Disordered Eating Attitudes and Behaviors in Female College Dance Students: Comparison of Modern Dance and Ballet Dance Majors

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The current study examined the prevalence of disordered eating attitudes and behaviors among modern dance and classical ballet majors at three colleges and universities in the Northeast United States. Ninety female undergraduate dance majors completed the Eating Attitudes Test (EAT-26) and the Eating Disorder Inventory Perfectionism subscale (EDI-P). Ballet dance majors (N=41) reported significantly higher EAT-26 total, Bulimia and Food Preoccupation, and Oral Control scores than modern dance majors (N=49). A score of 20 or above was reported for 12.2% of participants in the modern dance group, compared with 24.4% in the ballet group, indicating a high level of risk for disordered eating. No significant differences were obtained between the two groups for EDI-P total, Self-Oriented Perfectionism, and Socially Prescribed Perfectionism scores. Female ballet dance majors may be at greater risk for eating pathology than modern dance majors. Perfectionistic tendencies may not increase the risk for disordered eating in undergraduate dance majors.

Female ballet dancers are highly vulnerable to the development of eating disorders (Abraham, 1996; Anshel, 2004; Ringham, Klump, Kaye, Stone, Libman, Stowe et al., 2006; Thomas, Keel, & Heatherton, 2005), and appear to be at higher risk than other female athletes (Macleod, 1998). They are generally 10-12% below ideal body weight and engage in dieting to maintain this weight (Kaufman, Warren, Dominguez, Wang, Heymsfield, & Pierson, 2002). As a special type of athlete, ballet dancers face some unique health risks related to conflicts among appearance, strength, endurance, and optimal health status (Krasnow, 2005). Competing goals between aesthetics and performance may incur an increased risk for disordered eating behaviors and cognitive disturbances in ballet dancers, along with psychosocial stressors specific to the dance profession (Krasnow, 2005).

The majority of studies on ballet dancers reveal symptoms of eating disorder psychopathology, including body dissatisfaction and preoccupation with food and weight (Montanari & Zietkiewicz, 2000; Ringham et al., 2006; Szumickler, Eisler, Gillies, & Hayward, 1985) and...
Ballet dancers are under constant pressure to maintain low body weight and they engage in behaviors to control their weight (Abraham, 1996). Vaisman, Voet, Akvis, & Sive-Ner (1996) demonstrated that the dance school atmosphere in classical ballet promotes striving for thinness to an abnormal extent. Modern dance, on the other hand, places more emphasis on individual interpretation of movement and improvisation (Clabaugh & Morling, 2004). Thus, modern dancers have much more freedom from the constraints, restrictions, and formalities of ballet (Clabaugh & Morling, 2004), both physically and artistically. While most studies indicate that disordered eating patterns are common among ballet dancers (Anshel, 2004; Montanari & Zietkeiwicz, 2000; Ringham et al., 2006; Thomas et al., 2005), little is known about this phenomenon in modern dancers.

In comparison to female college athletes, few studies have examined eating disorder issues in female college dance students. Findings indicate that ballet dance students have a greater preoccupation with weight, eating habits, and body image than do students in the general population (Anshel, 2004; Koutedakas & Jamurtas, 2004). Additional information about specific attitudes and behaviors that may increase the risk of eating disorders is needed, particularly in competitive dance programs. According to Neumarker, Bettle, Bettle, and Neumarker (1998), researchers should explore eating attitudes and behaviors in female ballet dancers with respect to specific life situations. Both cultural influences and an innate preoccupation with body image may create an increased vulnerability to disordered eating problems in ballet dancers (Neumarker et al., 1998). The effects of these sociocultural factors on modern dance students are unknown, as this population group has not been studied in the past.

