

## BODY IMAGE DISTORTION, PERFECTIONISM AND EATING DISORDER SYMPTOMS IN RISK GROUP OF FEMALE BALLET DANCERS AND MODELS AND IN CONTROL GROUP OF FEMALE STUDENTS

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### SUMMARY

**Background:** The aim of this research was to examine differences among two groups of girls, models and ballerinas (with risk factors – experimental group) and young students (control group), in body image perception, body mass index, neurotic perfectionism, body – image distortion and symptoms of eating disorders.

**Subjects and methods:** The research was conducted with 91 participants divided in two groups, control group – 55 students at University of Sarajevo and experimental group – 13 professional ballerinas, 23 professional models. During this research work we used several measuring instruments: Body mass index; Body Mass Index – Silhouette Matching Test; Neurotic Perfectionism Questioner; Eating Disorders Inventory.

**Results:** In this study statistically significant differences occur between these two groups of girls which are related to body – image perception and objective position on the body mass index chart. All 91 participants saw themselves as obese. Statistically significant differences occur in body – image distortion and symptoms of eating disorders in the experimental group, they have high scores on body – image distortion, on eating disorders inventory and neurotic perfectionism symptoms.

**Conclusion:** Based on the results in this study, we may conclude that there are groups of people who have risk factors for developing some kind of eating disorder, so it would be desirable to create a preventive intervention for young ballerinas and models, but also for those people who coach them, trainers, instructors and managers. For other population groups with risky behavior such as young children, a prevention plan and modifications of cultural influences on people's opinion of body image are extremely important.

**Key words:** neurotic perfectionism - body – image distortion - eating disorders – models - ballet dancers - students

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### INTRODUCTION

The literature describes body image as a multidimensional construct. Slade (Banfield & McCabe 2002) defined body image as a mental representation of the shape, size and form of the body, which is under the influence of various historical, cultural and social, individual and biological factors. The perceptive component of the body image is defined as an estimate of the size, shape and weight of one's own body in relation to the actual proportions. The subjective component of the body image refers to the person's satisfaction/dissatisfaction with his/her size or

shape of their own bodies. Garner and Garfinkel (Pokrajac-Bulian 1998) considered that body image disorders can become manifest in two different ways: as a body image distortion, and as body dissatisfaction, while Rosen (1996) believes that there should also be included a third, behavioral, component. Body image distortion refers to the perceptive disturbance due to which that person is not able to properly assess the appearance (size) of his or her body. Body dissatisfaction refers to the attitude or feelings and thoughts about one's own body. Self-schemes, which make up the self-concept are not the same. Some are more important and more developed than

others, some are positive and some negative, some are related to present experiences and some to past or future experiences. Some self-schemes are key or central to a person, while others are more peripheral (Markus & Wurf 1987). Central self-schemes are the most developed and have the strongest influence on information processing and on behavior. It is considered that sociocultural influences encourage the development of body image disorders and eating disorders. Sociologists have described two processes through which socialization agents can affect attitudes and behavior: social reinforcement and modeling (Fairburn & Brownell 2002). While considering body image eating disorders, social reinforcement refers to the comments or actions of others which serve as support or maintenance of the ideal of thinness for women. Modeling refers to the process through which persons directly endorse/imitate behavior that they observe (Fairburn & Brownell 2002). There is no doubt that current social standards of feminine beauty overly emphasize the desirability of thinness, as well as the level of thinness that is impossible to accomplish in a healthy manner for the most of women. In the literature much is being written about overcoming the concerns regarding body image in female students. In a longitudinal study with students and colleagues, Heatherton (2000), states that 82% of students report that they would like to lose weight, although there are very few (1.4%) who were objectively overweight. The basic features of anorexia nervosa and bulimia nervosa is a perception disturbance of the perception of one's own body image and body weight. Earlier sociocultural research, which are done on the so-called high risk occupations that emphasize the importance of body weight, managed to get impressive data. The prevalence of some forms of eating disorders is high, and there is increasing concern and preoccupation with thin body figure. Ballet dancers, female athletes and models are a group at high risk for the development of eating disorders (Garfinkel 1980).

