

# Body image in patients with mental disorders: Characteristics, associations with diagnosis and treatment outcome

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## Abstract

**Objective:** Despite the increasing recognition in clinical practice of body image problems in other than appearance related mental disorders, the question remains how aspects of body image are affected in different disorders. The aim of this study was to measure body image in patients with a variety of mental disorders and to compare scores with those in the general population in order to obtain more insight in the relative disturbance of body image in the patients group compared to healthy controls. In a further exploration associations with self-reported mental health, quality of life and empowerment were established as well as the changes in body image in patients over time.

**Methods:** 176 women and 91 men in regular psychiatric treatment completed the Dresden Body Image Questionnaire, the Outcome Questionnaire, the Manchester Short Assessment of Quality of Life and the Mental Health Confidence Scale. Measurements were repeated after four months.

**Results:** Patients with mental disorders, especially those with post-traumatic stress disorder (PTSD), scored significantly lower on body image, with large effect sizes, in comparison with the healthy controls. Scores of patients from different diagnostic groups varied across domains of body image, with body acceptance lowest in the group with eating disorders, and sexual fulfillment extremely low in PTSD. Vitality did not differ significantly between the various disorders. Gender differences were large for body acceptance and sexual fulfillment and small for vitality. Associations of body image with self-reported mental health, quality of life and empowerment were moderate to strong. After four months of treatment positive changes in body image were observed.

**Conclusions:** Negative body image is a common problem occurring in most patients with mental disorders. Diagnosis-specific profiles emerge, with PTSD being the most affected disorder. Body acceptance and sexual fulfillment were the most differentiating aspects of body image between diagnoses. Changes in body image occur over the course of treatment.

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## 1. Introduction

The term ‘body image’ has been used to describe and assess a variety of body-related phenomena, including perceptions, cognitions, affects, and awareness with regard

to the body [1,2]. Body image has implications for psychosocial functioning and its disturbance in non-clinical samples showed poorer psychological adjustment [3–5]. In a systematic review on body image in oncology patients, the main conclusion was that a negative body image had a negative influence on quality of life [6]. Body image disturbance in patients with colorectal disease was also associated with poorer quality of life, with a negative body image predicting the onset of psychopathology [7].

In psychiatry, body image and its disturbances have been studied particularly in eating disorders. There is extensive research on appearance-related body image issues such as body weight and shape concerns in young women, as well as on the effectiveness of a variety of interventions addressing

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disturbed body image in eating disordered female patients [3,8,9]. Overall, the conclusion for this category of patients is that those who receive treatment with an emphasis on body image show better outcomes than patients receiving treatment without this component [10]. With recent studies on body image in body dysmorphic disorder [11–13], the scope of research in the field of body image is somewhat widening. Still, research on the relation between body image and mental disorders is largely restricted to disorders that are characterized by appearance-related body image concerns, despite the fact that pioneers in psychosomatic medicine such as Lipowski [14], have stressed the importance of body image in all forms of psychopathology already 30 years ago.

Research has shown that body-related experiences have far-reaching effects on human development and quality of life and that body image as a central component of how an individual experiences him or herself in the world is an issue of importance in a broad range of psychopathologies [15–17]. In line with this reasoning, a number of relatively small and mostly exploratory studies have been conducted measuring negative or disturbed body image in mood disorders [18], anxiety disorders [18,19] trauma-related disorders [20–22], schizophrenia [23,24] and borderline personality disorder [25,26]. A wide range of instruments to measure body image has been used, hindering comparisons between studies and diagnostic groups. Only the study by Röhrich et al. [18] compared body image across two disorders: anxiety and depression. The overall impression is that body image is affected in a diverse range of mental health problems. It remains unclear, however, how body image relates to specific psychiatric symptoms or disorders and what dimensions of body image are implicated. To gain more insight into the concept of body image and its association with mental health, research is needed in heterogeneous samples investigating body image across different diagnostic groups. This would help to understand the relevance of body image as transdiagnostic factor [27] and its potential value as target of interventions. And, in order to gain more understanding of the specific nature of body image, the question is valid as to how body image is associated with other generic indicators of evaluative criteria of mental health like symptom severity, well-being and measures like quality of life and control and autonomy [26].

