup> | 5.30                    | (3.71) <sup>a</sup> |
| IA        | 5.43                | (5.22)              | 5.84                    | (5.43)              | 5.32                | (5.22)              | 5.81                    | (5.50)              |
| MF        | 5.29                | (3.94)              | 5.57                    | (3.96)              | 5.30                | (3.80)              | 5.21                    | (5.40)              |

\*Age is presented in years; body mass as kg/m<sup>2</sup>; DT = drive for thinness; BUL = bulimia; BD = body dissatisfaction; INEFF = ineffectiveness; PERF = perfectionism; ID = interpersonal distrust; IA = interoceptive awareness; MF = maturity fears.

† Higher scores for the eight EDI subscales indicate higher levels of the variable.

<sup>a,b</sup> Mean scores for athlete and non-athlete groups that do not share common superscripts are significantly different at  $p < 0.05$ .

were of similar ages,  $F(1711) = 2.07$ ,  $p = 0.12$ , but did differ significantly on body mass index,  $F(1681) = 18.83$ ,  $p < 0.0001$ , indicating that non-athletes were larger than athletes.

Results of the  $2 \times 3 \times 8$  (athletic status  $\times$  ethnicity  $\times$  EDI subscales) multivariate analysis of covariance with BMI as the covariate also produced a significant main effect for athletic status, Wilks' Lambda = 0.96,  $F(8671) = 3.31$ ,  $p < 0.001$ , and thus univariate ANCOVAs were computed. These subsequent analyses found no significant differences between athletes and non-athletes on the variables drive for thinness, bulimia, body dissatisfaction, ineffectiveness, interoceptive awareness, and maturity fears. For the variables perfectionism,  $F(1678) = 17.69$ ,  $p < 0.001$ , and interpersonal distrust,  $F(1678) = 6.72$ ,  $p < 0.01$ , however, the ANCOVAs were significant. Scheffé *post-hoc* analyses revealed that the athletes expressed higher expectations of superior performance/achievement (PERF) and a lower sense of isolation and reluctance to form interpersonal relationships (ID).

### Interaction of ethnicity and athletic status

There was a significant interaction effect for the athletic status  $\times$  ethnicity  $\times$  EDI subscales multivariate analysis of covariance, Wilks' Lambda = 0.96,  $F(16, 1344) = 1.91$ ,  $p = 0.02$ , and thus univariate ANCOVAs were computed. Only two of the eight EDI psychological subscales were significant: interpersonal distrust,  $F(2678) = 3.22$ ,  $p = 0.04$ , and maturity fears,  $F(2678) = 6.32$ ,  $p < 0.002$ . Hispanic and African-American non-athletes and athletes did not differ significantly from one another in their interpersonal distrust (ID) or maturity fears (MF) scores. Caucasian athletes, however, were significantly less likely than other ethnic groups to manifest a sense of isolation and reluctance to form interpersonal relationships (ID). Caucasian athletes and non-athletes also were less likely than Hispanic and African-American athletes and non-athletes to experience feelings of insecurity due to the overwhelming demands of adulthood (MF).

## Discussion

The purpose of this study was to compare Caucasian, Hispanic, and African-American female adolescent athletes and non-athletes on behavioral and psychological indices of eating disorders. With respect to behavioral indices of eating disorders, Caucasian and Hispanic females had higher drive for thinness and body dissatisfaction scores than African-American females. These findings are consistent with previous research on Caucasian adolescent females (e.g. Taub and Blinde, 1992), and provide tentative support for previous data suggesting that eating disturbances are equally common among Hispanic and Caucasian females and less frequent among African-American females (e.g. Fisher *et al.*, 1994; Crago *et al.*, 1996).

When corrected for lower body mass index scores, urban Caucasian and Hispanic females are more preoccupied with thinness and dissatisfied with their bodies than African-Americans who are significantly more overweight (represented by a score  $>26$  on BMI; National Center for Health Statistics, 1996). African-Americans' greater weight tolerance may be a function of different internalized standards for beauty and acceptance (Rucker and Cash, 1992). Hispanics' and Caucasians' similar body dissatisfaction and weight preoccupation scores suggest that Hispanics may be adopting societal values about attractiveness and thinness more common to Caucasian than African-American females (Lester and Petrie, 1995).

The finding that the groups did not differ on the bulimia subscale, where scores were low as compared to those previously reported (Petrie, 1996), suggests that this preoccupation and pursuit of thinness does not appear to manifest itself through bingeing (i.e. uncontrollable overeating) and purging (i.e. vomiting). It may be that Caucasians and Hispanics employ other weight control behaviors such as strict dieting to achieve the desired weight or appearance (Petrie, 1993, 1996). African-Americans' low body dissatisfaction and drive for thinness scores parallel their low bulimia scores, indicating they appear to be the least likely to engage in weight control behaviors.

