



The effects of social relationships and acceptance on disturbed eating attitudes in elite adolescent female athletes: The mediating role of physical self-perceptions

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**The effects of Social Relationships and Acceptance on Disturbed Eating
Attitudes in Elite Adolescent Female Athletes: the Mediating Role of
Physical Self-perceptions**

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Running head: FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETES

The effects of Social Relationships and Acceptance on Disturbed Eating Attitudes in Elite Adolescent Female Athletes: the Mediating Role of Physical Self-perceptions

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Running head: FACTORS OF DISTURBED EATING ATTITUDES IN ELITE

ATHLETES

The effects of Social Relationships and Acceptance on Disturbed Eating Attitudes
in Elite Adolescent Female Athletes: the Mediating Role of Physical Self-perceptions

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE

Abstract

Objective: The purpose of the study was to examine the effects of social relationships (i.e., coach, friends, and parents) and acceptance (i.e., peers) on Disturbed Eating Attitudes (DEA) in elite adolescent female athletes, through the mediating role of physical self-perception (i.e., perceived physical appearance and perceived physical ability).

Method: The sample comprised 227 elite adolescent female athletes ($M_{age}=15.75$; $SD_{age}=3.00$) engaged in various aesthetic sports. The data was analyzed using structural equation modeling method and mediation analysis.

Results: They showed that peer acceptance and quality of parent-athlete relationships have a significant negative influence on DEA in elite adolescent female athletes. Moreover, the quality of relationship with the coach and sport friend has a significant positive influence on DEA in female athletes through the mediating role of perceived physical ability.

Conclusion: The quality of relationship with parents and peer acceptance would be a protective factor regarding DEA, whereas the quality of relationships with coach and friend in sport would be risk factors for the development of DEA in adolescent female athletes through the mediating role of perceived physical ability. Recommendations for future use of, and research on, activities are outlined.

Keywords: structural equation modeling, aesthetic sports, significant others, friendship, physical self-perceptions.

The effects of Social Relationships and Acceptance on Disturbed Eating
Attitudes in Elite Adolescent Female Athletes: the Mediating Role of Physical Self-
perceptions

Many theoretical frameworks have been developed to explain the personal and contextual factors that govern eating disorders.⁵ In the late 1990s, Thompson, Coover and Stormer⁶ suggested a tripartite theoretical model on the social and psychological factors that influence DEA in community adolescent girls. In this model, peers, parents, and media are thought to have: (i) a direct effect on the specific psychological variable of body image, and (ii) an indirect effect on body image through two mediational processes: internalization of societal standards of appearance and excessive appearance comparison. Finally, in this model body image is also hypothesized to have a direct effect on eating disturbances. Recently, this model has received strong support within adolescent female samples⁷⁻¹⁰. Furthermore, other authors⁷ simultaneously examined the influence of peer acceptance and friendship quality on eating and body image disturbances. Their findings indicated that friendship variables contributed significantly to the prediction of body image concern, body dissatisfaction and restrained eating.

International Journal of Eating Disorders

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 2

perception of athletes has been undertaken. Because the Shroff and Thompson⁹ tripartite model was established in daily living situations, it is not necessarily applicable to another context such as elite sport. Firstly, athlete social environment is different from adolescent social context in daily life. Several studies demonstrated that the coach was often the key person in the lives of athletes, and that he/she could be a risk factor for the development of eating disorders because of strong pressures to keep body weight low¹¹ or because of the impact of his/her coaching style.¹² Moreover, Duda's¹³ study revealed that high importance placed on performance excellence and pressure regarding body weight within the family have an influence on adolescent physical self-perception. Peers also play a unique and important role in shaping the quality and meaning of athletes' sport experience.¹⁴ Specifically, peer acceptance and friendship quality have been found to predict perceived competence.¹⁵ However no research to date has simultaneously examined the influence of peer acceptance and friendship quality on athlete eating disorders.