In this respect, it is also important to learn more about the dynamics of body image, or in other words, its sensitivity to change, especially since in some recent studies body image has been considered as a possible measure for treatment outcome. Examples are the studies by Röhrich et al. [22] who evaluated body experience in the context of body psychotherapy in chronic schizophrenia and Stumpf et al. [27] who studied the influence of short-term psychiatric treatment on body image in in-patients with a variety of disorders.

The present study addresses the above-mentioned issues by measuring body image, mental health, quality of life and empowerment in participants with a wide range of psychiatric

disorders including mood disorders, anxiety disorders, adjustment disorder, post-traumatic stress disorder, eating disorders, schizophrenia and other psychotic disorders, attention deficit/hyperactivity disorder, using the same measures across disorders and at two time points. To evaluate the possibility of differentiated profiles per diagnostic group, an instrument was chosen with a broad scope, the Dresden Body Image Questionnaire (DBIQ) [28]. The DBIQ does not cover all aspects that form part of the umbrella term body image, but focuses on thoughts, beliefs, and conceptual aspects of patient's body experiences in five different domains: body acceptance, vitality, self-aggrandizement, physical contact and sexual fulfillment. Especially the incorporation of physical contact and sexual fulfillment, often reported by patients as problematic topics but rarely included in questionnaires, makes the DBIQ a suitable instrument for the broad mental health population that is the subject of our study.

Our first aim was to measure body image in a sample of patients with mental disorders and to compare scores with those in the general population, in order to obtain more insight in the relative disturbance of body image in the patients' group compared to healthy controls, thereby expecting a significantly worse body image in the patient sample. We also evaluated gender differences because non-clinical surveys show that women are generally more preoccupied and dissatisfied with their bodies than men [29–31]. The second aim was to explore body image profiles for several diagnostic groups, extending the work of Pöhlmann et al. [32] who developed and validated the DBIQ in a sample of patients with mental disorders, however without differentiating between disorders. A third aim was to examine associations between body image and perceived mental health, quality of life, and empowerment. A final aim was to investigate the sensitivity to change of the DBIQ across a period of four months of psychiatric treatment in order to get an indication of its potential use as a measure of treatment outcome.

## 2. Method

### 2.1. Participants and procedure

This study is part of the study on Creative Arts and Body- and movement therapies in the Northern Netherlands (CArBoNN), a study on the availability of and patient satisfaction with experiential therapies and the outcomes across a period of four months [33]. Participants were included from a heterogeneous patient population from four mental health care organizations in the Northern Netherlands. Inclusion criteria were referral to one of the experiential therapies (psychomotor therapy, art therapy, music therapy) and age > 18. No other inclusion or exclusion criteria were used. A total of 392 patients were invited to participate in the study while continuing their, mostly multidisciplinary, psychiatric treatment as usual [33]. About one third ( $n = 125$ ) did not participate for a variety of reasons: 41 refused, 47 were not able to fill in the self-report questionnaires

because of organic mental disorders or present mental status, and 37 were excluded for other, mostly logistic reasons. This resulted in 267 patients who participated in the first wave measurement and 214 in both the first and second wave. Fifty-three participants (20%) could not be reached for the follow-up. Those who agreed to participate in the study signed an informed consent form. As the study used data from routine outcome monitoring already in use in the treatment facilities, a waiver for this study was granted by the medical ethical committee of the University Medical Center Groningen.

The sample with at least one measurement consisted of 176 women (66%) and 91 men (34%), with a mean age of 35.24 (SD = 12.0, range = 17–69). 34% were in-patients, 66% were out-patients or attended day treatment. At the time of the first measurement, 34% of the participants had been in contact with mental health care for six years or longer, 16% for a period between two and six years and 50% had been in contact for a year or less. Table 1 shows the clinical characteristics of the sample. Mood disorders, anxiety disorders, post-traumatic stress disorder (PTSD), eating disorders and adjustment disorder accounted for 70% of the DSM-IV axis I disorders. Mood disorders formed the largest group (31%).

## 2.2. Measures

### 2.2.1. Body image

The Dresden Body Image Questionnaire (DBIQ) is a 35-item questionnaire with positively and negatively worded items [28,32]. The questionnaire consists of five subscales, covering a wide range of the individual's attitudes toward their body: body acceptance ("I wish I had a different body"), vitality ("I am physically fit"), physical contact ("I do not like people touching me"), sexual fulfillment ("I am very satisfied with my sexual experiences") and self-aggrandizement ("I use my body to attract attention"). Using a 5-point Likert scale

ranging from 1 = *not at all* to 5 = *fully*, respondents rate their level of agreement with each statement.

