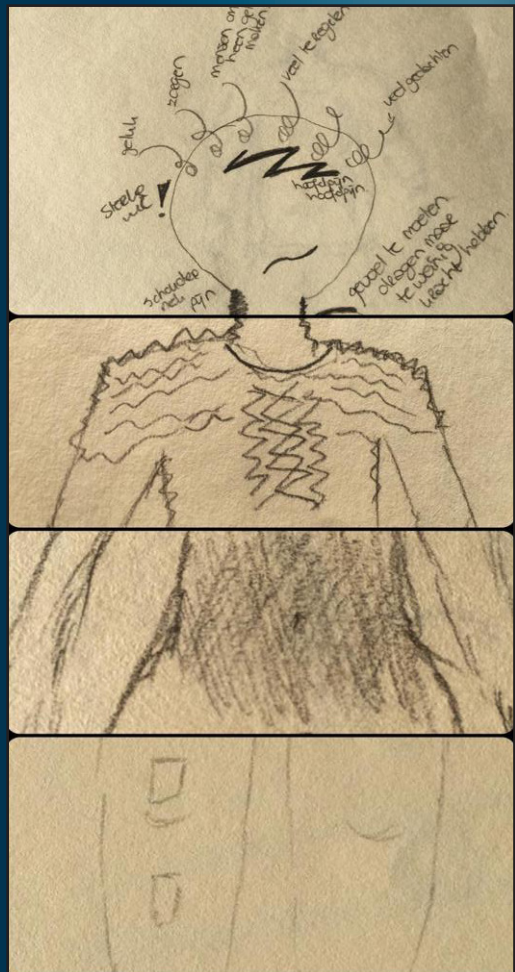


BODY-RELATEDNESS IN SOMATIC SYMPTOM DISORDER



Hanneke Kalisvaart

**BODY-RELATEDNESS
IN SOMATIC SYMPTOM
DISORDER**

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Body-relatedness in somatic symptom disorder
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Thesis Utrecht University, the Netherlands

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BODY-RELATEDNESS IN SOMATIC SYMPTOM DISORDER

**De verhouding tot het eigen lichaam bij
somatische-symptoomstoornissen**

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de

Universiteit Utrecht

op gezag van de rector magnificus, prof. dr. H.R.B.M. Kummeling,

ingevolge het besluit van het college voor promoties

in het openbaar te verdedigen op

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Johanna Baukje Kalisvaart

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te Haften

Promotor: Prof. dr. R. Geenen

Copromotoren: Dr. J.T. van Busschbach

Dr. S.A.M. van Broeckhuysen-Kloth

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CHAPTER 1

DEDUCTIE

Is het een muur van glas, de palm van een hand rechtop? Is het een gebrek aan gezond verstand, ijzer in het bloed? Peuten geven degelijk advies:

Daal af in het kind dat geen woorden kent, alleen jij kan erbij. Maar waar ik ook grijp, ik grijp mis. Het is geen sleetse woede die spieren stijft, geen

allergie, geen zeldzame waan. Het is een tikfout in de genen. Melancholie op celniveau. Het is een haperend mechaniek. En nee, ook dat is het niet.

Peter Swanborn
uit: Het wolkenreparatieatelier,
Podium, 2019

GENERAL INTRODUCTION

INTRODUCTION

Persons with somatoform disorder (DSM-IV)¹ or somatic symptom disorder (DSM-5)² experience chronic distressing somatic symptoms together with excessive thoughts, feelings, or behaviors. The body presents problems that can be hard for the client to understand, to solve, to deal with and to accept³, and for clients relating to their body may be troublesome.⁴ The prevalence of somatic symptom disorders varies according to the context: approximately 6% in the general population, 13% in general practice and up to 33% in secondary care.⁵

Treatment of somatic symptom disorder generally consists of body-mind education, activation and psychotherapeutic interventions, aiming at symptom reduction, improved well-being and functioning.⁶ Depending on the treatment setting and the severity of the disorder, this can be done by a single general practitioner, physical therapist or psychotherapist or, by a multidisciplinary team. Active participation of the client and supportive biopsychosocial management are considered important in treatment of the symptoms.^{3,7}

Psychological interventions have been found effective in improving illness consequences, such as well-being and functioning, but hardly in changing symptoms and psychopathology.^{6,8,9} The evidence for effective interventions and underlying mechanisms is low to moderate and further research is needed in order to help these clients more efficiently.³

Experience-based therapies, such as specific forms of physical therapy^{10,11}, occupational therapy¹², art therapy^{13,14}, psychomotor therapy¹⁵⁻¹⁷, and dance/movement therapy^{18,19} are considered a valuable addition to more verbal oriented cognitive and emotion-focused interventions. For clients these therapies, that address the body more or less directly, may feel more appropriate than only talking to a psychotherapist, especially when a psychological point of view is hard to accept because of the somatic nature of the disorder⁹. Also, the active experience is thought to provide an opportunity for the client to explore less conscious processes²⁰ and to become more aware of bodily signals and behavior, in order to regulate automatic processes, to appreciate and accept the body and, to improve the “embodied” identity.^{21,22} The effectiveness of experience-based therapies for somatic symptom disorder has thus far been barely studied. In a systematic review of body awareness interventions effects on

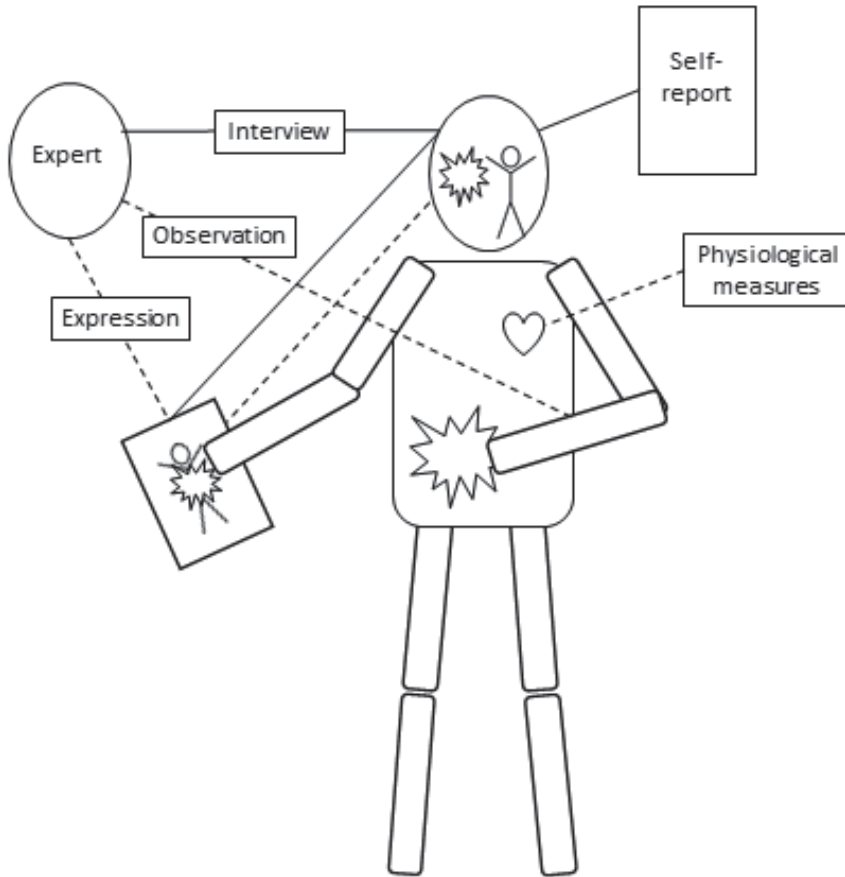




Figure 1. schematic overview of assessment methods of body experience

 somatic symptoms
 other physical experiences

Solid lines: self-report
Dotted lines: observational

depression, anxiety and health-related quality of life were found, but there is a lack of high quality studies.²¹ Also relaxation techniques have been reviewed systematically, with a positive effect of guided imagery on pain and daily functioning for persons with fibromyalgia.²³

One problem when using an experience-based treatment focus in somatic symptom disorder is the lack of appropriate outcome measures. The main goals of these therapies in somatic symptom disorder are improvements in body-related awareness, attitude, and behavior.¹⁵ There are self-report questionnaires, measuring for example body awareness²⁴, body attitude^{25,26}, or somatoform dissociation²⁷ available but most of these have not been studied in somatic symptom disorder and only assess conscious body experiences. However, clients with somatic symptom disorder are thought to be cognitively distanced from their body⁴ and therefore self-report likely does not contain all the relevant information for treatment and evaluation. In order to be able to examine the effectiveness of experience-based therapies assessment instruments are needed that, in addition to self-report questionnaires, also cover body-related information that is relevant to somatic symptom disorder but less consciously available.

A schematic overview of assessment methods that might be useful to measure aspects of body experience is provided in figure 1. Assessments can be done on various levels, addressing more and less conscious processes, through self-report as well as observation. In somatic symptom disorder and other polysymptomatic distress syndromes such as fibromyalgia, objective physical measures, such as heartrate, muscle tension and activity, have thus far not been associated with actual symptom severity^{28,29} or outcomes of treatment³⁰ and therefore they seem less appropriate. From the perspective of experience-based therapies, it is above all one's relationship to the body with symptoms, that is relevant to clients and that can be changed through therapy, but this is a complex concept. This psychological-phenomenological dimension of body experience encompasses body satisfaction, awareness of the body, and the cognitive, affective as well as behavioral attitude towards the body.³¹ The conscious aspects of body experience, such as body awareness and attitude in relation to the body and symptoms³² could be assessed through interviews³³ or self-report questionnaires. The Dresden Body Image Questionnaire^{25,26} is such a self-report measure that assesses five body-related scales: vitality, acceptance, self-aggrandizement, sexual fulfilment and physical contact. This questionnaire addresses cognitions and conscious body

experiences. As stated above, since clients with somatic symptom disorder can be dissociated from their body⁴, these conscious experiences could be biased, and less conscious aspects such as automatic behavior patterns, affects and cognitions are considered to maintain the symptoms.³⁴ It is suggested that this requires other assessment methods, such as observation by professionals or projective and expressive techniques. In clinical practice, for instance, physical therapists observe clients in standardized exercises and art therapists let them draw their body as experienced. In order to be able to examine which changes in the client's relationship to the body are important for amelioration of somatic symptom disorder, a first challenge is to assess and validate assessment techniques reflecting body experiences.

This research objective that has risen from clinical practice in the multidisciplinary treatment of clients with severe somatic symptom disorder, is the starting point of a long journey. Although there are body-related empirical studies in other groups^{e.g.35-37} and some publications describe the body-related treatment of clients with somatic symptom disorders in a qualitative way^{e.g.14,15,38}, further quantitative research on this topic can improve our understanding of somatic symptom disorder. This dissertation is a pioneering exploration of the feasibility of experience-based assessment of body experiences in somatic symptom disorder.

The dissertation builds on the clinical expertise of professionals as well as the experiences of clients with somatic symptom disorder in a tertiary care center. The overall aim is to examine the definition of body-relatedness and the feasibility of its assessment in clients with a somatic symptom disorder. In order to introduce the clinical setting of body-related treatment, *chapter two* describes body awareness interventions in somatic symptom disorder. All kinds of body-related factors can play a role in sustaining the symptoms. *Chapter three* describes the search for a complete definition and model of body-relatedness from the viewpoints of clients as well as professionals. Methods to assess the identified aspects of body-relatedness are developed and evaluated in the remaining chapters. *Chapter four* examines the validity for somatic symptom disorder of the self-report inventory Dresden Body Image Questionnaire (DBIQ-35) and *chapter five* evaluates own body drawings as a potential assessment tool to assess body experiences on a less cognitive level. To examine whether features of body drawings are characteristic for clients with somatoform disorder, *chapter six* compares drawings from clients with those of a matched sample

from the general population. Finally *chapter seven* examines the feasibility of standardized observations by physical therapists as an assessment tool of movement behavior and interoceptive awareness. The general discussion in *chapter eight* will summarize the main results of all studies and reflect on their contribution to the field of experience-based assessment and treatment in somatic symptom disorder.