Secondly, athletes are under high pressure from the sport achievement context itself. They have to conform to an ideal body weight in order to achieve an aesthetically pleasing appearance and a performance excellence, both of which may be essential to success.^{11, 12, 16} In sport contexts, physical self-perception thus not only includes perceived physical appearance but also perceived physical ability.¹⁵ This latter variable is recognized as being predictive of many adaptive patterns including positive affects, persistence and performance.¹¹ However the existing literature¹¹ has essentially focused on self-perception measures such as perceived physical appearance, body image and body satisfaction, and has not yet explored the relationship between perceived physical ability and DEA. Finally, one can assume that the influence of media on eating disorders is different for athletes and non-athletes. While the role of media images and

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 3

messages in⁷ socio-cultural internalization of appearance has been reported in adolescent girls, sport hero influence may be more salient in adolescent athletes.¹⁸

In summary, the particularity of the athlete's social environment (e.g., the salience of the coach's influence) and engagement in achievement contexts for the purpose of demonstrating competence (e.g., the salience of perceived physical ability) support the value of conducting context-specific examination of the psychosocial factors of eating disorders among athletes. The aim of this study was thus to examine the influence of social relationship quality (i.e., with friends, parents and coach) and acceptance (by peers) on the development of DEA through the mediating role of physical self-perception (i.e., perceived physical appearance and perceived physical ability). Based on the model of Shroff and Thompson⁹ and the aforementioned sport psychology literature, a hypothetical model was constructed to assess the power of interpersonal relationship quality (i.e., coach, friends, peers and parents) to predict DEA, via perceptions of physical appearance and physical ability. The first hypothesis supposed that, within the context of elite sport, the quality of the relationships with coach, friend and parents and peer acceptance would be positively linked with physical self-perception.¹³ The second hypothesis expected that physical self-perception (i.e., physical appearance and physical ability) would be negatively linked to DEA.¹¹ Finally, the third hypothesis also expected to observe direct and indirect (i.e., through physical self perceptions) negative influences of the different measures of social relationship on DEA.⁸

Method

Participants and Procedure

The sample was composed of 227 voluntary French adolescents ($M_{\text{age}} = 15.75$; $SD = 3.00$) recruited from elite sport structures and which exclusively practiced an aesthetic sport. This population of athletes engaged in aesthetic sports was recruited for

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 4

their particular vulnerability to the development of DEA^{12, 11} The sports taken into consideration were dance ($N_D = 22$), artistic gymnastics ($N_{AG} = 49$), rhythmic gymnastics ($N_{RG} = 47$), figure-skating ($N_{FS} = 48$), and synchronized swimming ($N_{SS} = 61$). All of the participants had an average of six to ten years of either national or international experience ($M = 8.78$; $SD = 1.12$) at senior or junior level. They practiced between 12 to 18 hours of physical training per week ($M = 13.86$; $SD = 2.85$).

Consent was obtained from national federations, departmental leagues and committees, coaches, athletes, and the parents of minors prior to performing the study. The questionnaires were completed either at the beginning or the end of training sessions, depending on the athlete's availability. Questionnaire completion was carried out under standardized conditions (i.e., isolation, paper, pencil, and prohibition to communicate) and did not exceed more than 20 minutes.

Measures

Sport friendship quality. Sport friendship quality was measured using the French version of the Weiss and Smith¹⁹ *Sport Friendship Quality Scale* (SFQS)²⁰ This scale includes 22 items assessing five positive and one negative relationship dimensions. Participants answered each item using a six-point Likert-type scale ranging from “not at all true” (1) to “really true” (6). In accordance with previous studies,^{15, 21} a global index of positive friendship quality was obtained by averaging the responses to items from the five positive dimensions. This scale provided an acceptable internal consistency coefficient ($\alpha = .84$).

Coach relationship quality. The quality of the athlete's relationship with the coach was assessed using a modified version of the SFQS French version. In this adaptation, the word “friend” was changed to “coach”. A similar adaptation was made by Ullrich-French and Smith¹⁵ for other social agents such as parents. A Confirmatory Factor Analysis (CFA) provided support for a six-factor model^[1]. Responses to items

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 5

from positive dimensions were averaged to produce the coach relationship quality score.