In a German sample drawn from the general population ( $n = 418$ ) [28], Cronbach's  $\alpha$  for the subscales were: body acceptance .93, vitality .94, physical contact .83, sexual fulfillment .91, and self-aggrandizement .81. Correlations between the subscales varied between  $r = .37$  (sexual fulfillment and self-aggrandizement) and  $r = .65$  (body acceptance and vitality), indicating the overlap between the subscales to be small to medium. In such a Dutch sample [34] Cronbach's  $\alpha$  for the subscales varied from  $\alpha = .83$  for self-aggrandizement to  $\alpha = .92$  for sexual fulfillment. Correlations between the subscales varied between  $r = .31$  (vitality and physical contact) to  $r = .65$  (physical contact and sexual fulfillment). The intraclass correlation coefficients (ICC) between test and retest scores on the DBIQ-NL scale were .88 and on the DBIQ-NL subscales .82 for vitality, .80 for body acceptance, .78 for self-aggrandizement, .79 for sexual fulfillment, and .64 for physical contact. This sample from the general public was used in the present study for comparison and consisted of 761 participants (433 women, 326 men, two persons with sex unknown), with a mean age of 30.9 (SD = 13.6). The sample was a convenience sample of healthy volunteers who were asked to participate in a study on the psychometric quality of some questionnaires. No further inclusion or exclusion criteria were applied for this sample.

### 2.2.2. Mental health

The Outcome Questionnaire (OQ-45) was used as a general measure for mental health. The OQ-45 is a 45-item self-report questionnaire measuring three domains of functioning relevant to mental health: symptom distress ("I feel no interest in things"), interpersonal relations ("I am satisfied with my relationships with others") and social role performance ("I feel that I am doing well at work/school") [35,36]. The OQ-45 was designed for repeated assessment of progress during the course of treatment and taps a wide array of symptomatology, not specific for one disorder. The OQ-45 is rated on a 5-point Likert scale ranging from *never* to *almost always* with higher scores indicating more symptoms of distress and more difficulties in interpersonal relations and social role.

### 2.2.3. Quality of life

The Manchester Short Assessment of Quality of Life (MANSA) is a short instrument for measuring quality of life in people with mental illness [37]. The MANSA comprises 4 objective questions and 12 subjective questions. The subjective items assess satisfaction with life as a whole, job, financial situation, number and quality of friendships, leisure activities, accommodation, personal safety, persons the individual lives with (or living alone), sex life, relationship with family, physical health and mental health. Each item is rated on a seven-point satisfaction scale, from 1 = *Couldn't be worse* to 7 = *Couldn't be better*. In this study only the 12 subjective items (range 1 to 7, the higher the score the better the quality of life) were used.

Table 1  
Diagnostic characteristics of the psychiatric sample ( $n = 267$ )<sup>a</sup>.

Axis I diagnostic groups DSM-IV	n	(%)	% women	Mean age
Mood disorders	83	(31.1)	62.7	38
Anxiety disorders (PTSD excluded)	41	(15.4)	56.1	34
Adjustment disorder	26	(9.7)	65.4	38
Post-traumatic stress disorder	20	(7.5)	90.0	35
Eating disorders	17	(6.4)	94.1	24
Schizophrenia and other psychotic disorders	8	(3.0)	25.0	32
Attention deficit/hyperactivity disorder	8	(3.0)	62.5	33
Other disorders <sup>b</sup>	39	(14.5)	59.0	36
Axis I diagnosis not available <sup>c</sup>	25	(9.4)	80.0	35

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, 4th edition.

<sup>a</sup> DSM-IV Axis I diagnoses were established by trained psychologists and confirmed by the psychiatrist.

<sup>b</sup> E.g. substance-related disorders, dementia, somatoform disorders, dissociative disorders.

<sup>c</sup> Diagnosed with "V code" or diagnosis not available.

