REGULAR ARTICLE

Static and Dynamic Body Image in Bulimia Nervosa: Mental Representation of Body Dimensions and Biological Motion Patterns

Silja Vocks, PhD[1]*
Tanja Legenbauer, PhD[2]
Heinz Rüddel, MD[3]
Nikolaus F. Troje, PhD[4]

ABSTRACT

Objective: The aim of the present study was to find out whether in bulimia nervosa the perceptual component of a disturbed body image is restricted to the overestimation of one's own body dimensions (static body image) or can be extended to a misperception of one's own motion patterns (dynamic body image).

Method: Participants with bulimia nervosa ($n = 30$) and normal controls ($n = 55$) estimated their body dimensions by means of a photo distortion technique and their walking patterns using a biological motion distortion device.

Results: Not only did participants with bulimia nervosa overestimate their own body dimensions, but also they perceived their own motion patterns corresponding to a higher BMI than did controls. Static body image was correlated with shape/weight concerns and drive for thinness, whereas dynamic body image was associated with social insecurity and body image avoidance.

Conclusion: In bulimia nervosa, body image disturbances can be extended to a dynamic component. © 2006 by Wiley Periodicals, Inc.

Keywords: biological motion; body image disturbances; bulimia nervosa; motion perception

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Introduction

The term "body image" refers to the way we perceive our own body and hence the way we assume other people perceive us. A disturbed body image is a main characteristic of bulimia nervosa and plays an important role in the development and maintenance of the eating disorder.[1–3] Body image disturbances can be differentiated into three components,[4,5] which seem to be only modestly intercorrelated.[6] The *cognitive-affective component* reflects the patients' thoughts and feelings about their own body. For example, it has been shown that women with eating disorders display negative emotions and cognitions to a greater extent when looking at their own bodies than do healthy controls.[7,8] These negative attitudes concerning one's own body can also influence how people behave. Thus, the *behavioral component* of a disturbed body image includes avoidance of body-related situations. Since patients with eating disorders are often socially insecure,[9] the behavioral component of body image might also be influenced by the way individuals assume other people judge them. Thus, body image avoidance also has a social component that, for example, is manifested in hiding one's own body from others under baggy clothes.[10,11] The *perceptual component* of body image refers to the overestimation of one's own body dimensions.[4,12] Empirical work assessing the specificity of body size overestimation for eating disorders has yielded inconsistent results.[13–15] These inconsistencies might be due to methodological factors, since body perception assessment varied from light beam apparatuses in earlier studies[16] to the application of distortable photographs in more recent works.[17]

Using photographs, however, reduces investigations of the perception of one's own body to its static properties. In particular, it excludes all

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*Correspondence to: Dr. Silja Vocks, Ruhr-University Bochum, Clinical Psychology and Psychotherapy, Universitätsstr 150, D-44780 Bochum, Germany.
E-mail: vocks@kli.psy.ruhr-uni-bochum.de
[1] Department of Psychology, Clinical Psychology and Psychotherapy, Ruhr-University, Bochum, Germany
[2] Department of Psychology, Clinical Psychology and Psychotherapy, Johannes-Gutenberg-University, Mainz, Germany
[3] Center for Psychobiological and Psychosomatic Research, University of Trier, Psychosomatic Clinic St. Franziska-Stift, Bad Kreuznach, Germany
[4] Department of Psychology, School of Computing and Vision Behavioural Sciences, Queen's University, Kingston, Ontario, Canada
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aspects of movement and behavior in general, although these aspects may be very important for the process of creating and shaping one's own body image. In fact, neurophysiological investigations of nonhuman primates as well as brain imaging work in humans have provided first hints that the brain is more responsive to conspecific action and movement patterns than it is to static images of a human figure.[18–21] The movement of a human body contains information about identity[22] as well as a variety of different attributes such as sex,[23–25] emotional states,[26,27] and body weight.[28–30] All of these attributes are socially relevant[31] and probably play an important role in body image formation.