A large number of epidemiological studies showed that the prevalence of anorexia nervosa in a group of ballerinas ranges from 2% do 7% (Hayward 1985).

Previous studies had shown that many professional ballerinas are under weight, according to World Health Organization, and perceive

themselves as having normal body weight (Vaisman & Akivis 1994). Models reflect the current cultural ideals of beauty, and dictate an ideal of woman's beauty, which is impossible to achieve for most women. Hence the objectives of the present research: the theme of eating disorders in the high risk group of models, ballerinas, gymnasts and generally in the population of adolescents is becoming more and more popular in the psychological literature. This work is in certain sense pioneering, because in our country a very small number of studies have been devoted to eating disorders, and practically no research was done on the groups of models and ballerinas. The aim of this research is to verify the relationship between body image distortion, neurotic perfectionism symptoms and eating disorders in a group of high-risk subjects, models and ballerinas and in a control group of students.

## **SUBJECTS AND METHODS**

The reserach includes 91 participants. We divided them in two groups: risk group N=36 (23 models and 13 ballerinas), and the control group which consisted of N=55 students. The respondents in the risk groups are models of 3 fashion agencies in Sarajevo and ballerinas who are members the Department of National Ballet theater in Sarajevo. The respondents from the control group were third-year students (N=27) and fourth-year (N=28) students in the Department of Psychology in Sarajevo. The average age, height and weight of the respondents in the overall sample are shown in Table 1.

**The body mass index** (Body mass index - BMI)- or Quetelet index is a statistical measurement which compares a person's weight and height. BMI provided a simple numeric measure of a person's "fatness" or "thinness". The World Health Organization (WHO - World Health Organization) has recommended a classification system based on BMI (Fairburn & Brownell 2002), which distinguishes four categories of body weight: 1. Underweight: BMI<18.5, 2. The range of normal weight: BMI of 18.5 to 24.9, 3. Above average weight: BMI from 25.0 to 29.9, 4. Obesity: BMI> 30.

**Body mass index-silhouette matching test (BMI-SMT)** - Silhouette matching tests commonly used in literature consist of between 5 and 12

silhouettes which represent different anthropomorphic shapes formed according to waist-to-hip ratio. Every item represents an increase (or decrease) of one BMI unit. The range of BMI values is 14 to 40. The presentation of the scale consists of specific questions related to two different measures of body perception, and these are body image perception and ideal body image. The question in the scale is: „Place an X in the box that best reflects: 1. Your current appearance (body image). Besides this, subjects are asked to state

their current weight and height which enables making comparison between body image perception and objective anthropomorphic measures (BMI). The difference between objective measure (BMI or subject's weight) and body image perception represents a *body image distortion*. The limitation of silhouette matching tests is that they cannot be quantified into real body image, so it is hard to determine whether body image perception is really inaccurate. In this research test-retest reliability was between  $r=0.79$  and  $r=0.85$ .

**Table 1.** Average age height and weight for both groups of subjects measured in years metres and kilos

	risk group		Control group	
	Models	Ballet dancers	Students	TOTAL
Average age	21	25	23	23
Average height (m)	1.79	1.68	1.69	1.72
Average weight (kg)	54	48	57	55

**Neurotic perfectionism questionnaire (NPQ)** is a scale that was originally designed to measure perfectionism in people with eating disorders (Slade & Dewey 1994). Many studies have shown it to be a very good measure for distinguishing unperfectionists, as well as normal and neurotic perfectionists. In this research test-retest reliability was  $r=0.98$ .