### 2.2.4. Empowerment

The Mental Health Confidence Scale (MHCS) focuses on intrapersonal aspects of empowerment in psychiatric patients [38]. The MHCS is a 16-item scale with three subscales: optimism, coping and advocacy. The questions refer to a person's global confidence in his or her coping ability across a wide range of situations. Perceived coping is measured with items such as "How confident are you that you can deal with symptoms of your illness?" and "How confident are you that you can deal with feeling lonely?" Items are ranked on a scale ranging from 1, *not at all confident*, to 6, *very confident*.

### 2.3. Data analysis

Differences in body image scores between the sample of patients with mental disorders and the sample of healthy controls data as well as gender differences in the sample of patients with mental disorders at baseline were addressed using independent *t*-tests. Cohen's *d* effect sizes were calculated to quantify group differences [39]. Differences in body image scores between diagnostic groups were evaluated by analysis of variance, using Hochberg's GT2 test post hoc. The univariate association of body image scores with scores on more general measures of mental health like problem severity, quality of life and empowerment was evaluated by using Pearson correlations. A paired-sample *t*-test was conducted to evaluate stability and change in body image scores over a period of four months. Statistical analyses were conducted using SPSS 20.

## 3. Results

### 3.1. Body image in patients with mental disorders

Table 2 presents descriptive information on the DBIQ scores for women and men in the group of patients with mental disorders and the healthy controls with effect sizes for the differences (see Supplement 1 for further information on the sample of healthy controls). Effect sizes for gender differences within the patient sample are also included.

Patients with mental disorders, women and men alike, scored significantly lower ( $p < 0.001$ ) than healthy controls on DBIQ total mean score and on all subscales. All effect sizes for the differences between the patient sample and the healthy sample were large: for women  $d = 1.54$  for total mean score,  $d = 1.28$  for vitality,  $d = 1.24$  for body acceptance,  $d = 1.03$  for sexual fulfillment,  $d = 0.92$  for physical contact and  $d = 1.03$  for self-aggrandizement), for men  $d = 1.36$  for total mean score,  $d = 1.41$  for vitality,  $d = 1.12$  for body acceptance,  $d = 1.02$  for sexual fulfillment,  $d = 0.88$  for physical contact, with the exception of a medium effect size ( $d = 0.66$ ) for self-aggrandizement in men. Within the patient sample women with mental disorders scored significantly lower than men on DBIQ total mean score and on body acceptance, sexual fulfillment and self-aggrandizement, with small to medium effect sizes. No significant gender differences were found for vitality and physical contact.

We explored differences on the DBIQ between the largest diagnostic groups: mood disorders, anxiety disorders, PTSD, eating disorders and adjustment disorder respectively. For the DBIQ total mean score, participants with PTSD scored significantly lower than those with adjustment disorder. Analysis per subscale showed significant differences in body acceptance, with eating disordered patients scoring significantly lower than patients with mood disorder, anxiety disorder and adjustment disorder; the group with PTSD scored significantly lower than the adjustment disorder group. The group with PTSD also scored significantly lower on sexual fulfillment than participants with mood disorder, anxiety and adjustment disorder. The group with mood disorder scored significantly lower on self-aggrandizement than the group with adjustment disorder (Table 3).

### 3.2. Body image, mental health, quality of life and empowerment

Total score on the OQ-45 in the sample of patients with mental disorders was 81.0 (SD = 23.0), with 50.8 (SD = 15.0) for symptom distress, 16.8 (SD = 6.2) for interpersonal relations and 13.4 (SD = 5.0) for social role. Total score on the MANSA

Table 2

Mean (*M*) and standard deviation (*SD*) of scores on the Dresden Body Image Questionnaire (DBIQ) in female and male patients with mental disorders and healthy controls and test of the difference and effect size (Cohen's *d*) between these groups and within the sample of patients with mental disorders.