For individuals suffering from bulimia nervosa, the weight-related aspects of motion patterns in particular may be of relevance, since these persons abhor fat, apply dysfunctional weight control strategies, and consider their own body weight to be highly relevant for self-esteem.[32,33] Assuming this to be the case, we should expect that patients with bulimia nervosa not only perceive their own body dimensions to be larger than they really are, but also that they will be sensitive to the changes in mobility and general motor behavior that go along with a higher body mass index (BMI). Although directly considering the mental representation of the own gait patterns in bulimia nervosa would enhance the understanding of body image disturbances in eating disorders and could provide useful information for treatment (e.g., with respect to body exposure[34]), this aspect has never been examined before. Therefore, a first aim of the present study is to find out whether the perceptual component of body image disturbances in bulimia nervosa is restricted to static aspects or can be extended to dynamic features. Thus, body image perception in patients with bulimia nervosa is not only probed with images but also with point-light animations of walking figures that display the biological motion behavior typical for various BMIs without interference from shape. A further aim was to find out whether these two aspects of the perceptual body image component are associated or display different constructs. Additionally, the study examined whether in bulimia nervosa the static and dynamic aspects of the perceptual body image component are correlated with the cognitive-affective and behavioral component.

Method

Participants

The present study involved $n = 85$ female participants. Those with bulimia nervosa ($n = 30$) were either outpatients from the university psychotherapy centers of the Ruhr-University Bochum ($n = 8$) and the Johannes-Gutenberg-University Mainz ($n = 11$) or inpatients from the Psychosomatic Clinic St. Franziska-Stift in Bad Kreuznach ($n = 11$). All patients were diagnosed according to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders[35] using a standardized interview (Structured Clinical Interview for Psychiatric Disorders).[36,37] In the control group ($n = 55$) women without any form of eating disorder who voluntarily participated in the study were examined. The existence of an eating disorder was excluded by administering the Eating Disorder Examination Questionnaire (EDE-Q).[38,39] The average age of the participants with bulimia nervosa was $M =$ 26.57 years (SD = 6.68) and of controls $M = 24.62$ years (SD = 4.67). A t-test including Levene's test homogeneity of variance revealed that the two groups were comparable with regard to age ($t(44.79) = 1.42$, $p = .162$). Furthermore, the BMI of the participants with bulimia nervosa and of controls did not differ significantly (participants with bulimia nervosa: $M = 20.85$ kg/m^2, SD = 1.94; controls: $M = 21.14$ kg/m^2; SD = 1.86; $t(83) = 0.70$, $p = .488$). The study was approved by the regional ethics committee.

Photo Distortion Technique

Because optical distortion methods have been considered to have the highest construct and ecological validity (e.g. for the situation of looking in the mirror),[12] a digital distortion technique was used to asses the static body image. In a first step, a digital photo of each participant was taken from a frontal perspective while participants were standing in front of a white wall wearing a standardized tight-fitting suit with short arms and legs. Then, the pictures were displayed on the screen of a laptop computer using a distortion program to scale the picture along the horizontal axes. By pressing the left or right arrow key, participants could interactively adjust the width of the displayed picture, thus making their body appear thinner or fatter. Pressing a button once distorted the picture by +0.8% or −0.8% as the case may be. In the present study, the participants were asked to indicate their "actual" ("What do you really look like?"), "felt" ("What do you feel you look like?"), and "ideal" ("What would you like to look like?") body dimensions.[6,40] Participants could correct the degree of distortion of the photo as often as they wanted. They were instructed to confirm their choice by pressing the "Enter" key when they thought that the current adjustment represented the best answer to the question. The computer program then automatically saved the final degree of distortion. A value of 100% indicates the original size of the photo, values below 100% a distortion towards a slimmer, and values over 100% towards a thicker body. Because earlier studies have shown that there is an "anchor effect" depending on the initial distortion of the presented picture,[41,42] for

each of the three questions, the initially presented picture was distorted twice in the smaller direction (80%) and twice in the wider direction (120%). Intrasubject reliability was measured by means of Cronbach's α. In all three conditions, the values ranged between $\alpha = 0.90$ and $\alpha = 0.93$ in different samples, indicating that this method is sufficiently reliable.

Motion Distortion Technique

The motion distortion technique makes it possible to study biological gait patterns without interference from shape. It is based on a continuum of point-light displays depicting a walking figure in a frontal view perspective presented on a computer screen. The point-light displays consist of an array of 15 white dots on a black background. They generate a vivid percept of a body in motion[26,43,44] and can be altered by the participants along a BMI axis.