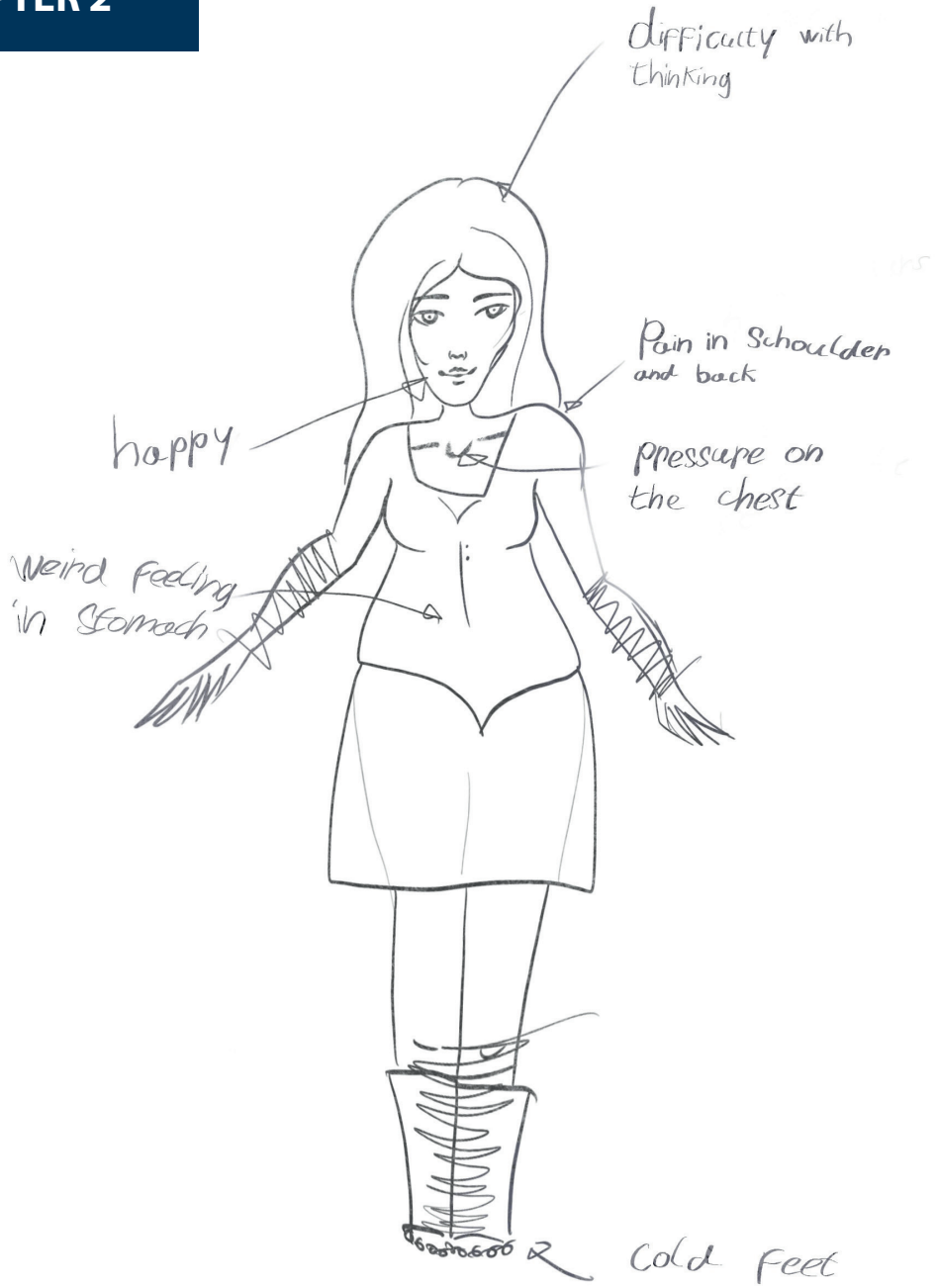
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CHAPTER 2



Body awareness interventions for somatic symptom disorder in clinical practice

Hanneke Kalisvaart and
Lia van der Maas

English adaptation of a chapter in: J. Spaans, J. Rosmalen, Y. van Rood, H. van der Horst & S. Visser (Red.)
Handboek behandeling van somatisch onvoldoende verklaarde lichamelijke klachten (pp. 377-386).
Houten: Uitgeverij LannooCampus, 2017.

ABSTRACT

Psychomotor therapy is a body-oriented therapy that uses awareness of the body to help clients gain insight into how they regulate and are influenced by emotions, thoughts, and behavior. This kind of intervention seems appropriate for somatic symptom disorder because of the focus on restoring the disturbed connection of body and mind. Awareness of the body can be addressed on the levels of basic body signals, meaning in the here and now, and personal history. Interventions provide opportunities to study and change automatic patterns of responding to and with the body. Three main phases of psychomotor therapy consist of creating a safe context, improving body awareness through body and movement interventions, and integration in daily life. Some evidence for positive effects of body awareness interventions has been provided, especially in polysymptomatic distress disorders such as fibromyalgia. There is an urgent need of good quality randomized controlled trials to fully examine the effectiveness of body-oriented (psycho)therapies. In order to examine the effect and mechanisms of body awareness interventions, relevant experience-based modes of assessment need to be developed.

INTRODUCTION

People with somatic symptom disorder (DSM-5, APA, 2013) experience chronic distressing somatic symptoms together with excessive thoughts, feelings, or behaviors. The body presents problems that can be hard to understand, to solve, to deal with and to accept. This chapter describes the clinical practice of interventions that specifically address awareness of the body (Kalisvaart et al., 2012; Michels et al., 2015; Spaans et al., 2009).

Body awareness can be defined as a multidimensional construct involving sensitivity and attentiveness to internal body signals (e.g. muscle tension, heartbeat, fluttering in the stomach), to overall body states (e.g. strained, relaxed) and to the body's responses to changes in the environment or emotions (e.g. acceleration of breath when you get scared or tightening of muscles when someone gets too close to you) (Van der Maas et al., 2015). People with somatic symptom disorder have been suggested to have disturbed body awareness (Courtois, Cools & Calsius, 2015; Price & Mehling, 2016), being more aware of bodily signals that are related to the somatic symptoms than of "normal" - non-symptom related - signals, such as raised heartbeat, faster breathing and muscle pain after physical exercise (Houtveen, 2009; Schaefer, Egloff & Witthoef, 2012; Van der Maas et al., 2015; Van Dixhoorn, 2000). When people interpret these signals of physical activity as symptoms, they may start to avoid physical activity which may, doing so, contribute to persistence of the symptoms. On the other hand, they may try to neglect disturbing signals –symptom related or not– and give the body the least possible attention. Professionals suggest that this may lead to physical and mental overuse with aggravation of the symptoms as a consequence (Janssens et al., 2017). Moreover, it has been suggested that some persons with somatic symptom disorder may have premorbid disturbed body awareness (Lind, Delmar, & Nielsen, 2014). Trauma and problems in development and upbringing may lead to restricted contact with the body and difficulty to understand bodily signals (Ogden & Fisher, 2015), and thus might make the person vulnerable for the development of somatic symptom disorder (Sack, Boroske-Leiner & Lahmann, 2010). Therapies that help people with somatic symptom disorder to become more aware of their body and get a more "healthy" relationship to their body (Kalisvaart et al, 2012) are thought to reduce the negative consequences of the somatic symptoms (Courtois, Cools & Calsius, 2015).

DESCRIPTION OF THERAPIES THAT FOCUS ON BODY AWARENESS

Promoting body awareness can be the focus of various treatment interventions for somatic symptom disorder. Body-oriented therapies that directly address the experience of the body and movement, are assumed to promote psychological processes that are beneficial for the well-being and functioning of the client.

Body-oriented therapies make use of different techniques in order to improve body awareness, varying from relaxation techniques like progressive relaxation, mindfulness and yoga, to resilience training, family therapy, and Pesso Boyden psychomotor therapy (Pesso & Crandell, 1991) and sensorimotor psychotherapy (Ogden & Fisher, 2015). Table 1 shows three levels of body awareness that can be addressed and the different disciplines that may be involved.

Table 1. Levels of body awareness with associated techniques and disciplines

Level of body awareness	Technique	Discipline
1. Sensing basic body signals 'Action-oriented'	relaxation, mindfulness, mobilizing awareness, yoga, tai chi, sports etc.	physical/occupational therapist, psychomotor therapist, (psychologist)
2. Giving meaning to body signals in here and now 'Experience-oriented'	stabilization after trauma, body mentalization, resilience training, non-verbal group- or family therapy, emotion regulation etc.	psychomotor therapist, haptotherapist, specialized psychologist or physical therapist
3. Giving meaning to body signals in the context of personal history (trauma and attachment) 'Discovering-conflict-oriented'	somatic experiencing, sensorimotor psychotherapy, Pesso psychotherapy etc.	specialized psychomotor therapist or psychotherapist

Body-oriented therapies for somatic symptom disorder are mainly executed by physical therapists, haptotherapists and psychomotor therapists. In this chapter we will focus on psychomotor therapy (PMT), also named *body-oriented (psycho)therapy* (e.g. Probst, Knapen, Poot & Vancampfort, 2010; Röhricht, 2009).

PRINCIPLES OF BODY-ORIENTED THERAPIES

Probst and coworkers (2010) distinguish two basic types of body-oriented interventions: action-oriented and experience-oriented. Although in clinical practice a combination of both is mostly applied, research of intervention effectivity usually focusses on one or the other.

Action-oriented interventions for example focus on stepwise improvement of physical fitness (e.g. with graded exercise, Nijs, Paul & Wallman, 2008) in order to reduce symptoms and improve functioning and well-being. Another category of *action-oriented* interventions is teaching and using relaxation techniques and meditation, such as mindfulness. This addresses the first level of body awareness, sensing basic body signals, such as muscle tension, heart beat and respiration. Several maintaining factors can be reduced with these interventions, such as not being aware of the moments when the symptoms are absent, taking too little time for relaxing activities, and physical exhaustion. Conrad and Roth (2007) assume that, when people learn to achieve deep muscle relaxation, they also learn to regulate distressing thoughts, emotions and sensations, which is core to somatic symptom disorder.

Experience-oriented interventions concern, amongst others, reinforcement of self-esteem and body experience, and emotion regulation. The client can, for example, become aware of body signals that are associated with physical distress, self-rejection, stress or anger, and learn to adequately express emotions in words, movement and in relation to others, which fits in the second level of body awareness (e.g. Boerhout et al., 2013; Goffin, Broekmans & Besemer, 2010; Kalisvaart, 2010; Kind, 2014; Van der Maas, 2010; Van der Maas, et al., 2015; Michels et al., 2015; Payne & Brooks, 2016).

A deeper level of experience-oriented interventions, *discovering-conflict-oriented* (NVPMT, 2009), addresses body memory and the story that the body tells through the somatic symptoms. Especially trauma can lead to typical physical reactions, such as conversion disorder. Also in attachment disorders that have a basis in early childhood experiences, characteristic physical patterns may have developed that can become problematic in adult relationships (Ogden & Fisher, 2015). These patterns can be studied and changed through awareness of body-mind interaction and exploring new actions and experiences. This kind of therapy addresses the third level of body awareness.

Experience-oriented interventions focus mainly on sustaining factors such as difficulty to experience and interpret emotions and physical processes, insufficient or disturbed body awareness and negative body experiences, for example manifested in preoccupation with the symptoms, anxiety, catastrophizing thoughts, high demands and avoidant behavior.

Both action- and experience-oriented interventions are relevant to persons with somatic symptom disorder. Being physically present and coming into movement can confront the client with the symptoms. A combination of both interventions is recommended because, next to physical fitness, motor ability and regulation of tension, the experience of the body with its symptoms and relating to it, also needs attention.