**Eating Disorders Inventory (EDI)** (Bennett & Stevens 1997) is the standard measure of the psychological characteristics and groups of symptoms that are believed to be relevant in understanding and in treatment of eating disorders. It consists of 64 items which constitute 8 subscales. Three subscales measure attitudes and behavior related to weight, physical appearance and eating, five other subscales measure general psychological characteristics of people with eating disorders. Subjects respond on the Lickert's scale with 6 degrees (never, rarely, sometimes, often,

usually, always) by rounding the extent to which each statement describes them. Test retest reliability was  $\alpha = 0.976$ .

## RESULTS

Analyses of the results were made by using SPSS for Windows, version 12.0. To determine the relationship between objective indicators of body weight and subjective body image for each group of respondents we used the objective chi-square test. Information about real weight was obtained by body weight index (BMI), whose results are shown in Table 2. Respondents are divided into two categories of the subjective body image: sees herself as a person with normal weight, and sees herself as thicker, and in two categories of objective indicators of body weight: below-normal weight and overweight, and the main results are shown in Table 3.

**Table 2.** Examining if there is a difference between the objective indicator of body mass index (BMI) and body image perception in the groups of female subjects: risk-group (models, ballet dancers) and control group (students)

BMI	risk group		Control group
	Models (N=23)	Ballet dancers (N=12)	Students (N=55)
Under average weight	23	12	20
Normal weight	0	1	33
Above average weight	0	0	2
Overweight	0	0	0

**Table 3.** Number of subjects according to BMI and body image perception in risk group (N= 36) and control group (N=51) and chi-square  $\chi^2$ - results

Group	Body image perception					N	
	Sees herself as having a normal weight		Sees herself as heavier				
	N	%	N	%			
Risk group	BMI	Under-average weight	29	80.5	6	16.6	35
		Normal weight	0	0.0	1	2.7	1
		Total	29	80.5	7	19.4	36
$\chi^2$ , p		$\chi^2=4.261$ , p<0.05					
Control group	BMI	Under-average weight	18	35.3	0	0.0	18
		Normal weight	22	43.1	11	21.5	33
		Total	40	78.43	11	21.5	51
$\chi^2$ , p		$\chi^2=7.650$ , p<0.05					

Preliminary analyses of subjective body experience showed that no research subject sees herself as skinny or extremely fat while assessing her body image on the silhouette choosing test, so we excluded these categories. Therefore, the students are divided into two categories of subjective body image: under average weight and normal weight, and the main results are shown in Table 3. When testing if there was a statistically significant difference between BMI and body

image perception in the two groups (control and risk), the chi-square test showed that there was a statistically significant difference between BMI and body image perception in the risk and in the control group. Testing the importance of differences in body image distortion between the control and risk groups will be conducted by using a nonparameterical statistical procedure, the Mann-Whitney test for independent samples. The results are shown in Table 4.

**Table 4.** Values of Mann-Whitney test derived by testing the differences between risk group (models, ballet dancers) and control group (students) in body image distortion

Groups		N	M of range	Sum of ranges	z	p
Body image distortion	Risk group	36	63.17	2274.00	-5.019	0.000
	Control group	55	34.76	1912.00		
	Total	91				

In Table 4. we can see that there is a statistically significant difference in the body image distortion between the risk and the control group ( $Z = -5.019$ ;  $p=0.01$ ). Body image distortion is greater in the risk group (M rank = 63.17) compared to the control group (M rank = 34.76). In all eight subscales of the Eating Disorders Inventory, the risk groups manifest more symptoms of eating disorders. When we tested normal distribution with the Kolmogorov-Smirnov test, we established that the distribution of the results on the subscales of body dissatisfaction, perfectionism and desire for thinness is asymmetrical, while the distribution of the results on subscales bulimia, fear of growing up,

interoceptive awareness, ineffectiveness, distrust in other people is normal. Because the majority of the scales did not distribute normally, it was decided to use the Mann-Whitney test. The results are shown in Table 5, and Table 5.1. We tested the significance of differences in neurotic perfectionism between the control and risk groups by conducting the unparameterical statistical procedure, Mann-Whitney test for independent samples. The results are shown in Table 6.