The coordinates of the BMI axis are based on empirical data previously collected from $N = 40$ females in the "Bio Motion Lab" at the Ruhr-University Bochum, Germany. The mean BMI of these women was $M = 21.05$ kg/m^2 (SD = 2.32). The BMI axis was derived by regressing the BMI of the 40 participants on a morphable parameterization of their walking patterns. For the initial data collection, participants wore a standardized black ballet suit while walking on a treadmill at a comfortable speed. A set of 41 markers was attached to the participants' bodies. Marker locations were strategically chosen to compute a biomechanical model that reveals the locations of 15 "virtual" markers placed at the major joints of the body (shoulders, elbows, wrists, hip joints, knees, and ankles), and the centers of head, chest, and pelvis. A motion capture system (Vicon, Oxford Metrix, with 9 cameras) was used to track the three-dimensional trajectories of all markers. For further processing and the creation of the stimuli, only the 15 virtual markers were used. The data were then transformed into a linear, morphable model.[44] Principal components analysis was used to reduce the dimensionality of the resulting linear space to $d = 10$ best reflecting the changes in walking pattern, which are due to differences in BMI. Further details of data acquisition and data processing are described in Troje.[26,44]

In the present study, participants could actively change the animation of walking patterns by navigating from displays corresponding to higher or lower BMIs. The BMI axis was scaled in *z*-scores. Analogous to the photo distortion technique, participants had to adjust the motion patterns to best reflect the estimation of their "actual" ("What do you really look like?"), "felt" ("What do you feel you look like?"), and "ideal" motion patterns ("What would you like to look like?"). As in the previous experiment, each question had to be answered four times, twice with a starting stimulus distorted towards a lower (*z*-score = −1.2) and twice with a starting stimulus distorted towards a higher BMI (*z*-score = +1.2). Using the arrow keys of a computer keyboard, participants could adjust the walker in both directions in steps of 0.1 *z*-scores as often as they wanted. When they were satisfied with their adjustment, they pressed the "Enter" button and the data were saved automatically. The *z*-scores were then transformed into the corresponding BMI-values. To assess the reliability of this measure, Cronbach's α was calculated for the three conditions in various samples. Coefficients ranged from $\alpha = 0.92$ to $\alpha = 0.96$ so that internal consistency was regarded as sufficient.

Questionnaire Measures

The EDE-Q[38,39] was administered to the participants of the two groups. Furthermore, patients with bulimia nervosa answered selected scales from the Eating Disorder Inventory (EDI-2)[45,46] as well as the "Body Image Avoidance Questionnaire" (BIAQ).[10] The EDE-Q assesses relevant characteristics of eating disorders that occurred during the past 28 days, indicating the amount as well as the frequency of these characteristics. It consists of 14 single items and four subscales "Eating concerns," "Weight concerns," "Restraint," and "Shape concerns." Internal consistencies of these subscales are satisfactory with Cronbach's α ranging from $\alpha = 0.76$ to $\alpha = 0.93$. Test–retest reliability varies from $r_{tt} = 0.68$ to $r_{tt} = 0.74$. The subscales "Body dissatisfaction" and "Drive for thinness" from the EDI-2 were used to operationalize the cognitive-affective aspect of body image. These scales include the evaluation of the own body as negative, fear of getting fat, thoughts about diets as well as thoughts fixated on weight and weight gain.[46] Additionally, the EDI-subscale "Social insecurity" was administered. Patients scoring high on this scale are described as having a tendency to social self-doubt and unhappiness. Internal consistencies for the aforementioned scales range from $\alpha = 0.79$ to $\alpha = 0.88$ and test–retest reliability lies between $r_{tt} = 0.86$ and $r_{tt} = 0.89$ for an intervening period of 7 days.[46] To assess the behavioral component of a disturbed body image including, for example, aspects of social activities, clothing, and weight, the sum score of the BIAQ was applied. The internal consistency of this questionnaire is $\alpha = 0.89$ and the test–retest reliability is $r_{tt} = 0.87$ for an intervening period of 2 weeks.

Statistical Analyses

All statistical analyses were performed using the SPSS package (version 11). To test the hypothesis that participants with bulimia nervosa and healthy controls differ in the estimation of their body dimensions and motion patterns, a *t*-test for independent samples (including Levene's test of homogeneity of variances) was used. We also compared the two groups with respect to the dis-

TABLE 1. Comparison of participants with bulimia nervosa and normal controls concerning their body image scores (*t*-test including Levene' test of homogeneity of variances)