PSYCHOMOTOR THERAPY FOR PERSONS WITH SOMATIC SYMPTOM DISORDER IN CLINICAL PRACTICE

Body awareness is considered relevant for clients with somatic symptom disorder because the body is experienced as problematic. Therefore the body is an obvious starting point for therapy. Some clients have a clear affinity with movement and sports, and therefore choose body-oriented therapy. But also when a client has a strong cognitive preference, body-oriented therapy can be indicated as it gives alternative routes to understand emotions and experiencing. Sometimes a client is too anxious to focus on the body, for example after sexual abuse, or the gym evokes too many negative associations, for example when the client had bad experience in school sports. In such cases another experience-based therapy, such as art therapy, could be chosen or still at first a cognitive intervention. The physical condition of the client is no contra-indication for body-oriented therapy, because it can be adapted to the fitness and physical (dis)abilities of the client.

As an example of components of interventions aimed to improve body awareness in clinical practice, this paragraph describes three phases of psychomotor therapy: creating a safe context, improving body awareness, and integration.

Creating a safe context

To enhance body awareness a safe context is necessary and needs to be created in the first phase of therapy. Next to usual agreements that are part of a therapeutic relationship, physical safety is explicitly discussed, for example by deciding if touch can be used, by examining what place in the room feels to be a safe starting position and by figuring out together what kind of exercises work best. The psychomotor therapist is attentive to non-verbal signals that are contrary to the clients words. By adjusting to the client's body signals and talking about eventual discrepancies, the therapist shows understanding of the client, and, by doing so, provides an example of taking care of the body.

Mrs. Jones, a woman of 31 with two daughters of six and four, suffers from pelvic instability since the birth of her children. She is not able to follow up the (action-oriented) advices of her physical therapist concerning alternation of activity and rest because she gets restless when she lays down in order to relax. She has a lot of pain but keeps going all day until she is exhausted and goes to bed early. Since she knows that she will not be able to take care of her children if she goes on this way, she is referred to a psychomotor therapist in order to learn to better listen to her body that she actually disgests.

At the start of the first meeting Mrs. Jones is quite nervous; the room is too big and it makes her think of the terrible gym classes that she has gone through. She is prepared to do anything she is asked to, but in order to do so she has to switch off part of herself. Together with the therapist she decides to place the chairs near the window and to look outside instead of into the room. They also agree not to do any activities that could make her "switch off". At first the therapy remains restricted to moving and sensing her "safe", neutral body parts: the arms and lower legs. In order to get in contact with her whole body, the therapist introduces symbols, that help her to experience her body with some distance.

Improving body awareness

When basic safety is achieved, the actual problems can be addressed. For clients with somatic symptom disorder this can be, for example, difficulty to feel and respect physical limitations, difficulty to recognize and express emotions, and negative body experiences. With the use of, for example, movement exercises, directing attention,

symbols, group interaction and reflection, the client becomes more aware of his or her own body and behavior with accompanying emotions and cognitions. In this way opportunities for new experiences are created that can improve body awareness and experience.

Mrs. Jones uses a big exercise ball to symbolize her body and a table tennis ball that she lays aside, to represent herself as a person. In this way she expresses how much space her body has always taken. As a child she had severe eczema, which implied frequent visits to doctors, a worried mother, and classmates that did not want to hold hands. Therefore she learned that she was dirty. Moreover, she learned that the illness gave her attention from her quarreling parents. Later on she even started to hurt herself on purpose. What she did not learn was how to sense her body and the related emotions and thoughts. The big ball is thus very present; so much that there is no room for the small ball, her personal experience of bodily sensation, thoughts and emotions, and Mrs. Jones is insecure about that part of herself. It is hard to bear for her to make such a vulnerable part of hers more visible and take it seriously. Actually she appears to be afraid of her own emotions when she becomes more aware of her bodily experience. Therefore some sessions are spent on becoming more aware of the physical aspects of emotions and learning to express and regulate them. Mrs. Jones learns for example "controlled boxing": she is taught how to hit against a boxing ball and to control her power, and thereafter she can connect her angry feelings with the movement. She is anxious about actually expressing her feelings with her body. This way she stops avoiding her feelings and takes the first steps towards being consciously present in her body and showing how she thinks about things in life.

Integration

In the last phase of treatment the integration to everyday life is important. This transition is facilitated by numerous behavioral exercises that can be done within psychomotor therapy. The client can, for instance, practice through physical role play with everyday situations, eventually with the help of group or family members. By practicing with bodily experiences in psychomotor therapy, the new awareness of body and behavior can be remembered more easily than just through words and thoughts.

Mrs. Jones gets accustomed to be aware of her feelings and to say what she thinks about situations. Also she is more aware that the belief that her body is dirty actually stems from her youth. Although this thought often recurs, she knows it is not true. Now it becomes possible to more adequately sense her body and to place, for instance, a hand on her painful back. Also she dares to show herself more: in a touching moment she places her hand against the hand of the therapist without withdrawing as a person. Then she is ready to start with regular physical therapy. In the psychomotor sessions we focus on her body in everyday situations. Finally she can feel and tolerate that her body sometimes asks for rest. By doing so her body and particularly her pelvis can recover little by little.

THERAPEUTIC PITFALLS

One advantage of body oriented therapies is that the body with its symptoms is the starting point of therapy. The therapist literally can stand next to the client and together they can study the symptoms. However using the body as a medium should be done carefully because of its powerful connection to the past. The therapist must be aware that overwhelming memories can be triggered through touch, proximity, invoking emotions and group interactions, and how to resource the client if needed. Extensive experience with body-oriented work and a good working alliance and attunement with the client are helpful to make the therapy successful.

SCIENTIFIC BASE

The last ten years the amount of research of body awareness interventions has slowly grown. Courtois, Cools & Calsius (2015) conducted a systematic review and meta-analysis of these interventions for persons with fibromyalgia and chronic fatigue syndrome, polysymptomatic distress disorders that are closely related to somatic symptom disorder. Twenty-nine randomized controlled trials were included, that mainly concerned fibromyalgia (26). The diversity of interventions was large: thirteen hands-on interventions such as massage and other interventions that use touch, and nineteen hands-off interventions such as yoga, Mensendieck therapy, dance, and relaxation techniques. They conclude that both intervention types have a positive effect on depression, anxiety and health-related quality of life. Also a positive but heterogeneous effect was found on pain and fibromyalgia impact. Due to the limited

amount of studies per intervention and the lack of qualitatively strong research no further conclusions can be drawn concerning the efficacy of specific interventions. So, Courtois et al (2015) concluded that there is a need for methodologically strong studies in order to better evaluate body-oriented interventions. In these studies, body awareness should be included as mediator variable and outcome measure. Moreover, controlled trials of body-oriented interventions should be done in clients with somatic symptom disorder.

Van der Maas and coworkers (2015) executed a randomized controlled trial targeted at the efficacy of psychomotor therapy for chronic pain. Treatment as usual, multidisciplinary pain rehabilitation, was compared to the same program complemented with psychomotor therapy. Body awareness was considered the mediator variable that brought about change. On short term significant positive effects of psychomotor therapy compared to treatment as usual, were found on depression, catastrophizing and body awareness. This effect continued three months after treatment for catastrophizing and twelve months for body awareness. Also the differences in treatment effect between persons with weak and strong body awareness were studied (Van der Maas et al., 2016): the persons with strong body awareness had no significant gain from psychomotor therapy, compared to treatment as usual (controlled for baseline levels of outcomes) while persons with weak body awareness reported significant improvements in depression, catastrophizing, body awareness, self-efficacy and mental aspects of health-related quality of life.

For chronic fatigue syndrome and fibromyalgia, the efficacy of relaxation techniques, a frequently used method for improvement of body awareness was partly confirmed by Meeus et al. (2014) in a systematic review. They conclude that there is moderate evidence that guided imagery has positive effects on pain and daily functioning for persons with fibromyalgia. For chronic fatigue syndrome a multimodal approach seems more effective than relaxation as a stand-alone intervention. No conclusions could be drawn about other relaxation techniques.

Several systematic reviews and meta-analyses have been published about mindfulness for polysymptomatic distress conditions that are related to somatic symptom disorder (e.g. Holger, Lauche, Haller, Langhorst & Dobos, 2012, Lauche, Cramer, Dobos, Langhorst & Schmidt, 2013). Mindfulness is based on here and now, non-judgmental attention, and directing attention to the body is part of the technique.

The reviews give an indication that mindfulness is effective for improving quality of life and pain but more quantitatively strong research is needed to draw clearer conclusions.

In the presented evaluations, most outcome measures used are self-report questionnaires with the majority of them not directly related to body experience, but for example assessing depression, quality of life or catastrophizing. In order to better study the effect and mechanisms of body awareness interventions, more relevant outcome measures need to be developed. These could be self-report but, since poor body awareness (Lind, Delmar & Nielsen, 2014) may suppress the validity of such a report, other modes of assessment may be preferred, such as a standardized observation by an experienced professional, an interview or body drawing techniques.

CONCLUSION

Body-oriented therapies use awareness of the body to influence thoughts, emotions and behavior of a client. In this process the therapist helps the client by supporting and mirroring behavior. Awareness of the body can be addressed on different levels: basic body signals, meaning in here and now, and meaning in the context of personal history. Most body-oriented therapies are experience-based, which helps for transfer and integration to everyday life, since the new skills are remembered through the body and the image of the exercise, instead of just through words and thoughts. The therapist is able to arrange the situation in such a way that the exercise is adjusted to the client. This provides an opportunity to study and change automatic patterns of responding to and with the body. However, the therapist must be aware of potential triggers in the body that can evoke negative memories. Therefore, therapists are advised to be trained and supervised and so gradually learn to work with deeper levels of body awareness (NVPMT, 2009). Body-oriented therapies seem appropriate for somatic symptom disorder because of their focus on connection of body and mind, and in clinical practice clients can appreciate it for the direct experience they get when they learn to listen to their hampered bodies, but more support from randomized controlled trials is needed to substantiate these considerations and impressions.

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CHAPTER 3



Definition and structure of body-relatedness from the perspective of patients with severe somatoform disorder and their therapists

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ABSTRACT

Background: How a patient is connected with one's body is core to rehabilitation of somatoform disorder but a common model to describe body-relatedness is missing. The aim of our study was to investigate the components and hierarchical structure of body-relatedness as perceived by patients with severe somatoform disorder and their therapists.

Methods: Interviews with patients and therapists yielded statements about components of body-relatedness. Patients and therapists individually sorted these statements according to similarity. Hierarchical cluster analysis was applied to these sortings. Analysis of variance was used to compare the perceived importance of the statements between patients and therapists.

Results: The hierarchical structure included 71 characteristics of body-relatedness. It consisted of three levels with eight clusters at the lowest level: 1) understanding, 2) acceptance, 3) adjustment, 4) respect for the body, 5) regulation, 6) confidence, 7) self-esteem, and 8) autonomy. The cluster 'understanding' was considered most important by patients and therapists. Patients valued 'regulating the body' more than therapists.

Conclusion: According to patients with somatoform disorders and their therapists, body-relatedness includes awareness of the body and self by understanding, accepting and adjusting to bodily signals, by respecting and regulating the body, by confiding and esteeming oneself and by being autonomous. This definition and structure of body-relatedness may help professionals to improve interdisciplinary communication, assessment, and treatment, and it may help patients to better understand their symptoms and treatment.

INTRODUCTION

Somatoform disorder is characterized by physical symptoms that suggest a general medical condition but are not fully explained by this condition or by the direct effects of a substance or another mental disorder [1]. When the whole spectrum from minor to severe somatoform disorder is considered, the prevalence in general practice is about 16 to 21 percent [2]. A distorted relation with one's body is core to somatoform disorder and treatment usually aims at changing this relation on a cognitive, emotional, and behavioral level. Terms such as body attitude, body schema, body experience, and body awareness have been used heterogeneously in literature as umbrella terms to refer to various aspects of body experience that are considered important in somatoform disorder [3,4,5,6]. The terms that cover such various aspects as perception, cognition, emotion, awareness, and sometimes behavior, are mostly used to describe the current state of affairs, while patients and therapists are typically also concerned with the desired state of affairs. We use the term "body-relatedness" to refer to what a patient can learn in relation to the body when being in therapy.