Statistically significant correlations are found between neurotic perfectionism and all of the eating disorder symptoms (EDI) in the risk group (models and ballet dancers), the results are shown in Table 7.

**Table 5.** Values of Mann-Whitney test derived by testing the differences between the risk group (models, ballet dancers) and control group (students) in eating disorder symptom

	Groups	N	M of range	Sum of ranges	z	p
Drive for thinnes	Risk group	36	69.14	2489.00	-6.807	0.000
	Control group	55	30.85	1697.00		
	Total	91				
Body dissatisfaction	Risk group	36	68.64	2471.00	-6.807	0.000
	Control group	55	31.18	1715.00		
	Total	91				
Perfectionism	Risk group	36	65.49	2357.50	-5.721	0.000
	Control group	55	33.25	1828.50		
	Total	91				

**Table 5.1.** Values of Mann-Whitney test derived by testing the differences between the risk group (models, ballet dancers) and control group (students) in eating disorders symptoms

	Groups	N	M of range	Sum of ranges	z	p
Bulimia	Risk group	36	55.0	1983	-2.664	0.008
	Control group	55	40.0	2203		
	Total	91				
Maturity fears	Risk group	36	65.3	2352	-5.672	0.000
	Control group	55	33.3	1833		
	Total	91				
Introceptive awareness	Risk group	36	65.1	2346	-5.606	0.000
	Control group	55	33.1	1840		
	Total	91				
Inefficacy	Risk group	36	65.1	2346	-5.767	0.000
	Control group	55	33.4	1840		
	Total	91				
Interpersonal distrust	Risk group	36	56.2	2025	-3.006	0.003
	Control group	55	39.2	2161		
	Total	91				

**Table 6.** Values of Mann-Whitney test derived by testing the differences between the risk group (models and ballet dancers) and control group (students) in neurotic perfectionism

	Groups	N	M of range	Sum of ranges	z	p
Neurotic perfectionism	Risk group	36	68.67	2472.00	-6.624	0.000
	Control group	55	31.16	1714.00		
	Total	91				

**Table 7.** Spearman's correlation coefficients between neurotic perfectionism, symptoms of eating disorder, body image perception, body mass index (BMI), body image distortion in the control group (student N = 55) and risk group (models, ballerinas N = 36)

	Groups	Drive for thinnes	Body dissatisfaction	Per	Bul	Maturity fears
Neurotic perfectionism	Control group	-0.35	-0.076	0.032	-0.006	-0.250
	Risk group	0.570**	0.601**	0.586**	0.489**	0.491**
	Groups	Inefficacy	Introc. awareness	Interpersonal distrust	EDI tot	Body image distortion
Neurotic perfectionism	Control group	-0.170	-0.221	0.008	-0.159	0.123
	Risk group	0.646**	0.646**	0.426**	0.699**	0.375**

## DISCUSSION

As we can see in the Table 2, and according to the criteria of the World Health Organization, 23 models and 12 ballerinas have below body weight. The risk and control group of girls assessed their weight as normal or above average, while actually being underweight, but many more ballet dancers and models (in comparison to subjects in control group) show these discrepancies. These results can be explained by the nature of their profession. The modeling profession and ballet dancing imply that less body weight means success, „being on the top“. Their professional and cultural surrounding creates an aversion towards gaining weight, and strongly supports the attitude that a skinny body and body image are normal. These results perhaps could be explained only by the influence of social factors on a subjective evaluation of one's own body image. On the basis of this we can conclude that in ballerinas and models, who belong to the risk group, there is increased body image distortion. The importance of skinniness is connected with the ideal of beauty, but also with positive characteristics of their profession and success, which is a fertile ground for creating a distorted body image that is an important aspect in eating disorder diagnostics. Subjects in the control group are students who do not meet such requirements. These results can be explained by some hypotheses from the literature, that suggest that some self-schemes are central for the individual, while others are of less importance. Central self-schemes are schemes that are most developed and have the strongest influence on information processing and behaviour. The models' and ballet dancers' central self-scheme is body. We can conclude that the risk groups (models and ballerinas) in relation to the control group (student) have a greater desire for thinness, show more body dissatisfaction, more tends to perfectionism, and show more symptoms of bulimia. Such results can be explained by the fact that the models and ballerinas often starve and have disrupted eating habits in order to reach and maintain their physical ideals, which are enforced by fashion-designers and fitness-trainers. In further testing that used structured interviews and questionnaires to measure symptoms of eating disorders we could get more valid data, and thus a better conclusion. Many studies show that female models and female