	Participants with Bulimia Nervosa	Normal Controls	*t*-Value	df	*p*	*d*
Static body image						
"Actual"	104.40 (14.18)	94.68 (8.62)	3.43	40.98	.001	1.13
"Felt"	111.96 (18.34)	95.91 (9.31)	4.49	37.33	<.001	1.72
"Ideal"	81.76 (13.06)	84.88 (10.24)	−1.21	83	.228	−.30
"Actual" – "Ideal"	22.64 (17.29)	9.80 (9.90)	3.75	39.61	.001	1.30
"Felt" – "Ideal"	30.20 (21.86)	11.03 (11.32)	4.49	37.67	<.001	1.69
Dynamic body image						
"Actual"	26.42 (7.10)	23.06 (5.64)	2.39	83	.019	.60
"Felt"	29.18 (8.68)	23.30 (5.26)	3.89	83	.001	1.12
"Ideal"	19.17 (4.28)	19.36 (4.42)	−1.85	83	.854	−.04
"Actual" – "Ideal"	7.25 (9.32)	3.70 (3.92)	1.99	34.69	.055	.91
"Felt" – "Ideal"	10.01 (11.66)	3.94 (3.97)	2.76	32.72	.009	1.53

Notes: Static body image values are displayed in percents deviating from the original picture and dynamic body image values are displayed in BMI scores corresponding to the estimated walking patterns. Instructions for the distortion techniques: "Actual," "What do you really look like?"; "Felt," "What do you feel you look like?"; "Ideal," "What would you like to look like?"

crepancy scores between the "actual" and "ideal" as well as the "felt" and "ideal" body dimensions and motion patterns since these values can be viewed as an index for the degree of body dissatisfaction.[4] Pearson's correlation was calculated to detect associations between different variables within the sample of the participants with bulimia nervosa. Two-tailed tests were used throughout. The significance level was fixed at 1% to correct for α inflation. Effect sizes for group differences were calculated according to Cohen.[47]

Results

Group Differences in Static and Dynamic Body Image

In a first step, the participants with bulimia nervosa and noneating-disordered controls were compared with respect to their static and dynamic body image. Means and standard deviations for the results of the photo and motion distortion technique as well as *t*-test values and effect sizes for the group differences are reported in detail in **Table 1**.

For *static body image* it was shown that participants with bulimia nervosa overestimated their "actual" and "felt" body dimensions by about 4 and 12%, respectively, while controls tended to underestimate them by about 5 and 4%, respectively. These group differences were statistically significant. In contrast, the two groups did not differ in their estimations of "ideal" body shape. Participants with bulimia nervosa wanted to be about 18% slimmer and healthy controls about 15% slimmer than they were presented on the photos. For the discrepancy scores between the "actual" and "ideal" as well as between the between "felt" and "ideal" body dimensions, significant group differences could also be detected. These results indicate that the patients' estimations of their "actual" and "ideal" body dimensions deviated to a higher extent from the judgments of the "ideal" shape than did the healthy controls' estimations. According to Cohen's conventions,[47] effect sizes for the group differences for "actual" and "felt" body dimensions as well as the two discrepancy scores were high.

Results for *dynamic body image* revealed that participants with bulimia nervosa perceived their own "actual" motion patterns corresponding to a BMI of about 26 kg/m^2 and controls corresponding to a BMI of about 23 kg/m^2. Furthermore, participants with bulimia nervosa estimated their "felt" motion patterns at a BMI of about 29 kg/m^2 and controls at a BMI of about 23 kg/m^2. Although the group difference was significant for the "felt" motion patterns, it failed to reach statistical significance for the "actual" walking patterns. Again, the group of participants with bulimia nervosa and the control group did not differ in their estimation of the "ideal" motion patterns and chose a walking pattern corresponding to a BMI of about 19 kg/m^2. Although the group difference in the discrepancy between the "actual" and "ideal" motion patterns failed to reach statistical significance, a significant group difference was detected for the discrepancy between the "felt" and "ideal" body dimensions. Effect size[47] for the group difference in the estimation of the "actual" motion patterns was medium and for the "felt" motion patterns as well as for the discrepancy scores high.

Correlations between Static and Dynamic Body Image

Further analyses were conducted within the sample of participants with bulimia nervosa to find out whether static and dynamic body image were cor-

TABLE 2. Pearson correlations between the static and dynamic body image and subscales from the EDE-Q and the EDI-2 within the group of the patients with bulimia nervosa