Several theories emphasize the importance of the patients' cognitive, emotional, and behavioral relatedness to the body as a therapeutic target in somatoform disorder. Acceptance and commitment therapy focuses on the acceptance of the bodily symptoms [7,8], cognitive behavioral therapy aims at optimal adaptation to bodily symptoms [9,10], and still other therapies emphasize the importance of revealing the knowledge embedded in the body [11] and adaptive body awareness by non-judgmental mindfulness instead of hypervigilance [3]. These approaches may overlap with each other in their points of view and, together, cover a broad spectrum of ways one can relate to the body. However, an integrative model comprising these various components is missing [12].

Various components of body-relatedness have been emphasized in clinical literature. Treatment programs for somatoform disorders for instance commonly emphasize body-relatedness components like awareness, acceptance, expression of the self, pain management, and adaptation to impairment [13,14,15,16,17,18]. Perceived body sensations, attention quality, attitude, and mind-body integration are seen as being of key importance for an appropriate questionnaire [3]. And in focus groups of expert practitioners and patients a shift in awareness of the body and negative

emotions towards self regulation, self care and integration of mind, body and life context have been considered important [19]. Integrating these components in one definition could clarify the interrelationships between components of body-relatedness and their relative importance in somatoform disorder.

The aim of this study was to identify all relevant components comprising body-relatedness and the hierarchical structure and importance of these constituting components as perceived by patients with severe somatoform disorder and their therapists. Using the practice-based knowledge and points of view of both groups can result in a definition of body-relatedness that is used broadly in communication between disciplines and between patients and health care providers [5,20], and it can give a common framework in assessment, goal setting, treatment, and research.

POPULATION AND METHODS

Ethics Statement

The study was approved by the insitutional review board (CWO) of Altrecht Psychosomatic Medicine, Zeist, The Netherlands. All patients provided written informed consent.

Participants

This study was conducted at Altrecht Psychosomatic Medicine, Zeist, The Netherlands, a specialized tertiary treatment center in which only the most severely impaired patients are examined and treated. The diagnosis according to DSM IV criteria was established by a multidisciplinary team of professionals. The main inclusion criterion in the current study was a severe somatoform disorder as the primary diagnosis according to DSM IV criteria with exception of hypochondria and body dysmorphic disorder. Hypochondrias and body dysmorphic disorder are not treated in our center, because it is debatable whether these are genuine somatoform disorders or could better be classified as obsessive-compulsive and related disorders [21]. Also excluded were patients with addiction, bipolar disorder, and psychosis as well as patients in a crisis situation requiring immediate attention and patients who were still under investigation with a specialized physician aside from Altrecht Psychosomatic Medicine. Comorbidity of other

diagnoses [22] was allowed, as long as it was not considered to impede treatment of the somatoform disorder.

The data collection consisted of interviews (in 2004 and 2005) and a card sorting task (in 2010 and 2011). Hierarchical cluster analysis was applied to examine the characteristics and hierarchical structure of body-relatedness from the perspective of patients and their therapists.

A convenience sample of ten patients from our treatment center was selected by their therapists according to their availability and interview capability and invited to participate in the interviews: five patients (all female) who just started treatment and five patients (one male) who successfully ended their treatment (mean age 40 years, $SD = 11$, range 29-59). They all had at least secondary education. Eleven professionals (1 male, 10 female) with different disciplines participated (1 psychiatrist, 1 medical doctor, 2 physical therapists, 2 psychotherapists, 1 creative arts therapist, 1 body psychotherapist, 2 nurses, and 1 social worker). Their mean time of psychosomatic specialisation was 10 years ($SD = 9$, range 1.5-30).

For the card sorting task, other participants were invited than the ones who were interviewed. A call by letter among patients from clinic, day-clinic, and a psychotherapy group resulted in 21 patient volunteers (5 male, 14 female, 2 gender not noted). A call among professionals by e-mail or personally, resulted in twenty participants (3 male, 17 female). The mean age of the patients was 42 years ($SD = 11$, range 25-59), the mean time since the first symptoms was 12 years ($SD = 11$, range 1.5-40), and the mean time of specialized psychosomatic treatment was 1.3 years ($SD = 1.7$, range 0.15-7). They all had secondary or higher education. The professionals had a mean time of psychosomatic specialisation of 8 years ($SD=9$, range 0.25-30).

Interviews

Eight patients and all professionals were interviewed at Altrecht Psychosomatic Medicine and two patients were interviewed at their homes. The interviews were semi-structured and the duration was 30 to 60 minutes. The main question was: "What do you think are the most important issues a patient has to learn in relation to his/her body?" The participants were asked to explain their answers and to illustrate the meaning with concrete statements.

The interviews were summarized and returned to the participants who could correct the text. From the interviews all relevant statements regarding body-relatedness were extracted for the card sorting task. Statements that evidently could not be generalized to all people with psychosomatic disorder were removed (e.g., “discover why I had to suppress my body”) and overlapping statements were combined (e.g., “feel bodily signals” and “feel the body”). These statements were adjusted with respect to language and grammar and modified to statements fitting the phrase “A patient may learn...” (see Table S1). The selected statements were written down on separate cards and numbered.

Card Sorting Task

The number of 20 participants is considered appropriate to obtain a variety of sortings [23]. Eight patients performed the card sorting task at Altrecht Psychosomatic Medicine and 14 performed the task at their homes. The professionals performed the task at Altrecht Psychosomatic Medicine. The duration was 45 to 60 minutes.

Research participants performed two card sorting tasks. First, they individually sorted the cards with the statements according to similarity, into piles that they gave labels. The following rules applied: all statements had to be placed in a pile; each statement could be placed in one pile only; each pile could contain 2 to 25 statements; and 4 to 20 piles could be formed.

In a second task, the participants individually sorted the cards with the statements based on the extent to which they considered them important for body-relatedness, defined as: what a patient may learn in relation to his/her body. The separate statements were rated from 1 (least important) to 5 (most important). The following rules applied: exactly five piles had to be formed from least to most important, statements had to be distributed equally across the five piles, all statements had to be placed in a pile, and each statement could be placed in one pile only. The results were written down on a score form by the participants. Not all participants had time to perform the second card sorting task. Nineteen patients (4 male, 13 female, 2 missing) and 12 professionals (2 male, 10 female) participated.

Data Analysis

Hierarchical cluster analysis. Cluster analysis is a statistical technique to classify objects of a similar kind into clusters [24]. These clusters are organized hierarchically and can be graphically presented in a dendrogram. Hierarchical cluster analysis (Ward's method, squared Euclidean distances) in the statistical software program SPSS, version 16.0 (SPSS, Chicago, IL), was used to classify the statements that were individually sorted by the participants according to their similarity. Statements that were sorted in the same pile because of similarity by many participants were grouped on the lowest level. The lower-order clusters that were the most closely related were grouped in higher-order clusters. These higher-order clusters were grouped in still higher-order clusters until there was a single highest-order cluster. The main criterion was that the separate lower-order clusters of statements should reflect distinct components of body-relatedness. To set the final number of lowest-order clusters, we used in the first stage top-down interpretation starting with two clusters, then three and so on until additional clusters did not yield new content. In the second stage, the contents of both a lower and a higher number of clusters were compared to finally decide on the number of clusters. The final hierarchical organization of the total group, with labels given to the clusters by consensus of three researchers (HK, SvB, RG), is graphically presented in a dendrogram. Separate cluster solutions of the patients and professionals were compared to judge if these fitted the cluster solution of the total group.

Analysis of variance. For each statement a mean importance score across respondents was calculated. Moreover, the importance of clusters was derived by calculating mean importance scores of all the statements in a given cluster across respondents. These scores reflect the mean importance of the unweighted importance scores of statements in a cluster as perceived by the respondents. The differences in importance between the clusters and between the two groups (patients versus professionals) were analyzed with repeated measures analysis of variance.

RESULTS

Interviews

The interviews yielded 68 statements about characteristics of body-relatedness from the patients and 49 from the professionals. Removing statements that could not be generalized and overlapping statements resulted in a final selection of 71 statements.

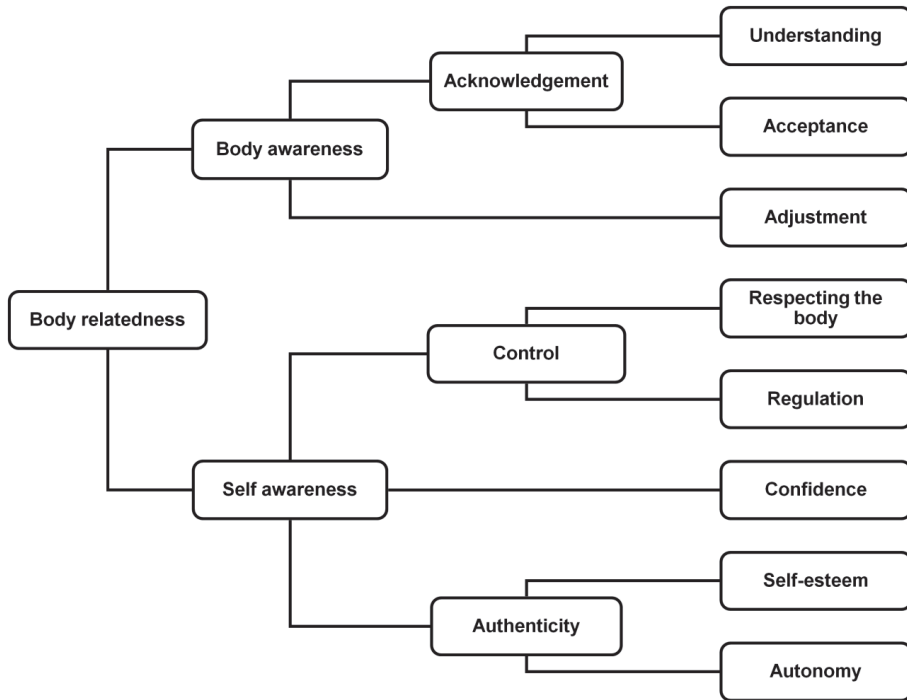
Card Sorting Task

In the first sorting task, participants sorted the cards with statements according to similarity. There were large differences between participants in the number of piles they used to categorize the 71 statements. The number of piles across the participants varied from 4 to 14. Individual participants used 39 distinctive labels to describe the piles. Labels that were frequently chosen included terms like knowledge about the body, limitations and adjustment, acceptance, control and management, body and self awareness, and self-other. These multiple labels were used by the investigators to interpret the hierarchical cluster solution and to choose final labels for the clusters.

Hierarchical Cluster Analysis

The outcome of the hierarchical cluster analysis structuring the 71 statements of the total group is shown in Figure 1. The statements included in the clusters are shown in Table S1. The structure consisted of three levels with eight components at the lowest level, three at the second, and two at the first. At the highest level the components were divided into 'body awareness' and 'self-awareness'.

Figure 1. Figural representation of the hierarchical structure of components of body-relatedness according to patients and their therapists



Body awareness consisted of 25 statements that mostly referred to the phenomenological sense of body. Two clusters of statements at the lowest level referred to ‘acknowledgement’ of the body by ‘understanding’ and ‘accepting’ bodily signals. Examples of the 16 statements that covered understanding were: “...notice bodily signals” and “...get to know the body”. An example of the four statements about acceptance was: “...accept that one can do less than others”.

Next to these two acknowledgement clusters, the third cluster included in the broad body awareness domain of the hierarchical structure was ‘adjustment’. It comprised five statements like: “...adapt to what is possible” and “...work out what one is still capable of doing”.