(sub) scale	Women					Men					Patient sample		
	Patients (n = 176)	Controls (n = 433)	Differences between groups			Patients (n = 91)	Controls (n = 326)	Differences between groups			Differences within group between women and men		
	M (SD)	M (SD)	t	df	d	M (SD)	M (SD)	t	df	d	t	df	d
DBIQ total score	2.75 (0.60)	3.56 (0.44)	18.35**	600	1.54	3.07 (0.61)	3.79 (0.43)	12.84**	413	1.36	4.10*	256	.53
Vitality	2.92 (0.72)	3.75 (0.58)	15.10**	607	1.28	3.05 (0.80)	4.01 (0.55)	13.34**	415	1.41	1.38	265	.17
Body acceptance	2.70 (0.91)	3.58 (0.66)	13.38**	607	1.24	3.22 (0.78)	3.87 (0.57)	8.92**	415	1.12	4.60*	265	.40
Sexual fulfillment	2.64 (1.03)	3.58 (0.78)	12.99**	599	1.03	3.06 (1.08)	3.98 (0.69)	10.45**	413	1.02	3.07**	255	.61
Physical contact	3.06 (0.88)	3.76 (0.61)	11.23**	607	0.92	3.25 (0.75)	3.84 (0.58)	8.19**	415	0.88	1.72	265	.23
Self-aggrandizement	2.47 (0.71)	3.11 (0.52)	12.20**	606	1.03	2.73 (0.62)	3.23 (0.55)	7.46**	414	0.66	2.91**	263	.39

\*  $p < .01$ .

\*\*  $p < .001$ .



Table 3

Results on the DBIQ per diagnostic group.

Axis 1 disorders	Mood (n = 83)	Anxiety (n = 41)	PTSD (n = 20)	Eating (n = 17)	Adjustment (n = 26)	F	p
DBIQ	2.73 (0.62)	2.82 (0.57)	2.50 <sub>a</sub> (0.52)	2.60 (0.66)	3.11 <sub>a</sub> (0.59)	3.379	0.011
Vitality	2.79 (0.77)	2.78 (0.61)	2.78 (0.60)	3.09 (0.90)	3.05 (0.60)	1.264	0.286
Body acceptance	2.83 <sub>c</sub> (0.89)	2.76 <sub>d</sub> (0.88)	2.51 <sub>e</sub> (0.90)	2.04 <sub>c,d,f</sub> (0.78)	3.30 <sub>c,f</sub> (0.90)	5.786	< 0.001
Sexual fulfillment	2.66 <sub>g</sub> (1.03)	2.88 <sub>h</sub> (1.00)	1.92 <sub>g,h,i</sub> (1.02)	2.45 (1.09)	3.28 <sub>i</sub> (1.02)	5.303	< 0.001
Physical contact	3.03 (0.87)	3.16 (0.76)	2.75 (0.59)	3.07 (1.02)	3.18 (0.82)	1.002	0.408
Self-aggrandizement	2.34 <sub>b</sub> (0.67)	2.48 (0.67)	2.33 (0.59)	2.44 (0.63)	2.84 <sub>b</sub> (0.73)	2.923	0.023

DBIQ: Dresden Body Image Questionnaire. Standard deviations appear in parentheses. Means in a row sharing subscripts are significantly different at  $p < 0.05$  based on Hochberg's GT2 test.

was 4.1 (SD = 0.84); total score on the MHCS was 62.1 (SD = 12.8), with 23.8 (SD = 5.5) for optimism, 25.8 (SD = 6.6) for coping, and 12.5 (SD = 2.7) for advocacy.

Pearson's  $r$  between OQ-45 and the DBIQ was strong for mean total score and for the subscales vitality and body acceptance and moderate for sexual fulfillment and self-aggrandizement. Correlations between MANSA and DBIQ were strong for mean total score and moderate for body acceptance, vitality and sexual fulfillment. Pearson's  $r$  between and MHCS and DBIQ was moderate for mean total score and subscales vitality, body acceptance, sexual fulfillment and self-aggrandizement. OQ-45, MANSA as well as MHCS correlated low with the subscale physical contact (see Table 4).

For the Dutch version of the OQ-45, the cut-off score for clinical dysfunctioning is 55. A person who scores on or above the cut-off score belongs to the dysfunctional (clinical) range [35]. Participants in this clinical range ( $n = 158$ ,  $M = 2.82$ ,  $SD = 0.60$ ), scored significantly lower on DBIQ total score than participants ( $n = 45$ ,  $M = 3.42$ ,  $SD = 0.51$ ) in the healthy range ( $t(201) = 6.159$ ,  $p < 0.001$ ).

Total DBIQ score and scores on all subscales for those who participated in the second measurement ( $n = 214$ ) were (significantly) higher after four months (Table 5).