This global scale exhibited good internal consistency ($\alpha = .92$).

Disturbed eating attitudes. Eating attitudes and behaviors linked to DEA were measured with the French version of the Garner, Olmsted, Bohr and Garfinkel⁴ EAT.²² This 26-item self-report inventory comprises three subscales: dieting, bulimia and oral control. For the purpose of this study and consistently with previous studies,¹ only a global index measuring disturbed attitudes was used. This global scale exhibited satisfactory internal consistency ($\alpha = .87$).

Several subscales from the French version of the Marsh (1990) *Self-Description Questionnaire* (SDQ-II)^{17, 23} were used: (a) *perceived peer acceptance* was measured through a 10-item subscale which exhibited a satisfactory internal consistency coefficient ($\alpha = .84$); (b) *Parent relationship quality* was measured through an 8-item subscale and presented good internal consistency ($\alpha = .82$); (c) *Perceived physical ability* was adapted to each sport. This subscale was composed of eight items and exhibited good internal consistency ($\alpha = .87$); (d) *Perceived physical appearance* was measured through an 8-item subscale and showed satisfactory internal consistency ($\alpha = .78$).

Data Analyses

The construct validity of the model was examined through CFA. Given the number of participants and to maintain an acceptable degree of freedom, the number of indicators per latent variable was reduced. To this end and according to Bagozzi & Heatherton²⁴ recommendations, several item parcels were developed using random splitting of averaged items. The CFA was thus based on 27 observed variables and seven latent factors. Analyses were performed using bootstrapped maximum likelihood estimation with the AMOS 7.0 program²⁵ because of the significant multivariate non-normality of the data (normalized skewness and kurtosis: 91.21 and 17.55). Assessment

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 6

of model fit was based on multiple indicators recommended by the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI Byrne²⁶, Hu and Bentler²⁷, and Vandenberg and Lance²⁸: chi square (χ^2), the Root Mean Square Error of Approximation (RMSEA), and RMSEA 90 Confidence Interval (RMSEA 90% CI). Scale reliability (ρ) was computed from the model's standardized parameter estimates, using the formula: $\rho = (\sum \lambda_i)^2 / ([\sum \lambda_i]^2 + \sum \delta_{ii})$, where λ_i are the factor loadings and δ_{ii} the error variances.²⁹

The hypothesis model assessing the power of interpersonal relationship quality (i.e., coach, friends, peers and parents) to predict DEA via perceptions of physical appearance and physical ability, was examined through a series of Structural Equation Modeling (SEM). The mediation effects were tested using the four steps suggested by Baron and Kenny²⁹. According to these authors, mediation exists if the influence of the independent variables on the dependent variables is significant via the mediators. If the direct effect imposed at the second step was different from zero, a complete mediation was considered.³⁰ Finally, the individual parameters of the model such as the error measurement; inter-item correlations and modifications index were examined to evaluate the conformity of the model to the data.

Results

Preliminary Analyses

Multivariate Analyses of Variance (MANOVAs) were performed on all observed variables, in order to examine the differences due to adolescent sport type. The first analysis of the variables relating to social relationships indicated a significant main effect of sport type (Wilks' $\lambda = .70$, $F_{(16, 685)} = 5.22$, $p < .0001$, $\eta^2 = .30$). Univariate analyses of Variance (ANOVA) and subsequent post-hoc tests revealed that dancers reported significantly lower scores compared with the other participants on: (a) sport friendship quality ($M_D = 4.90$; $M_{RG} = 5.20$; $M_{AG} = 5.23$) and (b) coach relationship quality ($M_D = 3.30$; $M_{RG} = 3.97$; $M_{AG} = 4.21$; $M_{RG} = 5.20$; $M_{FS} = 4.03$). A second

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 7

MANOVA was performed on the other variables (i.e., perceived physical appearance, perceived sport ability and disturbed eating attitudes). This analysis yielded a main sport effect (Wilks $\lambda = .85$, $F_{(12, 596)} = 2.99$, $p \leq .001$; $\eta^2 = .15$). Univariate ANOVA and subsequent post-hoc tests showed that dancers reported significantly lower scores of perceived physical ability compared with the other participants ($M_D = 4.85$; $M_{GR} = 5.30$; $M_{NA} = 5.35$) and higher scores of DEA ($M_D = 2.90$; $M_{GR} = 2.46$; $M_{NA} = 2.39$). The other variables did not differ according to sport type. In order to ensure a homogeneous population, the 22 dancers were thus excluded from all subsequent analyses.