ballet dancers possess traits of neurotic perfectionism. This may be due to the nature of these professions, which expects an absolute perfectionism. Ballet dancers are required and expected to be strong, their movements are expected to be technically and artistically gracious, they are expected to do every performance with perfection, and to gain the ideal of low body weight. Models are also required to be perfect, to look the exactly the way the fashion-designer imagines, they are under a constant pressure to be skinny and look healthy at the same time. Specifically, we can not conclude whether neurotic perfectionism leads to the appearance of symptoms in eating disorders or disturbed body image, or whether this is an inverse relationship. Neurotic perfectionism is higher in the risk group in comparison to the control group. However, it would be very interesting to examine whether the trait of perfectionism is present in these individuals before they start with ballet or modeling, monitoring if the trait of perfectionism keeps developing, and if individuals with perfectionism tend to choose such professions. Although it is not defined as a problem in this research, it seemed interesting to check a correlation between neurotic perfectionism on the one hand, and eating disorder symptoms, body mass index and body image distortion on the other hand. Our results show subjects that seem to express more neurotic perfectionism simultaneously show more eating disorder symptoms. Also, we found a significant correlation between neurotic perfectionism and body image distortion in the risk group. This means that, the higher is neurotic perfectionism the higher is also a body image distortion in the risk group. Such a result makes sense, considering that ballet dancers and models show a high discrepancy between the subjective assessment of body size and objective indicators of their body weight. The limitations are due to sampling, and characteristics of the measure instruments. However, it should be mentioned that in the literature it is generally assumed that neurotic perfectionism is a causal factor in eating disorders. Of course, there are many others important variables that are not covered by this study (eg, depression, self-esteem, etc.). The importance of this research is that constructs such as body image distortion, perfectionism and eating disorder symptoms are scientifically examined for the first time in B&H in

the risk group of female models and ballet dancers. Preventive programs could be created for the models and ballerinas in the risk group, and for their trainers and managers. The goal of these programs would be to increase insight into the phenomena of body image distortion, which perhaps might reduce the discrepancy between body image perception and objective indicators of weight.

The general population should also be informed, primarily children and adolescents and secondarily schools, about the relationship between body image and objective body weight, and on the impact of culture on the development of eating disorders. Therapeutic intervention would be primarily directed towards those who have certain symptoms of eating disorders, body image distortion and those with certain maladaptive perfectionism.

## CONCLUSION

There is a difference in body image distortion, neurotic perfectionism and eating disorder symptoms between ballet dancers, models and students. Also, we could claim that students, models and ballet dancers overrate their body image in relation to real objective dimensions; they see themselves as fatter than they really are. It seems that ballet dancers and models have a worse body image or higher body image distortion when compared to students, as well as more emphasized eating disorder symptoms. This means that there are indeed some persons in the B&H population who are at risk of developing eating disorders.

We may conclude that, there are groups of people who have risk factors for developing some kind of eating disorder, so it would be desirable to create a preventive intervention for young ballerinas and models, but also for those people who coach them, trainers, instructors and managers. For other population groups with risky behavior such as young children, a prevention plan and modification of the cultural influences on people's opinion of body image is extremely important.

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