	Static Body Image					Dynamic Body Image				
	"Actual"	"Felt"	"Ideal"	"Actual" – "Ideal"	"Felt" – "Ideal"	"Actual"	"Felt"	"Ideal"	"Actual" – "Ideal"	"Felt" – "Ideal"
EDE-Q										
"Restraint"	.117	.170	−.368	.374	.362	.270	.168	.034	.190	.112
"Eating concerns"	.077	.269	−.231	.261	.413	−.345	−.240	.029	−.285	−.203
"Shape concerns"	.272	.417	−.386	.515*	.580**	.392	.373	−.127	.356	.324
"Weight concerns"	.019	.129	−.485*	.382	.398	.239	.289	−.098	.227	.251
EDI-2										
"Drive for thinness"	.201	.356	−.573*	.597**	.641**	.340	.329	−.122	.314	.289
"Body dissatisfaction"	.249	.284	−.056	.247	.272	.027	−.145	.218	−.079	−.188
"Social insecurity"	.034	.122	.107	−.055	.049	.410	.597**	−.289	.516	.620*
BIAQ										
Sum score	.211	.304	−.300	.400	.435	.485*	.534*	−.294	.505*	.506*

Notes: Mean score on the scale "Restraint" was $M = 3.30$ (SD = 1.47), on the scale "Eating concerns" $M = 3.13$ (SD = 1.37), on the scale "Shape concerns" $M = 4.46$ (SD = 1.20), and on the scale "Weight concerns" $M = 3.96$ (SD = 1.48). On the scale "Body dissatisfaction" mean value was $M = 4.04$ (SD = 0.98), on the scale "Drive for thinness" $M = 4.71$ (SD = 0.74), and on the scale "Social insecurity" $M = 3.36$ ($SD = 0.42$). Data concerning the scale "Social insecurity" were only available from 19 participants. Mean value of the BIAQ sum score was $M = 40.83$ (SD = 14.95).

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

related. It was shown that the participants' estimations of their "actual" ($r = 0.428$, $p = .018$) and "felt" body dimensions and motion patterns ($r = 0.355$, $p = .054$) failed to reach the fixed significance level of 1%. In contrast, the correlations between the "ideal" body dimensions and motion patterns ($r = 0.506$, $p = .004$), the discrepancy between the "actual" and "ideal" ($r = 0.645$, $p < .001$) as well as between the "felt" and "ideal" body dimensions and motion patterns ($r = 0.598$, $p < .001$) were significant.

Correlations between the Perceptual and the Cognitive-Affective and Behavioral Component of Body Image

To shed light on the associations between static and dynamic body image on the one hand and the cognitive-affective and behavioral component of body image on the other hand, correlations were calculated within the sample of participants with bulimia nervosa. The correlation coefficients and significance levels are listed in **Table 2**.

For *static body image*, analyses within the sample of participants with bulimia nervosa revealed that the estimation of the "ideal" body dimensions was negatively correlated with the EDE-Q scale "Weight concerns" and the EDI-2 scale "Drive for thinness." Furthermore, the discrepancy between the participants' estimations of their "actual" and "ideal" as well as between their "felt" and "ideal" body dimensions were positively correlated with the EDE-Q scale "Shape concerns" and the EDI-2 scale "Drive for thinness." These results indicate that the more the participants displayed weight and shape concerns and the more they strove for thinness, the higher their estimated "ideal" body dimensions deviated from the original picture as well as from their "actual" and "felt" body dimensions. The EDE-Q scales "Restraint," "Eating concerns," the EDI-2 scales "Body dissatisfaction" and "Social insecurity" as well as the BIAQ sum score correlated neither with the estimation of the "actual," "felt," and "ideal" body dimensions nor with the discrepancy scores.

A different picture emerged for *dynamic body image*. The estimation of the "felt" and the discrepancy between the "felt" and "ideal" motion patterns were positively correlated with the EDI-2 scale "Social insecurity." Additionally, the estimation of the "actual" and "felt" as well as the discrepancy scores between the "actual" and "ideal" and the "felt" and "ideal" body dimensions correlated significantly with the sum score of the BIAQ. These data indicate that the more socially insecure the participants were and the more they displayed body-related avoidance behavior, the more ponderous they estimated their "actual" and "felt" motion patterns and the stronger these gait patterns deviated from their "ideal" ones. The four EDE-Q scales and the EDI-2 scales "Body dissatisfaction" and "Drive for thinness" did not significantly correlate with the estimations of the own "actual," "felt," and "ideal" motion patterns and the discrepancy scores.