Perfectionism has been reported to be a risk factor for eating disorders such as anorexia nervosa and bulimia nervosa, but not for binge eating disorder (Ashby, Kottman, & Schoen, 1998; Bastiani, Rao, Weltzin, & Kaye, 1995; Forbush, Heatherton, & Keel, 2007; Halmi, Tozzi, Thornton, Crow, Fichter, Kaplan et al., 2005). Research reveals a striking connection between perfectionism and susceptibility to eating disorder risk in athletes (Schwarz, Gairrett, Aruguete, & Gold, 2005). High levels of individual perfectionism may elevate the risk for eating disorders in dance students along with external pressure from the dance environment to maintain low body weight (Thomas et al., 2005). According to these authors, internal pressure for thinness is promoted in an atmosphere of external pressure for thinness. Self-imposed pressures may also increase the desire to apply to highly competitive dance programs in order to validate excessive perfectionistic standards (Thomas et al., 2005). Research by Anshel (2004) and Ringham, et al. (2006)
found higher scores on measures of perfectionism for dancers than non-dancers on the *Eating Disorder Inventory* (EDI; Garner, Olmsted, & Garfinkel, 1983). Although perfectionism may increase the likelihood of disordered eating, high achievement standards may also foster success in the competitive dance environment (Anshel, 2004). Consequently, both healthy and unhealthy aspects of perfectionism may influence the adaptation to pressures in the dance world.

The purpose of the present study was to investigate the relationship between dance specialization and the presence of disordered eating attitudes and behaviors in female college students. The study explored whether there are differences between modern dance majors and classical ballet majors related to diet concerns, bulimia and food preoccupation, oral control, self-oriented perfectionism and socially prescribed perfectionism. Research has supported the association between these variables and eating disorder risk in adolescents and athletes, but comparisons between modern dance and ballet dance majors have not been previously conducted. It was expected that modern dance majors would exhibit lower scores on the eating disorder and perfectionism scales than would classical ballet dance majors. In order to understand further the problem of eating disorders in the larger population of dancers, it was important to discern the differences between the scores on the EAT-26 and EDI-P in modern dancers and in ballet dancers. By determining the most significant risk factors in these groups, the prediction and identification of dancers vulnerable to eating disorder development can be facilitated.

**METHOD**

**Participants**

An *a priori* power analysis revealed that a total of 80 participants (*n* = 40 per group) would be needed to detect a medium effect (critical *F* (4, 75) = 2.49). Ninety female undergraduate dance students aged 18-25 years (*M* = 19.66, *SD* = 1.40) currently enrolled as dance majors in three colleges and universities from the Northeast United States participated in this study during February and March 2009. The participating institutions all offer undergraduate dance degree programs leading to either a Bachelor of Arts or a Bachelor of Fine Arts degree in dance. The sample consisted of: European American, *n* = 64 (71.1%); Hispanic, *n* = 7 (7.8%); African American, *n* = 8 (8.9%); Asian American, *n* = 3 (3.3%); American Indian, *n* = 1 (1.1%); Multiracial, *n* = 5 (5.6%); and Other, *n* = 2 (2.2%).
Materials

The survey was adapted from previous instruments used in a study of eating attitudes and behaviors in female college athletes (Schwarz et al., 2005), which was administered to groups of students during dance classes. Participants were asked to complete the 26-item version of the Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) and the Perfectionism subscale of the Eating Disorder Inventory (EDI-P; Garner, Olmsted, & Polivy, 1983). Participants also completed a demographic questionnaire assessing age, ethnicity, dance major enrollment status in a B.A. or B.F.A. program, and primary career goal of modern dance or ballet.

The EAT-26 is one of the most commonly used self-report instruments, measuring attitudes about food and dieting behaviors that are similar to clinically diagnosed eating disorders (Kirk, Singh, & Getz, 2001). The EAT-26 is particularly useful for assessing eating disorder risk in high school and college students, as well as in high-risk groups such as athletes, dancers, or models (Garner & Garfinkel, 1980). The validity of this instrument has also been examined in female college athletes (Doninger, Enders, & Burnett, 2005). The findings support a five-factor structure for use in athletic populations (Doninger et al., 2005). In the current sample, Cronbach’s alpha for the EAT-26 was .93.

The EDI is a 64-item, self-report instrument, which was developed for the assessment of psychological and behavioral traits in anorexia nervosa and bulimia nervosa (Garner et al., 1983). While this instrument contains eight subscales, including Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears (Garner et al., 1983), only Perfectionism was administered in the current study. The EDI-P is one of the most widely used measures for examining the relationship between perfectionism and eating disorders (Sherry, Hewitt, Besser, McGee, & Flett, 2004) and was constructed to measure both intrapersonal and interpersonal dimensions of trait perfectionism in eating disorders (Sherry et al., 2004). In previous studies, EDI-P measures suggested a link between perfectionism and more severe eating disorders in female college students (Peck & Lightsey, 2008), and that this trait is most closely associated with fasting and purging disorders (Forbush et al., 2007). Perfectionism can be defined as excessive personal expectations for superior achievement (Garner, Olmsted, & Polivy, 1983). Perfectionism has been also been defined as having five components: concern over mistakes, high personal standards, parental expectations and criticisms, self-doubt, and organization (Halmi et al., 2005; Stroeber & Otto, 2006). In this study, this construct consisted of both self-oriented perfectionism (SOP), which refers to perfection standards of oneself, and
socially prescribed perfectionism (SPP), which refers to the perception that others are demanding perfection of oneself (Sherry et al., 2004).