Self awareness consisted of 56 statements that referred to strengthening the sense of self by ‘control over the body’, ‘confidence’ and ‘authenticity’. Control over the body consisted of four statements about ‘respecting the body’ and nine about ‘regulating’ one’s body. An example of a respect statement was “...not see the body as a

Table 2. Mean scores (standard deviation) of importance of the clusters

Clusters	Group	n	Statistics		95% Confidence Interval for Mean	
			Mean	SD	Lower Bound	Upper Bound
Understanding	Patients	19	3.31	.64	3.00	3.61
	Professionals	11	3.69	.36	3.45	3.94
	Total	30	3.45	.58	3.23	3.66
Acceptance	Patients	18	3.31	.74	2.94	3.67
	Professionals	12	3.12	.64	2.72	3.53
	Total	30	3.23	.69	2.97	3.49
Adjustment	Patients	19	3.11	.64	2.79	3.42
	Professionals	12	3.08	.62	2.69	3.48
	Total	31	3.10	.63	2.87	3.33
Respect	Patients	19	2.91	.58	2.63	3.19
	Professionals	12	2.98	.75	2.50	3.46
	Total	31	2.94	.64	2.70	3.17
Regulation	Patients	14	2.87	.51	2.58	3.17
	Professionals	12	2.26	.45	1.98	2.54
	Total	26	2.59	.57	2.36	2.82
Confidence	Patients	19	3.04	.49	2.80	3.27
	Professionals	12	3.10	.50	2.78	3.42
	Total	31	3.06	.49	2.88	3.24
Self-esteem	Patients	19	2.72	.78	2.34	3.09
	Professionals	12	2.59	.71	2.14	3.05
	Total	31	2.67	.74	2.40	2.94
Autonomy	Patients	19	3.01	.43	2.80	3.22
	Professionals	12	2.96	.39	2.71	3.21
	Total	31	2.99	.41	2.84	3.14

tool". Regulation included for example "...be able to influence tiredness" and "...rediscover structure".

The confidence cluster included statements like "...be satisfied" and "...trust the body". Authenticity was divided into 'self-esteem' (8 statements) and 'autonomy' (19 statements). Self-esteem consisted of statements like "...express feelings" and "...feel respected". Examples of the autonomy statements were "...discover what one likes" and "...dare to show one's limitations".

Group comparison

The structure of the sortings of the distinct groups was largely similar on the lower level: the clusters of patients and professionals included mostly similar statements with only some statements being placed in different clusters. On the highest level, however, the clusters of the professionals were split into awareness clusters (e.g. autonomy and acknowledgement) versus clusters related to further development (e.g. regulation and self-esteem) instead of the distinction between body- and self-awareness from the patients (and total group). Also the patients classified 'control over the body' as body awareness, contrary to the total group outcome where it was classified as self-awareness.

Analysis of Variance

In the second sorting task, participants individually sorted the cards with regard to importance for body-relatedness. Table S1 shows the mean importance scores of the individual items. The five statements that were valued as most important (mean > 3.80) were: "relax", "listen to the body", "notice bodily signals", "experience a connection with oneself" and "be more aware of limits". The statements that were considered least important (mean < 2.15) were: "feel more masculine/feminine", "reduce over-sensitivity", "concentrate better", "not let oneself be defined in terms of physical ailments", and "be independent".

Table 2 shows the mean scores of importance of the clusters for the patients and professionals, based on the hierarchical structure of both groups together. The scores of the total group varied from 2.59 (SD = .57) for regulation (which obtained a lower importance score ($p < 0.05$, $df = 14$) than all other clusters except respect and self-esteem)

to 3.44 (SD = .58) for understanding (which obtained a higher score than all self-awareness clusters ($p < 0.05$, $df = 14$), except confidence).

Patients valued regulation as more important than professionals ($p < 0.05$, $df = 1$). The lower importance value attached to understanding by patients than professionals was not significant ($p = 0.08$, $df = 1$).

DISCUSSION

This study examined the components of body-relatedness and its hierarchical structure from the perspective of patients with severe somatoform disorder and their therapists. The results yield the following definition of body-relatedness in somatoform disorder: awareness of the body and self by understanding, accepting and adjusting to bodily signals, by respecting and regulating the body, by confiding and esteeming oneself and by being autonomous.

Our definition of body-relatedness includes cognitions, emotions, and behavior associated with the body. Consistent with the core problem of somatoform disorders it does not refer to appearance, as in eating disorders [25] or body dysmorphic disorder [26]. The multiple components of body-relatedness as specified in this study were categorized in two broad higher-order clusters including more body-oriented and more identity-related themes.

With respect to the higher-order cluster body awareness, understanding bodily signals was perceived as the most important learning goal in therapy (by patients as well as therapists), that is, to learn to listen to one's body and to know and recognize its signals. For most patients, however, this is a hard task because of fear, non-acceptance, or alexithymia [4,8]. The other body-awareness components were accepting and adjusting. Accepting implies acknowledgement of pain and activity limitations, which, in case of a chronic condition, may induce a serious grieving process about giving up important things in life [27]. Core to adjustment is that the patient adapts his standards and does what he or she is capable of doing. This involves pacing activities [10] and abandoning "overactive" or "underachieving" lifestyles [9,27]. To summarize, the body awareness components understanding, accepting and adjusting are perceived as important learning goals by professionals as well as by patients and these processes may take a long time to change.

The second higher-order cluster self-awareness comprised control, confidence, and authenticity. As for the control cluster, the body-mind relation is evident in its main components respecting and regulating the body. Components of the respecting clusters such as not seeing the body as a tool and not letting oneself be defined in terms of physical ailments reflect that patients can learn to less objectify their body and unite body and mind towards an indivisible integrity [19]. The importance attached to regulation is a little bit lower than the importance attached to other components, but patients think it is more important than professionals do. Their need to have a sense of control over their tired, painful or otherwise uncomfortable body might be underestimated by professionals who have the experience that listening and adjusting to the body will lead to better regulation. Perhaps the topic of regulation should get more attention at the start of treatment in order to motivate patients not only to try to control their body but also to listen to its signals.

The other self-awareness components, confidence, self-esteem and autonomy, emphasize how strong the connection with one's body is related to identity and personality [28]. The development of emotional awareness starts with the experience of physical sensations and action tendencies, resulting in distinction of emotions and the capacity to appreciate complexity in the experiences of self and other [4]. The cluster confidence refers to positive bodily feelings and trust that most patients have lost due to the problems with their body. Self-esteem ameliorates when patients feel respected and dare to express their feelings, even if these feelings concern tiredness or loss. If patients learn and dare to distinguish themselves from others instead of trying to meet expectations, they may perhaps change to a higher level of emotional awareness, appreciating the complex experience of self and other [4]. These self-awareness components that are mentioned in the literature as expression of the self [15], attitude [3], self care [19], and emotional awareness [4], emphasize the importance of a positive feeling about the unique self to overcome the difficulties of somatoform disorder.

Comparing the structure of the sorting of patients and professionals, a difference appears on the higher level where patients make a body-self split while professionals distinguish overall awareness from development. One can wonder if the duality in the total model is acceptable for professionals who emphasize the unity of body and mind. The model reflects a Western way of thinking about the body that professionals may encounter in most of their patients and in colleagues who are not specialized in

somatoform disorder. However, since the total model reflects body-self dualism as well as body-self unity, it provides a tool to communicate about body-relatedness and to emphasize that it is important to integrate body and self.

Although the different components of body-relatedness are interrelated, the definition can serve well to decide which components in the treatment of individual patients should be emphasized. It provides a model that can be used as a checklist in assessment, therapeutic goalsetting, or evaluation and it might offer input to construct a questionnaire. However, as self-report questionnaires only measure components that the client is aware of and is willing to tell, the validity of a questionnaire for body-relatedness will likely be low. An interview and nonverbal observations by specialized therapists will provide more information about body-relatedness than self-reports of patients. Although this study did not focus on a specific method to ameliorate body-relatedness, the definition suggests that an integrative, multimodal approach is preferable. The model can be applied from different theoretical and clinical viewpoints.

One strength of the current study is that both patients and professionals were seen as experts who from their own experiences and perspectives specified the components of body-relatedness. Another strength is the use of both qualitative and quantitative methods allowing a description beyond the subjective interpretation of researchers. A limitation of the current study may be that the wording of statements could have influenced the sortings. Also, there was no control on the score forms that were filled out at home, resulting in missing values (for example concerning gender). With respect to external validity, the results of this study do not generalize beyond predominantly female patients with severe somatoform disorder and their therapists or people from a Dutch (Western) culture. Comparable studies in general practice or hospitals and in other countries should reveal whether the components of body-relatedness can be generalized to other groups.

In conclusion, the present study identified the components and hierarchical structure of body-relatedness from the perspective of patients with severe somatoform disorder and their therapists. The findings give direction to assessment, therapeutic goal setting, evaluation, and development of questionnaires and observation instruments, and may ameliorate communication between disciplines, which can lead to improved therapeutic targets in this difficult-to-treat patient group.

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SUPPORTING INFORMATION

Table S1. Clusters and statements

Clusters	Statements (preceded by the words "A patient may learn...")	Importance attached to the statements (range 1-5)	
		Mean patients (n=19)	Mean professionals (n=12)
Understanding	to acknowledge his/her body.	3.53	3.25
	that physical sensations are signs of psychological processes.	3.26	3.83
	to discover the meaning of body language.	2.84	2.92
	to know what his/her body is capable of.	3.11	3.00
	to know that his/her body has limits.	3.47	3.55
	to understand physical functioning.	2.95	3.08
	that psychological stress can exacerbate symptoms.	3.26	3.92
	to get to know his/her body.	2.95	4.25
	to understand bodily signals.	3.42	3.50
	to take a break on time.	3.42	3.17
	to notice bodily signals.	3.42	4.50
	to take bodily signals seriously.	3.58	4.00
	to listen to his/her body.	3.58	4.33
	to take responsibility for his/her own body.	3.21	3.92
Acceptance	to respond to bodily signals.	3.26	3.83
	to be more aware of his/her limits.	3.63	4.08
	to acknowledge his/her limitations.	3.28	3.50
	to accept his/her body	3.63	3.25
Adjustment	to tolerate pain.	2.74	2.75
	to accept that he/she can do less than others.	3.53	3.00
	to adapt to what is possible.	2.74	2.92
	to lower goals.	3.11	3.42
	to indicate what he/she can no longer do.	3.63	3.00
	to take on less.	2.89	3.17
Respect for his/her body	to work out what he/she is still capable of doing.	3.16	2.92
	to accept physical symptoms.	3.32	2.92
	to not see the body as a tool.	3.05	3.00
	to not let oneself be defined in terms of physical ailments.	2.26	1.92
	to deal appropriately with bodily signals.	3.00	4.08

Regulation	to reduce over-sensitivity.	2.12	1.67
	to concentrate better.	2.22	1.50
	to rediscover structure.	2.94	3.25
	to deal with daily life.	2.74	2.75
	to be able to influence tiredness.	2.84	1.83
	to regulate breathing.	2.84	2.17
	to relax.	4.11	3.67
	to be able to influence pain.	2.84	1.83
Confidence	to increase physical fitness.	3.06	1.67
	body-mind connection.	2.84	4.17
	to be satisfied.	2.63	2.42
	to trust his/her own body.	3.74	3.58
	to think about oneself.	2.89	2.75
Self-esteem	to be less insecure and anxious.	3.00	2.08
	to act on his/her feelings.	3.11	3.58
	to feel respected.	2.47	2.00
	to express feelings.	3.58	3.67
	to be independent.	2.21	2.00
	to voice feelings.	3.05	3.42
	to feel good about oneself.	3.00	2.33
Autonomy	to enjoy.	2.74	2.75
	to be oneself.	3.11	3.17
	to feel more masculine/feminine.	1.58	1.42
	to ask for attention.	3.32	3.00
	to discover what he/she likes.	2.79	2.33
	to experience a connection with oneself.	3.79	3.92
	to dwell on oneself.	3.05	3.75
	to experience oneself as a whole.	2.63	3.42
	to see oneself as separate from others.	2.58	2.42
	to dare to trust his/her own feelings.	3.42	3.67
	to accept who he/she is.	3.32	3.08
	to be more open.	2.63	2.64
	to dare to show his/her limitations.	3.47	3.08
	to say that he/she can't do something.	2.47	3.33
	to relax in the company of others.	2.95	2.33
	to accept attention from others.	2.89	2.27
to be less afraid of the reaction of others.	2.58	2.08	
to take up space.	3.67	2.75	
that he/she can make choices.	2.74	3.08	
to find a balance between looking after oneself and looking after others.	3.21	3.17	
to be able to tell his/her own story.	2.58	2.75	
to deal with the person he/she has become.	3.16	3.08	

CHAPTER 4



Body image in patients with somatoform disorder

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ABSTRACT

Background: Although body-related problems are common in patients with somatoform disorder, research focusing on how patients with somatoform disorder perceive and evaluate their body is scarce. The present study compared differences in body image between patients with somatoform disorder and respondents from a general population sample. It also examined differences within the somatoform disorder group between men and women and between the diagnostic subgroups conversion disorder, pain disorder and undifferentiated somatoform disorder.