Ethnic differences were found on four of the five psychological indices. Compared to African-Americans, the Hispanic and Caucasian adolescent females reported feeling more insecure, inadequate, and worthless (INEFF) and having lower expectations of superior performance (PERF). Likewise, the Hispanics and African-Americans reported feeling a higher sense of alienation (ID) and fearing the demands of adulthood (MF). These results support previous findings suggesting that adolescent urban Caucasian and Hispanic females may be struggling for independence, autonomy, and individuality (Garner, 1991). Such a struggle appears to be associated with feelings of vulnerability that may cause Caucasian and Hispanic females to be more susceptible to the influence of peers, parents, and media. Due to findings that Hispanics had significantly higher psychological concerns on all four of these indices supports previous reports that Hispanics do not feel accepted by the mainstream society and suffer from low self-esteem (Grossman *et al.*, 1985). Coupled with the behavioral results, Hispanics may be at the highest risk for developing eating disorders.

In contrast, African-American female adolescents, in spite of being larger, had less weight concerns behaviorally, felt psychologically more secure (INEFF), and had higher expectations of superior performance (PERF) than Caucasians and Hispanics. In spite of being surrounded by the same majority culture standards as Hispanics, a different set of body image criteria and influences appears to exist for African-Americans. This may be due to African-American parents' and significant others' emphasis on body standards that are not assimilated from the

Caucasian culture and that encourage a favorable body-image development (Thomas, 1989; Rucker and Cash, 1992). Due to psychological discrepancies of these ethnic groups, however, more research needs to be conducted to clarify differences in body image standards of Hispanic and African-American urban adolescent females.

Contrary to much of the research on other high school and college female athletes, only minor differences were found between urban adolescent female athletes and non-athletes. The data failed to support athletes' greater drive for thinness and bulimia and non-athletes' greater body dissatisfaction. This discrepancy from previous research (Petrie, 1996) may be due to the fact that this study had a higher representation of athletes from non-lean sports (where weight or appearance are not important for success). The finding that urban athletes in contrast to non-athletes had higher expectations for performance (PERF) and a lower sense of isolation and reluctance to form interpersonal relationships (ID) may derive from the sense of competence athletes develop through sport involvement. Some researchers have argued that through sport involvement, eating problems may be avoided by encouraging girls to do things that give them a sense of competence in an area that does not rely on appearance (Dummer *et al.*, 1987; Sundgot-Borgen, 1994). Non-lean sports involvement potentially provides such an opportunity for females. In such sports, it appears body satisfaction is based not just on leanness, but the athlete's effectiveness in performance settings. For example, girls who are taller and bigger may enjoy a performance advantage in certain sports and positions (i.e. softball, basketball). It appears that non-lean sports which are more frequently offered in the urban high schools may serve as a protective mechanism for preventing attitudes and beliefs that lead to eating disorders.

Finally, the interaction effects may explain less about eating disorder behaviors, perhaps reflecting the sociological dynamics of the urban environment. The finding that African-American and Hispanic athletes and non-athletes scored higher on interpersonal distrust may be due to their more marginalized social status. Two-thirds of the students in the schools studied were Hispanic or African-American, and yet their representation in the United States is only approximately 10%. Their distrust with peers may be a function of varying cultural ethnic group differences and understandings (Grossman *et al.*, 1985).

Certain limitations of the current study should be noted. The sample was drawn from an urban population in one large metropolitan city in the United States, thus limiting the generalizability of the results to urban populations of similar ethnic background and geographic region. Also, acculturation was not examined with these ethnically diverse females. Last, only self-report measures were used and participants may have underreported behavioral and psychological disturbances, as well as weight (Brownell *et al.*, 1992).

This research extended previous work on socio-cultural theories and the etiology of eating disorders by studying not only Caucasian, but Hispanic and African-American female adolescent athletes and non-athletes. These findings suggest that Hispanic and Caucasian urban adolescent females are comparably more at-risk for eating disorders than African-American urban adolescent females. In addition, Hispanics are more similar to Caucasians than African-Americans on the behavioral measures of eating disorders. Limited research exists on Hispanics, the fastest growing population of youth in America today (National Center for Health Statistics, 1996). These data suggest the need to examine how standards of the predominant American Caucasian culture may impact Hispanic adolescent females. Controversy still exists regarding the impact of athletics on eating disorders, especially when ethnic differences are considered. This research suggests a need to study further urban adolescent populations, not only to corroborate these findings, but also to

further determine the nature of ethnic behavioral and psychological indices associated with eating disorders.

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