Confirmatory factor analysis demonstrates that the EDI-P is most accurately represented by a multidimensional factor structure consisting of six items: three measures of self-oriented perfectionism and three measures of socially prescribed perfectionism (Sherry et al., 2004). In the current sample, Cronbach’s alpha for the EDI-P was .85. The format of the EDI is analogous to that of the EAT, with ratings of always, usually, often, sometimes, rarely, or never as forced choices for each of the items.

Procedure
Participants were recruited directly from dance classes at each of three institutions. The study packets containing a cover letter, an informed consent form, and the study questionnaires were available for pick-up by prospective participants. The researcher explained the nature and purpose of the study in a group format prior to class, and the written version of this script was included on the cover sheet in the study packets. The dance students were given the option to fill out the questionnaire packets immediately or to mail them directly to the researcher in a pre-addressed, stamped envelope. Participants were offered entry into a raffle for a $50 dance shop gift certificate.

RESULTS
A total of 136 completed surveys were collected, but not all of the dance students met the established study criteria. One participant wrote in “jazz” rather than selecting either modern dance or ballet as a primary career goal. One participant was a Master’s level rather than a Bachelor’s level dance student. Additionally, 44 of the participants were not currently enrolled as dance majors, having instead undeclared majors. Those participants who did not fit the recruitment criteria were omitted from the study. The resulting sample was comprised of a total of 90 female students currently enrolled as undergraduate dance majors, ranging in age from 18 to 25. From this sample, 49 participants (54.4%) indicated that modern dance was a career goal and 41 participants (45.6%) indicated that they were pursuing ballet as a dance goal.

Prior to any analyses, the data were examined for any missing or improper values and none were found. In terms of assessing high levels of risk for disordered eating attitudes and behavior, the guidelines pertaining to scores at or above 20 were followed for the EAT-26. A score of 20 or above was reported by 16 (17.8%) of the 90 participants. For the modern dance group, 6 (12.2%) of participants reported a score of 20 or above on the EAT-26. By comparison, 10 participants (24.4%) in the ballet group reported a score of 20 or above. Since the EDI
contains eight subscales which are generally scored as a composite, there were no established scoring criteria for evaluating levels of perfectionism for the EDI-P subscale alone. A score of 14 or above was designated as a marker indicating high levels of perfectionism, as this was representative of at least one standard deviation above the mean in this sample. For the total sample of 90 participants, 20 (22.2%) reported a total score of 14 or higher on the Perfectionism subscale. For the ballet group, 11 (26.8%) of the 41 participants reported scores of 14 or above, whereas nine (18.4%) of the 49 modern dance participants reported scores at or above 14.

Multivariate analysis of variance was conducted to determine whether modern dancers differed from ballet dancers in terms of disordered eating attitudes and behaviors. Box’s test for equality of covariance revealed that the assumption of homogeneity of covariance was violated. As a result, Pillai’s Trace was used as the multivariate statistic, as this is the most robust in the face of violations of assumptions. Multivariate analyses indicated significant differences between the two groups of students (modern dance vs. classical ballet) on the multivariate combination of the EAT-26 subscales, Pillai’s Trace = .09, F(3, 86) = 2.92, p < .05, partial η² = .09. Univariate analyses, however, revealed significant differences between the groups on Bulimia and Food Preoccupation, F(1, 88) = 4.10, p < .05, partial η² = .05, and Oral Control, F(1, 88) = 6.56, p < .05, partial η² = .07, but not on Dieting, F(1, 88) = 1.26, p > .05, partial η² = .01. Specifically, classical ballet dancers had significantly higher means on two of the three EAT-26 subscales compared to modern dancers, providing partial support for this hypothesis. Means and standard deviations are reported in Table 1.