Methods: Data were obtained from 657 patients (67.5% female) with somatoform disorder (DSM-IV-TR 300.7, 300.11, 300.81, 300.82) and 761 participants (58.6% female) from the general population. The Dresden Body Image Questionnaire (DBIQ) was used to assess body image in five domains: body acceptance, vitality, physical contact, sexual fulfilment, and self-aggrandizement. Confirmatory factor analysis and analyses of variance were performed. Since differences in age and sex were found between the somatoform disorder sample and the comparison sample, analyses were done with two samples of 560 patients with somatoform disorder and 351 individuals from the comparison sample matched on proportion of men and women and age.

Results: Patients scored significantly lower than the comparison sample on all DBIQ domains. Men scored higher than women. Patients with conversion disorder scored significantly higher on vitality and body acceptance than patients with undifferentiated somatoform disorder and pain disorder.

Conclusions: The mostly large differences in body image between patients with somatoform disorder and the comparison sample as well as differences between diagnostic subgroups underline that body image is an important feature in patients with somatoform disorder. The results indicate the usefulness of assessing body image and treating negative body image in patients with somatoform or somatic symptom disorder.

BACKGROUND

Somatoform disorder (SFD), the precursor diagnostic category of “somatic symptom disorder” [1], is characterized by persistent physical symptoms that suggest the presence of a medical condition, but cannot be adequately explained by such a medical condition, nor by the direct effects of substance use or by a mental condition [2]. A core feature of somatoform disorder and somatic symptom disorder is the problematic relation of patients with their body. Patients perceive their body as dysfunctional [3] and have difficulty not only to acknowledge and understand bodily signals in an adequate manner, but also to adapt their behavior according to these signals [4-7]. Core problems of SFD include distrust and non-acceptance of the body, intimacy problems, changed physical identity, loss of vitality, as well as lack of awareness and incorrect interpretation of bodily signals [6, 8-10]. All of these aspects may have substantial consequences for an individual’s development and quality of life [11]. Patients with SFD have been suggested to be impaired in “embodied mentalization”, described as “the capacity to see the body as the seat of emotions, wishes, and feelings and the capacity to reflect on one’s own bodily experiences and sensations and their relationships to intentional mental states in the self and others” [12, p3].

Although body-related problems are common in patients with SFD, research focusing on how patients with SFD perceive and evaluate their body is scarce. A first condition for research is the possibility to assess the complex relation with their body in patients with SFD. This is important to acquire knowledge about the specificity and severity of body-related problems in patients with SFD as compared to reference groups. Moreover, specific symptoms such as pain, fatigue, or dissociation differ among diagnostic categories of SFD, and it could be studied whether their impact on the relation with one’s body differs as well [13, 14]. Finally, body-related assessment is needed as an evaluation tool when body-oriented interventions are part of the combined treatment package offered to patients with SFD [15, 16]. Thus, an adequate instrument to assess and evaluate the severity and scope of problems related to body image in people with SFD is a necessity.

In general, the term ‘body image’ has been used to describe and assess a variety of body-related phenomena, including perceptions, cognitions, and affects with regard to the body [17, 18]. However, most questionnaires measuring body image either emphasize physical appearance and weight or shape-related themes or specifically

evaluate body image problems in eating disorders or body dysmorphic disorder, which makes them not particularly suitable for patients with SFD (for an overview, see [17]). Questionnaires directed at the general population mostly focus on a specific aspect of body image, such as satisfaction with body parts and processes [19, 20] or sociocultural attitudes towards appearance [21, 22]. Other questionnaires, developed for clinical use, focus on physical symptoms [23-25] or body awareness [26-28]. In SFD patients, however, all of these body-related aspects are important [5] and a self-report questionnaire addressing a broad range of body-related aspects is needed for both research and clinical practice.

For this purpose, the present study employed the Dresden Body Image Questionnaire (DBIQ) to measure a broad range of body-related self-perceptions in five domains: body acceptance, vitality, physical contact, sexual fulfilment, and self-aggrandizement [29, 30]. Especially the incorporation of physical contact and sexual fulfilment, often reported by patients as problematic topics but rarely included in questionnaires, makes the DBIQ a suitable instrument for the SFD population. One of the present study's aims was to obtain more information on the severity of disturbances in these domains by comparing patients with SFD with a sample matched on sex and age from the general population described in an earlier study [31].

Studies of body image in the general population indicate that men and women appreciate their body image differently [32-34]. Women are generally more preoccupied and dissatisfied with their body than men [35], which may be explained by sociocultural values, genetic differences and differences in bodily development and experiences like trauma [36]. We expect these differences to be also present in the group of patients with SFD.

Body image may also differ between patients with different diagnostic categories conversion disorder, pain disorder and undifferentiated somatoform disorder. With no previous studies available, we base our expectation that patients with pain and undifferentiated somatoform disorder score lower on vitality than patients with conversion disorder on clinical observation.

In order to obtain insight into the significance of body image assessments for patients with SFD, the present study aimed to evaluate differences in body image as measured with the DBIQ between patients with SFD and a sample from the general population. It also aimed to evaluate, within the patient group, differences between women and men

and between the diagnostic categories conversion disorder, pain disorder, and undifferentiated somatoform disorder. Prior to the evaluation of differences, measurement invariance across clinical and non-clinical samples and across sex in the somatoform sample was tested, in order to affirm whether comparisons are valid.

METHODS

Participants

Participants were patients with severe SFD referred to Altrecht Psychosomatic Medicine, a tertiary care centre for psychosomatic medicine that is specialized in the treatment of patients with severe SFD. This centre is located in Zeist, the Netherlands. On average, patients admitted to this institution have had medically unexplained symptoms for 10 years and have, received five previous treatments for somatoform disorder in primary or secondary care. In about half of the cases, patients have comorbid disorders; mainly other somatoform diagnoses but also mood and anxiety disorders, substance dependence and personality disorder [37]. The main treatment criterion applied by the institution is the presence of a diagnosis of SFD (pain disorder, conversion disorder or undifferentiated SFD) as the primary disorder, in line with the criteria described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) [2], diagnosed by a trained psychologist, and confirmed by the resident psychiatrist. Exclusion criteria applied by the treatment centre were people with (a) a diagnosis of hypochondriasis or body dysmorphic disorder, (b) a diagnosis of addiction, bipolar disorder, or psychosis, and (c) a crisis situation requiring immediate attention (e.g., high suicidality); and (d) patients under treatment by a specialized physician outside the center.

In an intensive intake procedure, all patients consecutively referred in the period 2011-2014 were assessed for eligibility for treatment. Treatment inclusion was based on an initial diagnostic assessment and on the patient's informed consent to accept the treatment offered. All patients eligible for treatment were included in the study unless informed consent to participate in the study was not obtained.

Data were gathered from 657 patients with SFD between 24 and 69 years of age (Mean = 43.3, $SD = 10.8$), 443 women and 214 men with mean ages of 42.7 ($SD = 11.0$) and 44.5 ($SD = 10.3$) years. Table 1 shows the primary diagnoses according to

DSM-IV-TR. The number of patients with conversion disorder was relatively high (22.4%) since the treatment centre is the only institute in the Netherlands with clinical facilities that admits patients that are difficult to treat in secondary care.

A convenience sample from the general population [31] was used as comparison. This sample consisted of 761 adults (433 women, 326 men, two persons with sex unknown), with a mean age of 30.9 years ($SD = 13.6$, range 18-65). Details about recruitment of participants, data collection, and measurements used can be found in [31].

Table 1. Primary diagnoses of participants with somatoform disorder

Diagnoses*	<i>n</i> (%)	% men
Conversion Disorder (300.11)	147 (22.4)	37.4
Pain Disorder (307.80, 307.89)	185 (28.2)	38.9
Undifferentiated SFD (300.82)	325 (49.5)	27.4
Total	657 (100)	32.5

* Diagnosis according to DSM-IV-TR

Measures

The Dresden Body Image Questionnaire (DBIQ) [29, 30] is a 35-item questionnaire with positively and negatively worded statements across five subscales: body acceptance (e.g., “I wish I had a different body”), vitality (e.g., “I am physically fit”), physical contact (e.g., “Physical contact is important for me to express closeness”), sexual fulfilment (e.g., “I am very satisfied with my sexual experiences”), and self-aggrandizement (e.g., “I use my body to attract attention”). The level of agreement with items is scored on a 5-point Likert scale ranging from 1 (= not at all) to 5 (= fully).

In a German non-clinical sample [30] Cronbach's α for the subscales varied from $\alpha = .81$ for self-aggrandizement to $\alpha = .94$ for vitality. Correlations between the subscales varied from $r = .37$ (sexual fulfilment and self-aggrandizement) to $r = .65$ (body acceptance and vitality). The five-factor structure of the non-clinical sample was

replicated using a confirmatory factor analysis in a clinical psychiatric sample of 560 patients, of whom 45% had somatoform complaints (CFI = .90; RMSEA = .06) [29]. In this clinical sample Cronbach's α for the subscales varied from $\alpha = .83$ for self-aggrandizement to $\alpha = .92$ for sexual fulfilment. Correlations between the subscales varied between $r = .31$ (vitality and physical contact) to $r = .65$ (physical contact and sexual fulfilment).

Confirmatory factor analyses of the Dutch version of the DBIQ (DBIQ-35-NL) in the sample that was used in the present study for comparison showed a five-factor structure in accordance with the original scale, where model fit was improved significantly by moving one item from the subscale body acceptance to the subscale self-aggrandizement [31]. The equivalence of the measurement model across sex and age was evaluated in this study as well, demonstrating partial strong invariance. Internal consistency of the subscales in this Dutch version was good: Cronbach's α varied from $\alpha = .74$ for the subscale physical contact to $\alpha = .91$ for the subscale sexual fulfilment. The correlations between the subscales varied from $r = .17$ for vitality and physical contact to $r = .53$ for acceptance and sexual fulfilment. Temporal stability over two weeks was satisfactory, varying from an intra-class correlation coefficient (ICC) of .64 for physical contact to .82 for vitality (see Table S1 for DBIQ items in English).

Procedure

Patients completed the Dutch version of the DBIQ as part of a routine initial diagnostic screening and provided written informed consent for the use of the data for scientific purposes. This part of the study protocol was approved by the institutional review board (CWO) of Altrecht, Zeist, the Netherlands (CWO nr 1419).

The study in the general population used as a comparison sample was conducted in agreement with the VU University Amsterdam guideline for research for educational purposes, allowing students to collect data with the use of questionnaires in healthy groups of respondents when participation is voluntary and data are analyzed anonymously. The Medical Ethics Review Committee of VU University waived the requirement for formal ethical approval of the procedures used (for more details see [31]).

Data analysis

The factor structure of the clinical sample was evaluated using confirmatory factor analysis with maximum likelihood estimation robust to non-normality (MLR).

Moreover, measurement invariance was examined across the two groups (somatoform disorder and general population) and across sex within the somatoform group, to ensure meaningful comparisons between scores in these groups [38-40]. We used the procedures and fit indices used in the study of the comparison sample [31]: model selection was performed by testing invariance by the Scaled Difference in Chi-Squares (SDCS) test [41] for nested models estimated with MLR. Because little consensus exists with regard to recommended fit indices [38], standardized root mean square residual (SRMR) and Tucker Lewis index (TLI) are reported, in addition to the comparative fit index (CFI) and root mean square error of approximation (RMSEA). Analyses were conducted with Mplus Version 5.1 [42].