Differentiated per diagnosis, effect sizes for mood disorders were small for total DBIQ ( $d = 0.41$ ) and for all subscales ( $d = 0.32$  for vitality,  $d = 0.25$  for body acceptance and sexual fulfillment,  $d = 0.31$  for physical contact and  $d = 0.43$  for self-aggrandizement). Effect sizes for anxiety disorders were small for total DBIQ ( $d = 0.45$ ) and

for body acceptance ( $d = 0.49$ ) and self-aggrandizement ( $d = 0.38$ ). Effect sizes for PTSD were moderate for body acceptance ( $d = 0.62$ ) and self-aggrandizement ( $d = 0.66$ ). Changes in the other domains and in the other diagnostic groups over four months were not significant (for details, see Supplement 2).

#### 4. Discussion

This study measures dimensions of body image, reports diagnosis-specific body image profiles, and also evaluates associations of body image with gender, self-reported mental health, quality of life and empowerment in a large sample of patients with a range of psychiatric disorders.

In general, scores on body image in the sample of patients with mental disorders were significantly lower, for both men and women, than those in the healthy controls used for comparison, with large effect sizes and with lowest scores in patients with PTSD. Within the patient sample we observed large gender differences on the dimensions of body acceptance and sexual fulfillment, and small gender differences on vitality. Associations of body image with self-reported mental health, quality of life and empowerment were moderate to strong, with the exception for the subscale physical contact, which showed small associations with the general outcome measures. Within the patient sample significantly higher scores on body image were found for patients who scored in the non-clinical range on self-reported mental health. Changes in body image scores across a period of four months of treatment were significant with small to moderate effect sizes.

Table 4

Pearson correlations at baseline of OQ-45, MANSA and MHCS with DBIQ and its subscales.

	OQ-45	MANSA	MHCS
DBIQ	−0.60	0.51	0.49
Vitality	−0.57	0.39	0.42
Body acceptance	−0.53	0.44	0.45
Sexual fulfillment	−0.45	0.45	0.36
Self-aggrandizement	−0.36	0.28	0.35
Physical contact	−0.27	0.29	0.22

DBIQ: Dresden Body Image Questionnaire; MANSA: Manchester Short Assessment of Quality of Life; MHCS: Mental Health Confidence Scale; OQ-45: Outcome Questionnaire. All correlations are significant at the 0.01 level (2-tailed).

Table 5

Stability and change in DBIQ-scores across a period of four months ( $n = 214$ ).

	Pre (SD)	Post (SD)	t	df	d
DBIQ	2.86 (.63)	2.96 (.64)	3.77***	197	0.27
Vitality	2.96 (.74)	3.06 (.75)	2.82**	207	0.20
Body acceptance	2.89 (.88)	2.98 (.89)	2.83**	209	0.20
Sexual fulfillment	2.79 (1.07)	2.92 (1.09)	2.56*	195	0.18
Physical contact	3.11 (.85)	3.21 (.81)	2.58*	209	0.18
Self-aggrandizement	2.56 (.70)	2.66 (.68)	2.94**	207	0.20

DBIQ: Dresden Body Image Questionnaire.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

The large differences between patients with mental disorders and healthy controls on most dimensions of body image are in line with the few available studies comparing body image in a specific mental disorder with healthy controls. Dyer et al. [20] compared women with post-traumatic stress disorder after childhood sexual abuse with healthy controls and found a significantly lower body image in the patients. Stumpf et al. [40] compared body image in psychosomatic out-patients with norms based on the general population and found that the first group showed significantly more impaired body image than controls. It may be concluded from our study that body image is affected in individuals with psychopathology, possibly as part or possibly as a precursor or result from the disorder. The experience of the body as ‘my body’ and a positive attitude toward one’s body are acquired in early development and are primarily based on physical experiences and accompanying clear definitions of boundaries between self and others. Interpersonal embodied processes between children and the people in their environment are conditions for the construction of a coherent and positive body image, which may be severely impaired by threats to the physical integrity of the body [21], but also by neglect or low capacities in caregivers to offer embodied interactions [41]. From this developmental perspective a disturbed body image may be regarded as a shared etiological factor across different diagnoses.