Construct validity analysis of the tested model. The CFA illustrated in Figure 1, indicated that the hypothetical model was acceptable ($\chi^2 = 342.87$; $N = 205$; $ddl = 303$, $p < .01$; CFI = .92; TLI = .91; RMSEA = .068; RMSEA 90% CI = .060-.077). Moreover, Figure 1 exhibited that: (a) all loadings and uniquenesses were significant; (b) composite scale reliability was acceptable in most cases; and (c) most of the latent correlation scores were significant.

Partial mediation model. The partial mediation model, which established relationships between the independent variables (i.e., social relationship quality) and the dependent variable (i.e., DEA) both directly and via the mediators (i.e., physical self-perceptions), was retained because it was the most complete and parsimonious model concerning the causal paths explored in the study. This model provided acceptable goodness-of-fit indices ($\chi^2 = 342.77$; $N = 205$; $ddl = 303$, $p < .01$; CFI = .92; TLI = .91; RMSEA = .068; RMSEA 90% CI = .060-.077) and exhibited: (a) a negative influence of parent relationship quality ($\beta = -.18$, $p < .05$) and perceived peer acceptance ($\beta = -.15$, $p < .05$) on DEA; (b) a positive influence of both sport friendship quality ($\beta = .24$, $p < .05$) and coach relationship quality ($\beta = .31$, $p < .05$) on perceived physical ability and (c) a positive influence of physical self ability on DEA ($\beta = .27$, $p < .05$). The partial

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 8

mediation model provided in Figure 2 also indicated that the perceived physical appearance was not significantly related to the other studied variable. This hypothetical model explained 84.7% of the variance in perceived physical ability, 68.8% of the variance in perceived physical appearance and 66% of the variance in DEA. Other models were also examined according to Barron and Kenny²⁹ procedures: (a) direct effects of the independent variables on the dependent variable; (b) direct effects of the mediators on the independent variables; and (c) complete mediation. However, although these models exhibited acceptable goodness-of-fit indices in all cases, they were less adapted to the data than the partial mediational model ^[2].

Discussion

The present study examined the influence of social relationship (i.e., with friend, parents and coach) and acceptance (i.e., with peers) on the development of DEA in elite adolescent female athletes in sports with a strong aesthetic component, through the mediating role of physical self-perception (i.e., perceived physical appearance and perceived physical ability). Results from this study revealed that a high quality of parent-child relationship plays a protecting role regarding DEA in elite adolescent female athletes. Moreover, in agreement with our hypothesis, peer acceptance negatively influenced DEA. These results suggest thus that the data regarding the general population of adolescents can be generalized to adolescent females in high-level sport.⁸ They also constitute an original contribution to the literature, because the role of peer acceptance has never yet been reported in elite adolescent female athletes.

In the existing sport psychology literature the coach's influence on eating disorders has been exclusively considered in terms of perceived motivational climate and coaching style.^{12, 11} The present study found that the quality of the coach-athlete relationship was not a direct predictor of DEA. The quality of this relationship, such as sport friendship quality, positively and significantly influenced DEA through perceived

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 9

1 physical ability. Consistent with Ullrich-French and Smith¹⁵ findings, perceptions of
2 relationship with the coach and of friendship quality positively influenced perceived
3 physical ability. Perceived physical ability, on the other hand, appeared to be positively
4 associated with DEA. This relationship differed from the data of earlier studies showing
5 that perceived physical ability was generally associated with patterns of adaptive
6 accomplishment.¹⁵ It differed also from the findings that positive body image and body
7 satisfaction were protective factors regarding DEA, in both daily living situations and
8 sport setting.¹ However, no significant relationship between perceived physical
9 appearance and DEA was observed in the present study, in contrast to the findings of
10 earlier works.³¹ These discrepancies indicate the need to differentiate the variables of
11 perceived physical appearance, body image, and body satisfaction and the concept of
12 perceived physical ability in sport. It could be hypothesized that the primacy of
13 excellence in performance in high-level sport and thus the purpose of demonstrating
14 competence in such achievement contexts may account for these differences.