SPSS 20.00 for Windows was used to compare group differences in the clinical sample with analysis of variance. Because of the differences in sample size in the diagnostic categories, Hochberg's GT2 test was used for post hoc analyses [43]. Mean differences between subgroups were expressed in Cohen's *d* and considered large if ≥ 0.80 , moderate between 0.50 and 0.80 and small between 0.20 and 0.50 [44].

For comparison of the DBIQ scores across samples, the clinical sample was matched to the comparison sample on sex and age (see Figure S1 for age distribution of males and females in the clinical sample and in the comparison sample). The exact matching procedure from the R package MatchIt [45] was used to make 72 groups with respondents of both groups with equal age and proportion of men and women. A total of 580 patients from the somatoform sample (387 women; 193 men) were matched to 341 respondents in the comparison sample (201 women; 140 men), with appropriate weights. The weighted mean ages were 44.8 for men (range 25-65) and 42.8 for women (range 24-64) in both matched samples, with almost equal (weighted) standard deviations of 10.4 and 10.9 for men and women respectively across the two samples. Note that the matching procedure led to discarding the older respondents in the somatoform sample, whereas the younger respondents from the comparison sample were not included in the matched sample.

RESULTS

Measurement invariance

CFA in the somatoform sample showed the earlier found five-factor structure, with the same item shifted as in the general population sample [31]. Evaluation of measurement invariance for the somatoform sample and the comparison sample showed a model with partial strong measurement invariance, with different loadings across the groups for items 1 ("I move gracefully") of the subscale self-aggrandizement and item 7 ("There are lots of situations in which I feel happy about my body") of the subscale body acceptance estimated freely, as best fit (RMSEA (90% CI) = .061 (.059 - .063), SRMR = .074, CFI = .828, TLI = .823).

In the evaluation of the somatoform sample for measurement invariance with sex as a grouping variable, item 15 of the subscale body acceptance ("I choose clothing that hides the shape of my body") was the only item not showing invariance (RMSEA (90% CI) = .061 (.058 - .064), SRMR = .073, CFI = .832, TLI = .828). This item was also identified as non-invariant in the general population sample [31]. For detailed analysis of measurement invariance see Table S2. Based on these analyses and based on comparisons of the scores with and without the items that are not invariant across groups, which led to only marginally different (sub)scale scores (for details see Table S3), we concluded that use of the full scale ensures meaningful comparisons within this study and with results of other studies.

Internal consistency and correlations between subscales

In the group of patients with SFD, Cronbach's α for the subscales were .78 for physical contact and self-aggrandizement, .80 for vitality, .84 for acceptance and .92 for sexual fulfilment. Correlations between the subscales varied from $r = .14$ (vitality and physical contact) to $r = .50$ (self-aggrandizement and sexual fulfilment).

Differences between SFD diagnostic categories

Table 2 shows means of the diagnostic categories for the total score and all subscales of the DBIQ. Analysis of variance of the three diagnostic categories (conversion disorder, undifferentiated SFD and pain disorder) showed statistically significant higher scores for patients with conversion disorder on overall body image, vitality and body acceptance than for patients with undifferentiated SFD and pain disorder. Differences were largest for vitality.

Table 2 Means (*M*) and standard deviations (*SD*) of scores on the Dresden Body Image Questionnaire (DBIQ) in subgroups of patients in three diagnostic categories of somatoform disorder, test of the difference between diagnostic categories

	Conversion Disorder (<i>n</i> = 147)	Pain Disorder (<i>n</i> = 185)	Undifferentiated SFD (<i>n</i> = 325)		
(sub) scale	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>F</i> (2)	<i>p</i>
total score	2.78 _{a,b} (0.65)	2.55 _b (0.54)	2.60 _a (0.56)	7.32	.001
vitality	2.56 _{a,b} (0.84)	2.21 _b (0.67)	2.07 _a (0.62)	25.08	<.001
body acceptance	3.25 _{a,b} (0.97)	2.86 _a (0.83)	2.99 _b (0.98)	7.00	.001
sexual fulfilment	2.61 (1.18)	2.42 (0.97)	2.49(0.98)	1.44	.24
physical contact	3.32 (0.82)	3.19 (0.79)	3.31 (0.82)	1.47	.23
self-aggrandizement	2.31 (0.67)	2.20 (0.63)	2.27 (0.63)	1.19	.43

^{a, b} Means in a row sharing subscripts are significantly different based on Hochberg's GT2 test.

Differences between women and men

In Table 3 means of women and men with SFD on DBIQ total score and on all subscales are presented. Analysis of variance showed that men scored significantly higher than women on total DBIQ, body acceptance, sexual fulfilment and self-aggrandizement. No such differences were apparent for vitality and physical contact.

Table 3 Means (*M*) and standard deviations (*SD*) of scores on the Dresden Body Image Questionnaire (DBIQ) of women and men, test of the difference between women and men in the SFD sample

(sub) scale	women (<i>n</i> = 443)	men (<i>n</i> = 214)	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
total mean score	2.55 (0.56)	2.73 (0.61)	4.69	<.001	0.31
vitality	2.18 (0.68)	2.29 (0.78)	1.85	.07	0.15
body acceptance	2.88 (0.98)	3.12 (0.89)	5.50	<.001	0.26
sexual fulfilment	2.39 (0.99)	2.71 (1.06)	3.79	<.001	0.31
physical contact	3.25 (0.80)	3.33 (0.84)	1.08	.29	0.10
self-aggrandizement	2.20 (0.63)	2.39 (0.65)	3.70	<.001	0.30

Comparisons of the matched samples

Table 4 presents means of DBIQ total score and subscales in the clinical and comparison sample matched on age and sex. Patients with SFD scored significantly lower ($p < .001$) than the comparison sample on DBIQ total mean score and on all subscales, with the largest differences for sexual fulfilment (1.2 point) and vitality (1.6 point). Cohen's d was large (≥ 0.80) for all (sub)scales but physical contact.

Table 4 Means (M), standard deviations (SD), test of the difference (t), and effect size (Cohen's d) of scores on the Dresden Body Image Questionnaire in age and sex matched samples of patients with somatoform disorder ($n = 580$) and comparison sample ($n = 341$).

(sub)scale	Somatoform	Comparison	t	Cohen's d
	$M (SD)$	sample $M (SD)$		
total mean score	2.62 (0.58)	3.59 (0.42)	-29.3*	-1.9
vitality	2.20 (0.71)	3.79 (0.58)	-36.9*	-2.4
body acceptance	3.00 (0.94)	3.81 (0.66)	-15.2*	-1.0
sexual fulfilment	2.48 (1.02)	3.71 (0.67)	-22.1*	-1.4
physical contact	3.28 (0.82)	3.73 (0.58)	-9.7*	-0.6
self-aggrandizement	2.26 (0.65)	3.00 (0.54)	-18.9*	-1.2

* $p < .001$

DISCUSSION

The aim of the current study was to gain more detailed insight into body image in patients with SFD. To this end, we compared DBIQ scores in patients with SFD and people from the general population. In addition, we compared DBIQ scores in patients with different SFD diagnoses and scores demonstrated by women and men with SFD. After measurement invariance was confirmed across the clinical sample and the comparison sample as well as across sex in the clinical sample, the most prominent finding was that body image scores of patients with SFD were substantially lower than body image scores in the general population, showing large differences between groups on all domains of body image.

With respect to diagnostic categories of SFD, patients with conversion disorder scored higher on vitality, body acceptance and the total DBIQ score than patients with undifferentiated SFD and pain disorder. This difference in vitality scores is in accordance with our clinical impression that fatigue is less prevalent in conversion disorder. The higher score in body acceptance of patients with conversion disorder were unexpected. Patients with conversion disorder still scored substantially lower than the comparison group on all body image domains.

As hypothesized on the basis of results in non-clinical samples [35], women in the SFD sample scored lower than men on total DBIQ, body acceptance, sexual fulfilment and self-aggrandizement. No differences between women and men for vitality and physical contact were measured, which for vitality is in agreement with observations in chronic fatigue syndrome [47]. Overall, our study confirms that account should be taken of differences between men and women when assessing body image.

When tentatively comparing our findings with studies of the DBIQ in patients with mixed mental disorders (48), women with childhood trauma (49), and patients with depressive disorder (50), especially the relatively low scores on vitality for patients with somatoform disorder are noteworthy. Scores on sexual fulfilment and self-aggrandizement tend to be lower than those of the mental disorders group (48) but higher than the scores of the childhood trauma group (49), while scores on body acceptance and physical contact are about the same as in the mixed mental disorders group. Overall, body image scores appear to be about similar to scores of a sample of patients with mixed mental disorders, with lower vitality scores as the most distinct main outstanding feature in patients with somatoform disorder, especially in patients

with pain disorder and undifferentiated somatoform disorder. While body-oriented psychotherapy is considered important in both severe somatoform disorder [51] and other severe mental disorders [52], the current study adds that a focus on body image might be an important aspect of these therapies.

The DBIQ covers five body-related aspects, that all proved to be substantially affected in patients with SFD. This finding, together with the evidence for partial strong measurement invariance across the comparison group and the SFD group, leads to the conclusion that the DBIQ is a suitable instrument to evaluate the broad scope of body-related problems in patients with SFD [5]. However, it should be acknowledged that the DBIQ does not cover all body-related themes. For example, body awareness, the sensory awareness that originates from the body's physiological states, processes, actions and functions [27], is considered pivotal in the development and progress of SFD [53, 54] because lack of body awareness may undermine healthy behavior [55]. Furthermore, a self-report questionnaire such as the DBIQ does not address behavioural aspects, such as movement patterns and levels of activity [56]. Notwithstanding these restrictions, the large differences between patients with SFD and the general population comparison group on a broad range of body-related topics as well as the differences between diagnostic categories indicate the relevance of the DBIQ for patients with SFD.

Because data on the validity of the DBIQ scales are still scarce, comparisons with other assessments may be useful to support validity. The subscale vitality has an effect size ($d = 2.5$) comparable with that of the fatigue scale of the Checklist Individual Strength (CIS-20R) that has been used to compare patients with chronic fatigue syndrome (CFS) and a healthy reference group ($d = 3.0$) [47]. Furthermore, symptoms measured with the Symptom Checklist (SCL-90, [57]) in a severe SFD group have shown, when compared with a general population group, effect sizes that are comparable with or even smaller than those found for some DBIQ subscales (0.9 for anxiety, 1.2 for depression, 1.6 for somatization and 1.3 for overall psychopathology [51]).

Future studies must establish the clinical relevance of using DBIQ scales for patients with SFD by examining the effects of treatment on body image (sensitivity to change) as well as the prognostic value of the DBIQ for treatment outcome in patients with SFD. Treatment for patients with SFD aims at goals such as reducing or coping with physical complaints, enhancing body acceptance, and ameliorating quality of life, all depending

on individual situations and patient preferences. With respect to these goals, vitality and body acceptance seem to be the most relevant subscales of the DBIQ, but the current study shows that domains of self-aggrandizement, physical contact, and sexual fulfilment should not be overlooked in the assessment, treatment and evaluation of patients with SFD. In addition to its potential diagnostic importance and use in treatment evaluation, measuring body image with the DBIQ may also be valuable in clinical practice to recognize body-related themes underlying symptom presentation [58] and to enhance communication between patient and therapist about body-related experiences. Sexual fulfilment, for example, may be hampered by physical complaints [59] and is in fact, as the current study indicates, a prevalent problem for SFD patients. Because sexuality is a sensitive subject to discuss for patients as well as therapists, incorporating the domain of sexuality into a questionnaire may shed further light on possible problems with sexuality and enhance communication about this subject [60].