| TABLE 1 Disordered Eating Attitudes and Behaviors by Dance Goal |
|-----------------------------|----------------|----------------|----------------|----------------|
| EAT-26 Subscale | Dance Goal | M | SD | F | p | partial η² |
| Dieting | MD | 6.37 | 6.21 | 1.26 | .26 | .014 |
| | CB | 8.46 | 11.17 | | | |
| Bulimia | MD | 1.33 | 2.26 | 4.10 | .046 | .045 |
| | CB | 2.61 | 3.69 | | | |
| Oral Control | MD | 0.78 | 1.05 | 6.56 | .012 | .069 |
| | CB | 1.76 | 2.43 | | | |

**Comparison of Trait Perfectionism Between Groups**

Multivariate analysis of variance was conducted to investigate whether modern dance majors differed from classical ballet dance majors in terms of their levels of perfectionism. Box’s test for equality of covariance revealed that the assumption of homogeneity of covariance was not violated. Results indicated no significant differences between
moderndance and classical ballet dance majors in terms of their attitudes regarding perfectionism, Pillai’s Trace = .01, $F(2, 87) = 0.31, p > .05$, partial $\eta^2 = .01$. Thus, the results did not support this hypothesis. Means and standard deviations are reported in Table 2.

TABLE 2 Perfectionism by Dance Goal

<table>
<thead>
<tr>
<th>EDI-P Subscale</th>
<th>Goal</th>
<th>M</th>
<th>SD</th>
<th>F</th>
<th>$p$</th>
<th>Partial $\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Oriented Perfectionism</td>
<td>MD</td>
<td>4.73</td>
<td>2.44</td>
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<td></td>
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<tr>
<td></td>
<td>CB</td>
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<td>2.90</td>
<td>.47</td>
<td>.49</td>
<td>.005</td>
</tr>
<tr>
<td>Socially Prescribed Perfectionism</td>
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<td>2.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CB</td>
<td>4.20</td>
<td>3.10</td>
<td>.59</td>
<td>.45</td>
<td>.007</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The current study investigated whether there are statistically significant differences between modern dance and ballet dance majors regarding disordered eating attitudes and behaviors. This study was unique in that comparisons were made between two different dance forms rather than comparisons between dancers and normative samples. Therefore, the current findings extend research endeavors by including modern dancers, who have not been studied previously. Results suggested that ballet students might perceive more pressure to achieve and maintain low body weight than modern dance students, as they scored somewhat higher than modern dance majors on the Bulimia/Food Preoccupation and Oral Control subscales of the EAT-26. The study findings were consistent with previous studies showing that pressures and expectations in certain sports might increase body dissatisfaction and eating disturbances in female athletes (Berry & Howe, 2000; Crissey & Honea, 2006; Kerr, Berman, & DeSouza, 2006; Schwarz et al., 2005; Thompson & Sherman, 1999). Since eating disorder risk may be even greater in sports that emphasize a thin body type (Schwarz et al., 2005; Thompson & Sherman, 1999; Torstveit & Sungot-Borgen, 2005), dancers may be particularly vulnerable to disordered eating attitudes and behaviors (Anshel, 2004; Thomas et al., 2005).

In the present study, no statistically significant differences were found between ballet dance majors and modern dance majors for the Diet subscale on the EAT-26. This raises the possibility that these scores reflect more typical diet concerns in college students. With respect to the individual scores on the EAT-26, the number of participants scoring 20 or above was somewhat higher for the ballet group than the modern dance group. Nonetheless, the majority of participants did not report significant eating-related issues according to the scoring criteria.
A number of studies indicate that perfectionism may be connected to eating disorder development in both clinical and non-clinical samples (Macedo et al., 2007; Ruggiero, Levi, Ciuna, & Sassaroli, 2003; Schwarz et al., 2005; Sherry et al., 2004). In the current study, no statistically significant differences were found between modern dance and ballet dance majors on the two Perfectionism subscales of the EDI-P. This was unexpected, particularly in light of differences found for other eating disorder risk factors on the EAT-26. One explanation may be that college dance majors have perfectionist tendencies and high self-expectations, regardless of their dance specialization. The decision to enroll in competitive college dance programs may have been associated with perfectionism, similar to national and local ballet students in the study by Thomas et al. (2005). Alternatively, differences between the two groups may not have been detected due to the restricted sample of dance students.