15 Several limitations of the current series of studies must be taken into account
16 when interpreting these findings. First, the data was mostly self-reported and thus may
17 have been biased by social desirability. Then, this study was cross-sectional, which
18 limits the stability across time of the relationships between variables. Moreover, this
19 study was only performed with a girl sub sample, whose constituents practiced aesthetic
20 sport at elite level, and thus the results observed can't be generalized to a boy sub
21 sample or to other athletes. Finally, the sporting hero influence was not considered in
22 our tested model. These results suggest several directions for future research. To better
23 understand the paradoxical status of interpersonal relationship quality in high-level
24 sport, other variables from the model of Shroff and Thompson⁹, such as internalized
25 norms and mechanisms of social comparison, could be examined. Moreover, along with
26 the media influence in the original model of Shroff and Thompson, it could be of

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 10

1 interest to examine the influence of the sporting hero. This would require developing
2 and validating an appropriate measure to assess athlete perceptions regarding the body
3 ideal of sporting heroes. Furthermore the Thompson, Coover, & Storer⁵ model
4 indicated the interest in also examining the reciprocal relationships between DEA and
5 self-perception, and between DEA and social relationship variables.

6 In conclusion, the present study showed that the quality of the parent-athlete
7 relationship and peer acceptance would be protective factors regarding DEA in elite
8 adolescent female athletes. It also revealed that both the quality of the coach-athlete and
9 sport friendship relationships positively and significantly influenced DEA through the
10 mediating role of perceived physical ability. These paradoxical findings suggest that
11 both of these social relationship variables may be indirect risk factors for the
12 development of DEA in elite female adolescent athletes. The relationship between
13 social influences and DEA in high achievement contexts such as elite aesthetic sports,
14 and the specific role of physical self-perception should thus merit further attention in
15 future research. A better understanding of these mechanisms would clearly help to
16 refine the current strategies to prevent DEA in elite adolescent female athletes and
17 would benefit training programs for sport and health psychology (i.e., mental
18 preparation techniques and health maintenance).

FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 11

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FACTORS OF DISTURBED EATING ATTITUDES IN ELITE ATHLETE 15

Footnotes

[1, 2] Complete results from these analyses are available upon request from the first author.