Our results give insight into the association between specific dimensions of body image and the content of the mental health problems. Body acceptance and sexual fulfillment showed the largest differences between the diagnostic groups. Body acceptance was lowest in the group with eating disorders, which is in accordance with other studies [9], followed by the group with PTSD. The large impact of traumatic events on body acceptance was also shown in studies with patients suffering from (early) childhood abuse who report not only highly aversive emotions toward specific areas of their body but also a more general negative evaluation of their body as a whole [20,22,42]. Scores on sexual fulfillment were extremely low in patients with PTSD. PTSD may be a result of sexual abuse experiences and the gross influence of sexual abuse on body image and sexuality has been emphasized in previous studies [21,43]. Because the prevalence of sexual abuse in our sample of patients was unknown, it is not possible to substantiate this relation in our sample. The large differences found between PTSD and adjustment disorder, notably stressor-related like PTSD, are also important in view of the not uncommon strategy to merge these disorders in statistical analyses (see for example Stumpf et al. [40]), thus evening out the possibly high versus low scores in the respective disorders. Our preliminary conclusion is that a diagnosis-specific profile emerges with on the one hand differences in the severity of body image impairment, with PTSD being the most affected disorder, and on the other hand differences in emphasis with regard to dimensions, with body acceptance and sexual fulfillment as most differentiating between the diagnoses.

Remarkably, vitality did not differ significantly between the various disorders. Participants in all groups scored significantly lower on vitality than healthy controls, which gives reason to consider the low experience of vitality not to be restricted to mood disorders, but to represent a common problem in people with mental health problems. In this perspective it is interesting that, contrary to our expectations, no significant gender differences were found on the subscale vitality in the patient sample, whereas these differences were present in the sample from the general population. This might indicate that lack of vitality is an especially important signal of mental health problems in men. It should be noted that vitality as a dimension of body image is not identical with objectively measured vitality or physical fitness but refers to the subjective perception of an adequate energy level. Although the association between these subjective feelings of vitality and objective fitness is unclear, it seems plausible that feeling low on vitality hinders engaging in physically healthy and vitality enhancing activities and vice versa.

Moderate to strong associations of body image with self-reported mental health, quality of life and empowerment were also observed in this study, providing initial evidence for the relationship between body image and domains of functioning that are relevant for mental health, such as symptom distress, interpersonal relations and social role performance. Furthermore, the study supports the view of phenomenological psychopathology that body image is a central component of how an individual experiences him or herself in the world, as a system of conscious perceptions, emotional attitudes and conceptual beliefs that pertain to one’s body. The body functions as the medium and background of our experiences and is therefore a central element in psychopathology [17,44]. Thus, more insight in changes in the embodied existence may also lead to an advanced understanding of mental illness.

A final aim of our study was to measure the sensitivity to change of body image as measured with the DBIQ to gain insight in its potential value as an outcome measure of treatment. Results showed modest but statistically significant improvements of body image over time, providing some evidence for an effect on how patients relate to their bodies after in this case experiential treatment in combination with regular mental health contact.

The most important limitation of the current study lies in the fact that the sample of patients with mental disorders has a large variety in diagnosis and type of interventions and consists of inpatients as well as outpatients and patients attending day treatment. Half of the patients were already in treatment for two years or more. Not all of these factors could be taken into account in all analyses. For instance, in our comparison of the level of body disturbance in people with a mental health disorder and that of controls we refrained from analyzing results per specific diagnostic category, because our central aim was to obtain general information on this issue. It is clear that results from our heterogeneous sample

should of course be interpreted with care. Only general and preliminary conclusions can be drawn and further research should look into differences in body image and its changes in separate groups and for specific treatments. The same holds true for the analysis of the multivariate associations between (different domains of) body image and the severity of psychiatric symptoms or influence of these problems on quality of life and empowerment. Since our study was limited by sample size and heterogeneity the emphasis lies on the description of the magnitude and possibly dimensional character of these differences in body image in patient groups versus healthy controls. For now no attempt was made to develop and test multivariate models to explain these differences.

Notwithstanding these limitations, the conclusion seems justified that a negative body image is common in a broad range of psychiatric disorders, and because of this it is recommended to integrate the measurement of body image in standard diagnostics. This will make it possible to study the effect of treatment on body image and in particular the effect of specific interventions targeting body image, such as body- and movement oriented interventions [45].

In sum, the current study provides evidence that persons with a broad range of psychiatric disorders report a substantially more negative body image than healthy controls, with differences between diagnostic groups and gender. These findings contribute to the small but growing body of literature indicating that a negative body image is not restricted to appearance-related disorders, but is a common factor in mental health disorders.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.comppsy.2017.01.004>.

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