The self-selected, relatively homogeneous sample in this study may have influenced the findings for some of the variables. The results may not be representative of the entire population of dance students in other colleges and universities across the country, or those in professional dance schools or companies. Further, some students with eating issues may have declined participation due to the subject matter of the study, or concerns about peers, dance instructors, or the researcher finding out about their eating problems even though anonymity was assured. The exclusive reliance on self-report data constitutes another potential limitation. Due to the sensitive nature of the questions, the accuracy and honesty of the responses may have been limited by participants’ aims at positive impression management.

The current study sheds new light on disordered eating attitudes and behaviors in female undergraduate dance majors. Although the present study indicates that ballet dance majors are somewhat more susceptible to the development of eating disorders than modern dance majors, information on this population remains quite scarce. Data on eating disorder risk for other forms of dance are also lacking, warranting further examination in these contexts. Longitudinal studies with larger sample sizes from a variety of geographic locations may help discern the most prevalent risk factors in college dance students. For the Perfectionism variable in particular, the use of other, well-validated instruments to assess this trait may be necessary for a more in-depth exploration.

It also would be beneficial to compare female college dance majors with control groups of female college students who are not dance majors. The adjustment to the college environment may contribute to the onset or continuance of disordered eating manifestations in many students (Bradford & Petrie, 2008; Hoerr, Bokram, Lago, Bivins, & Keast, 2002).
However, studies report that the risk of eating disorders is even greater for college athletes than for college students in the general population (Benson, Allemann, Theintz, & Howald, 1990; Johnson, Powers, & Dick, 1999; Muscat & Long, 2008). Johnson et al. (1999) suggest that drive for thinness in female athletes arises from beliefs about both performance- and appearance-related thinness. Sport-specific factors, such as intrinsic pressures to be thin, demands of training, and personality traits, also may hasten the development of eating disorders in athletes (Beals, 2004).

Similarly, college dance majors may be exposed to additional internal and external pressures related to thinness and body image that non-dance majors do not experience. Research indicates that adolescent ballet dancers are at much higher risk for eating disorders than are non-dancing peers in the general population (Anshel, 2004; Thomas et al., 2005). Dancers face unique health risks related to conflicts between appearance, strength, endurance, and optimal health status (Krasnow, 2005). Since female dance students and professional dancers may consume 70-80% less than the recommended daily allowance of energy intake (Koutedakis & Jamurtas, 2004), potential health concerns are evident. Comparative studies of dancers and non-dancers in the college setting are necessary to identify the individual risk factors that promote disordered eating, particularly in the competitive dance atmosphere.

Previous studies have shown that eating disorder prevention programs are largely unsuccessful, so one approach would be to concentrate on the promotion of healthy lifestyles and self-image (Lindner, Hughes, & Fahy, 2008). School-based programs could incorporate realistic ways to improve body image, self-esteem, eating habits, stress management, and strategies to avoid injury. Educational endeavors also could be implemented for administrative staff, dance instructors, and parents, encompassing both the psychological and medical components of eating disorders.

Cognitions, attitudes, and behaviors related to eating disorder risk were demonstrated in a minority of dance majors in this sample, with ballet dance majors being slightly more likely than modern dance majors to embody such attitudes and behaviors. These findings were consistent with previous studies showing that striving to conform to strict aesthetic standards for professional success may heighten vulnerability to eating disturbances in ballet dancers (Abraham, 1996; Anshel, 2004; Koutedakis & Jamurtas, 2004; Krasnow, 2005). In the current study, students pursuing career goals in classical ballet appeared to engage in dieting and weight control practices to a somewhat greater extent than students focusing on careers in modern dance. Results suggest comparable levels of perfectionism in both groups of dance majors. This finding is congruent with perfectionistic attitudes of dancers in
competitive environments observed in prior research studies (Anshel, 2004; Thomas et al., 2005).
From a research perspective, the perpetual stigma and air of secrecy attached to eating disorders makes this a challenging area to investigate. Longstanding covertness, denial, and resistance from the insulated dance community (Montanari & Zietkiewicz, 2000) add to the difficulty of uncovering critical information about eating disorder etiology and risk factors. Hopefully, future studies will focus on the health and well-being of dancers, allowing the beauty of this art form to emanate and thrive.

REFERENCES


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