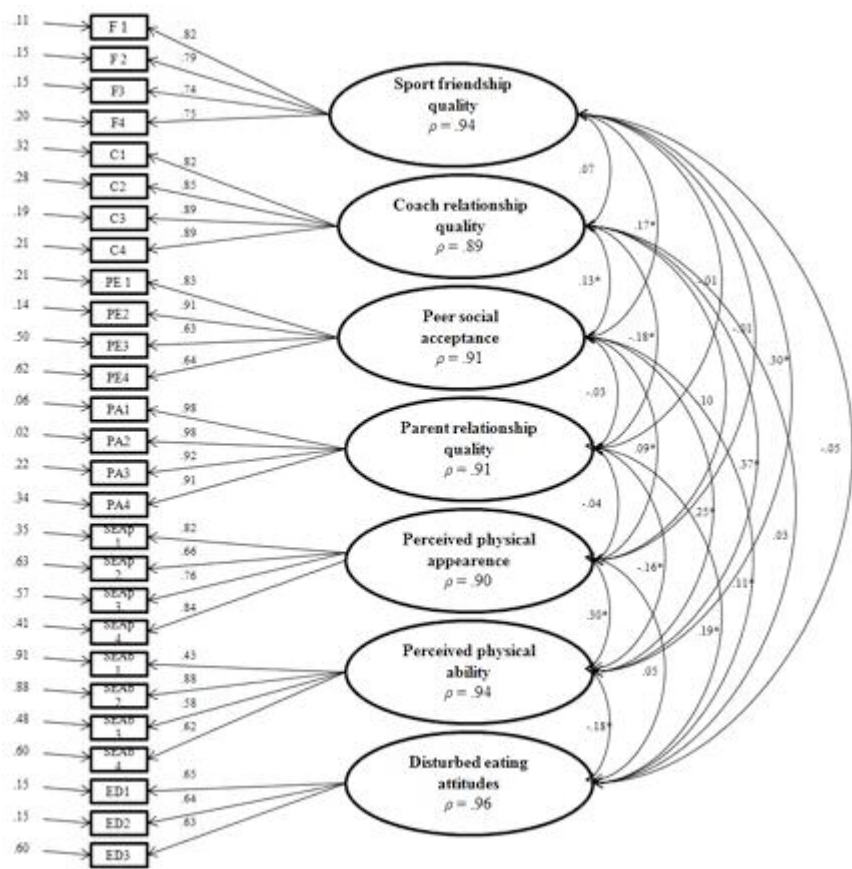
FIGURES

Figure 1. Confirmatory factor analysis model: Standardized loadings, uniquenesses, composite reliability coefficients and interlatent correlations of the tested model.

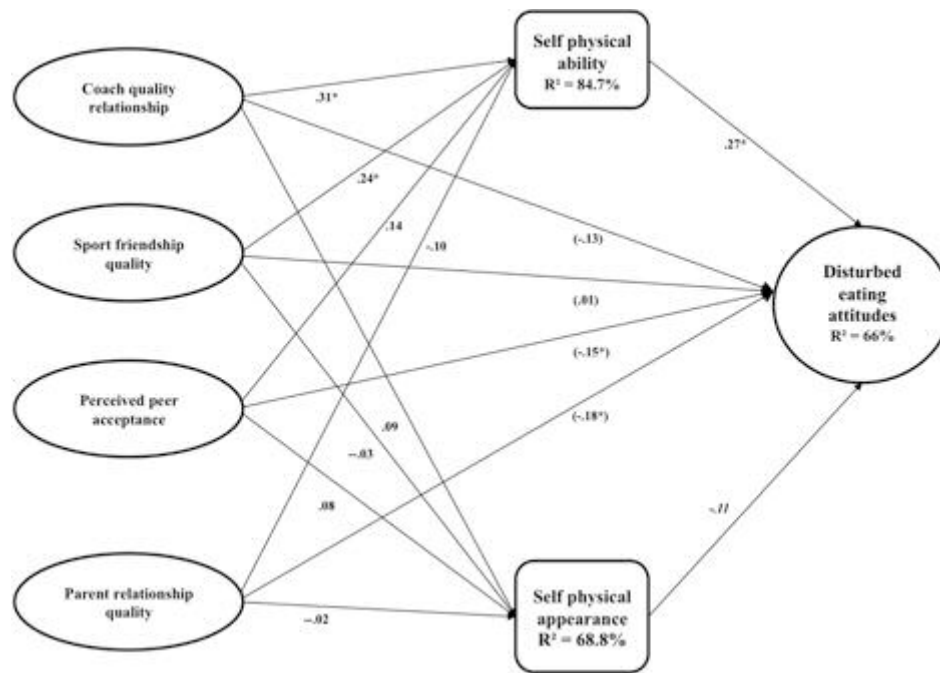
Notes: The standardized coefficients of estimation and the uniquenesses were all significant at $p < .01$. ρ : composite scale reliability; *: significant scores of correlation at $p < .05$.

Figure 2. Structural equation modeling of the psychosocial, which explained the disturbed eating attitudes in elite female athletes.

Notes: R^2 : percentage of explained variance; *: significant standardized estimate coefficients at $p < .05$. Standardized direct effect estimate coefficients are in parentheses.



150x152mm (72 x 72 DPI)



166x117mm (72 x 72 DPI)