Conclusion

In the present study, it was demonstrated for the first time that body image disturbance in participants with bulimia nervosa is not only restricted to

a static aspect, but also extends to a dynamic factor. For the static body image, the data revealed that participants with bulimia nervosa overestimated their "actual" and "felt" body dimensions when looking at a distorted picture of themselves on a computer screen, while healthy controls tended to underestimate them. The two groups were similar regarding their estimation of the "ideal" body dimensions and considered a slimmer body than they actually had to be the desired figure. A comparable picture emerged for the dynamic body image, which was assessed by using a computerized linear motion distortion technique,[44] making it possible to study the perception of human gait patterns without interference from shape. Participants with bulimia nervosa estimated their "felt" gait patterns to correspond to a higher BMI than did controls. Data indicate that participants with bulimia nervosa perceived their own motion patterns to be more ponderous than did controls, although, in fact, the two groups had a comparable BMI. As in the case of static body image, participants with bulimia nervosa and controls were not distinct in their estimation of their "ideal" gait patterns. Both for the static and the dynamic body image, a higher discrepancy between the "felt" and "ideal" estimations was detected in participants with bulimia nervosa compared to controls, indicating a higher dissatisfaction with the own body dimensions and motion patterns.

The overestimation of their own body dimensions among participants with bulimia nervosa and the underestimation among noneating-disordered controls may be a hint of an attentional bias in the two groups, since individuals with an eating disorder symptomatology seem to focus predominantly on their disliked (e.g. fatter) body regions, while women without eating disorders tend to look at their preferred (e.g. slimmer) body parts.[48] Further studies should confirm this hypothesis by combining the photo distortion technique and the eye tracking method. In spite of this self-serving attentional bias among healthy controls, these participants still wanted to be thinner than they actually were. This result is in accordance with previous studies,[49] indicating that body dissatisfaction is a common feature in young women in western cultures in which extreme sliminess is the predominant beauty ideal.[50]

Furthermore, the group difference in the estimation of the own body dimensions may be due to a stronger activation of negative body-related self-schemes in participants with bulimia nervosa when looking at pictures of their own body.[51,52] Since perception is viewed as a cyclic process in which cognitive factors such as attitudes and expectations influence the perceptual experience, participants "see" themselves as fatter than they really are.[13] With respect to dynamic body image, similar factors may be relevant, as the mental representation of one's own motion patterns may also be influenced by negative body-related self-schemes. These considerations raise the question as to whether the misperceptions of one's own body dimensions and motion patterns are based on self-schemes with a comparable content. Since in the present study the correlations between the "actual" and "felt" body image were not significant, the two factors seem not to represent an identical construct. Additionally, static and dynamic body image indices were correlated with different aspects of the attitudinal and behavioral component of body image. With respect to the static body image, it was shown that the more the patients' estimations of their "ideal" body dimensions deviated from the original picture as well as from their "actual" and "felt" body dimensions, the more concerned they were with weight and shape and the stronger they strove for thinness. In contrast, the dynamic body image was associated with behavior-related aspects of body image, since the perception of the own "actual" and "felt" motion patterns corresponding to a higher BMI as well as the deviation of those estimations from the judgment of the "ideal" motion patterns were correlated with a higher degree of social insecurity and body image avoidance. Nevertheless, since our data are correlational, we cannot deduce any causal association. For example, concerning dynamic body image, it is not only possible that social insecurity and body image avoidance lead to a perception of one's own motion patterns as ponderous. Alternatively, perceiving one's own walking patterns as clumsy may affect the view of one's own behavior in social situations.

Although the present study provides important information concerning a disturbance of the dynamic body image in bulimia nervosa, it also has limitations. The biological motion patterns presented to the participants were generated empirically using data previously collected. Since the BMI of the women on whom the virtual walking pattern is based did not differ from that of the participants with bulimia nervosa or of controls, it can be deduced that, on average, both groups overestimate their "actual" and "felt" motion patterns and consider a "slimmer" walking pattern than they actually showed as their ideal. Nevertheless, it has to be taken into account that to be able to exactly answer the question about the degree of overestimation, further studies would have to record the individual motion patterns of each participant in a

biological motion laboratory so that each participant's individual motion patterns can be used as stimulus material to be distorted according to the "actual," "felt," and "ideal" motion patterns.

In conclusion, the findings of the present study indicate that it seems to be promising to consider the mental representation of one's own motion patterns in eating disorders research to take the complexity of the body image construct into account. Additionally, the findings of the present study have therapeutic implications. In cognitive-behavioral treatment for eating disorders, body exposure techniques are applied, leading patients to focus systematically on each body part to correct their distorted view of themselves.[34,53–55] Taking the results of the present study into account, it could be promising not only to restrict these exposure techniques to the static component of body image, but also to confront patients with their own motion patterns. Providing the patients with video feedback concerning their real motion patterns might correct their distorted view of themselves and thus contribute to the establishment of a positive body image.

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