One of the present study's strengths lies in the fact that its sample of patients with a certified diagnosis of severe and chronic SFD was large: this enabled us to compare body image between different SFD diagnoses as well as between patients and a sample from the general population. A limitation with respect to generalizability is that the results apply to a group that was referred to tertiary care; results cannot be generalized to patients with somatoform disorder who present themselves in secondary and primary care. The relatively high amount of comorbid disorders may have confounded the results but comorbid mental disorders are a characteristic of this group with severe somatoform disorders.

CONCLUSION

The observed mostly large differences in body image between patients with somatoform disorder and the comparison sample as well as differences between diagnostic subgroups underline that body image is an important feature in patients with somatoform disorder. The results indicate the usefulness of assessing body image and treating negative body image in patients with somatoform or somatic symptom disorder.

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Table S1. Item means and standard deviations of the DBIQ items* in SFD sample grouped per subscale.

	Mean	SD
Vitality		
2. I often feel physically run down (R)	2.15	1.04
3. I lack energy and motivation (R)	2.92	1.18
6. I often feel physically exhausted (R)	2.39	1.14
8. I am physically fit	1.82	1.05
14. I have lots of energy	1.84	1.05
17. I am in good physical condition	2.12	1.05
26. I quickly reach my physical limits (R)	2.15	1.16
32. I am physically strong and resilient	2.34	1.17
Body acceptance		
7. There are lots of situations in which I feel happy about my	2.55	1.19
12. I like my body	2.60	1.20
15. I choose clothing that hides the shape of my body (R)	3.61	1.28
18. I often feel uncomfortable about my body (R)	2.90	1.25
23. I wish I had a different body (R)	3.18	1.53
25. I am satisfied with my appearance	3.27	1.21
28. If I could change something about my body, I would do it	2.96	1.53
Self-aggrandizement		
1. I move gracefully	2.06	1.00
10. Other people find me attractive	2.86	0.99
13. I find it pleasant and exhilarating when someone looks at	2.56	1.20
20. I feel more valued when someone pays attention to my	2.79	1.11
29. My body is expressive	2.62	1.09
31. I use my body to attract attention	1.45	0.75
33. I like showing my body	1.91	0.96
34. I like to be the centre of attention	1.85	0.96
Sexual fulfilment		
4. I experience intense and pleasurable feelings during sex	2.53	1.33
9. I am very satisfied with my sexual experiences	2.45	1.38
16. I think sex is an important part of life	2.50	1.21
21. I am able to lay aside my inhibitions in sexual situations	2.53	1.36
27. I am able to enjoy my sexuality	2.62	1.09
35. My sexual experiences are satisfying	2.65	1.40
Physical contact		
5. Physical contact is important for me to express closeness	3.25	1.23
11. I look for physical intimacy and affection	2.67	1.20
19. I do not like people touching me (R)	3.59	1.14
22. I like it when people put their arms around me	3.44	1.12
24. I consciously avoid touching other people (R)	3.84	1.13
30. I only allow a few people to touch me (R)	2.88	1.29

* items were translated from German into English using forward and backward translation.
 R: Reversely coded item. Recoding was performed before the mean was computed.

Table S2. Measurement invariance across the control group and the somatoform group and within the somatoform group across sex.

Model	χ^2	<i>df</i>	T_s	RMSEA (90 % CI)	SRMR	CFI	TLI	
Measurement Invariance subjects control group and somatoform group								
1A	configural invariance	3868	1100	.060 (.058 -.062)	.065	.844	.832	
1B	weak invariance	3981	1130	74.08**	.060 (.057 -.063)	.069	.840	.831
1C	strong invariance	4391	1160	247.39**	.063 (.061 -.065)	.077	.818	.814
1C-1	partial strong item 1 ^a	4310	1158	199.88**	.062 (.060 -.064)	.076	.823	.818
1C-2	partial strong item 1,7 ^b	4223	1156	144.30**	.061 (.059 -.063)	.074	.828	.823
Measurement Invariance sex within somatoform group								
2A	configural invariance	2596	1100	.060 (.057 -.063)	.068	.848	.835	
2B	weak invariance	2675	1130	70.80**	.060 (.057 -.063)	.074	.843	.835
2C	strong invariance	2887	1160	87.17**	.062 (.060 -.065)	.079	.824	.820
2C-1	partial strong item 15 ^c	2808	1158	51.95	.061 (.058 -.064)	.073	.832	.828

χ^2 = chi square; *df* = degrees of freedom; T_s = Scaled Difference in Chi-Squares (SDCS) test statistic; RMSEA = Root Mean Square Error of Approximation; 90 % CI = 90 % confidence interval of the RMSEA; SRMR = Standardized Root Mean Square Residual; CFI = comparative fit index; TLI = Tucker Lewis index.

^a modification index item 1 = 84.979; ^b modification index item 7 = 83.041; ^c modification index item 15 = 55.122
**p* < .01. ** *p* < .001.

Table S3. Mean (M) and standard deviations (SD) of scores on the Dresden Body Image Questionnaire (DBIQ) in patients with somatoform disorder ($n = 657$) and control sample ($n = 761$), test of the difference based on scale items deleted and effect size (Cohen's d).

(sub)scale	Somatoform	Somatoform	Control sample	Control sample	Based on scale items deleted		Cohen's d
	M (SD)	M (SD)	M (SD)	M (SD)	t	df	
total mean score	2.65 (0.58)	2.63 (0.58)	3.67 (0.45)	3.66 (0.45)	36.35*	1233	1.96
	Items 1 and 7 deleted		Items 1 and 7 deleted				
vitality	2.22 (0.72)	2.22 (0.72)	3.87 (0.58)	3.87 (0.58)	47.31*	1267	2.52
body acceptance	3.09 (0.96)	3.01 (0.95)	3.83 (0.67)	3.83 (0.67)	16.48*	1172	0.89
	Item 7 deleted		Item 7 deleted				
sexual fulfilment	2.50 (1.02)	2.50 (1.02)	3.78 (0.71)	3.78 (0.71)	26.93*	1145	1.46
physical contact	3.28 (0.81)	3.28 (0.81)	3.80 (0.60)	3.80 (0.60)	13.66*	1195	0.73
self-aggrandizement	2.29 (0.66)	2.26 (0.64)	3.10 (0.58)	3.12 (0.55)	24.32*	1310	1.30
	Item 1 deleted		Item 1 deleted				

* $p < .001$

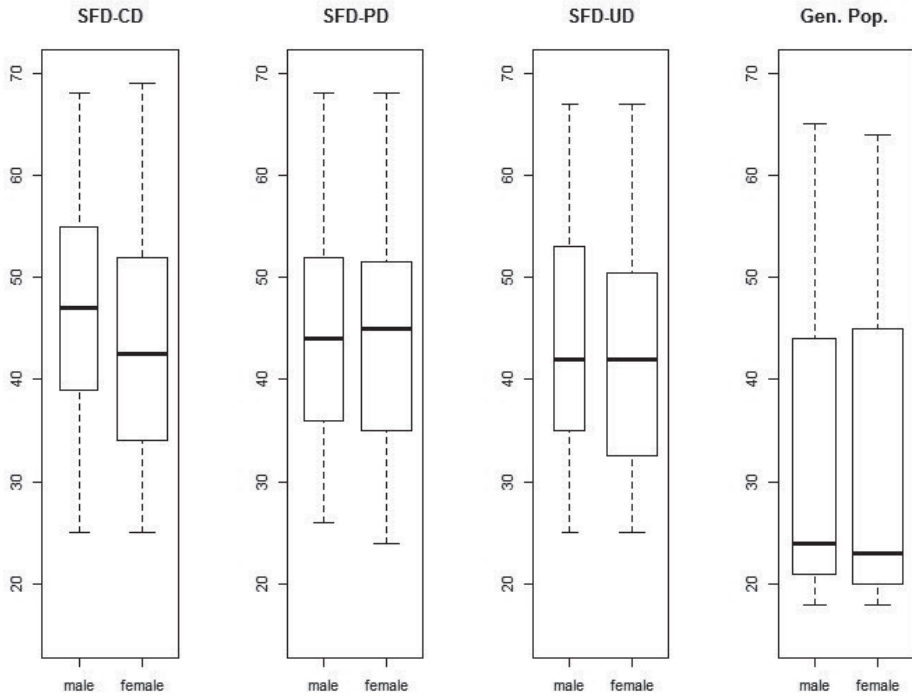


Figure S1. Age distribution of males and females across the three diagnostic categories and in the general population.

CD = Conversion Disorder; PD = Pain Disorder; UD = Undifferentiated Somatoform Disorder

CHAPTER 5



Body drawings as an assessment tool in somatoform disorder

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ABSTRACT

As part of the assessment of somatoform disorder, body drawings may provide complementary information to self-report questionnaires. This study examined the psychometric quality of observer ratings of objective characteristics of 180 own body drawings made by persons referred to treatment for somatoform disorder and 67 post-treatment drawings. Physical features of the drawings such as eyes, hands, size and angle of perception, were scored. These observer ratings were correlated with participants' responses on the Dresden Body Image Questionnaire (DBIQ-35) and with a single assessment by art therapists of the clients' relationships to their bodies. Changes in the observer ratings before and after therapy were evaluated. Inter-rater reliability was adequate to excellent for ten observer ratings and the art therapist ratings. Categorical principal components analysis of observer ratings indicated a 2-factor structure comprising details (factor 1, $\alpha = .76$) and basic elements (factor 2, $\alpha = .73$). Both factors correlated with the art therapists' rating (Spearman's $\rho = -.53$ and $\rho = -.36$) but not with DBIQ-35 scales. Factor scores improved after therapy. Assessment of objective characteristics of body drawings in clients with somatoform disorder indicate reliability, sensitivity to change and initial validity. These assessments may help to improve evaluation of client characteristics and treatment effectiveness.

INTRODUCTION

People with a somatoform disorder have a complex and problematic relationship to their bodies (Kalisvaart et al., 2012; Sertoz, Doganavsargil & Elbi, 2009). Somatoform disorder, the precursor to the diagnostic category of somatic symptom and related disorders in DSM 5 (American Psychiatric Association, 2013), is characterised by physical symptoms that suggest a general medical condition but which are not fully explained by this condition or by the direct effects of a substance or other mental disorder. People with somatoform disorder experience their body as being dysfunctional (Röhricht, 2011) and have difficulty acknowledging and understanding body signals and to adapt their behaviour to these signals (Creed, Henningsen & Fink, 2011; Henningsen, Zipfel & Herzog, 2007; Kalisvaart et al., 2012; Nijs, Paul & Wallman, 2008). This disturbed *body-relatedness* is a core focus in the treatment of somatoform disorder and can be defined as awareness of the body and self, by understanding, accepting and adjusting to bodily signals, by respecting and regulating the body, by trusting and esteeming oneself and by being autonomous (Kalisvaart et al., 2012). Assessing how a client with somatoform disorder experiences his or her own body could inform indication and contraindication for specific treatments and evaluation of treatments. This paper evaluates objective features of body drawings as a possible assessment method in clients with somatoform disorder.

Neural representations of the body develop at an early age (Gottwald, 2015) are well established in children aged 7-11 years (Fontan et al., 2017) and stay relatively persistent during adulthood (Pazzaglia & Zantedeschi, 2016). Neural mechanisms other than those involved in language and cognition enable people to reflect on their bodies and these include proprioception and interoception (Khalsa et al., 2018; Ogden & Fisher, 2015) and face recognition (Morita et al., 2017). Clients with somatoform disorder often struggle with their body and emotions (Lind, Delmar & Nielsen, 2014; Payne & Brooks, 2016) and some authors consider that clients may be trying to take control of their physical symptoms by withdrawing from their bodies (Luyten, van Houdenhove, Lemma, Target & Fonagy, 2013; Price & Mehling, 2016) or even by dissociating from them (Nijenhuis, 2000). It has been suggested that poor integration of the different neural pathways may be involved in this (e.g., Calsius, de Bie, Hertogen, & Meesen, 2016).

Self-report questionnaires, addressing cognitive processes, may not be sufficient to assess the experience of the body in its full range. It can be assumed that in particular the more implicit side of body experiences such as body identity, posture, movement patterns and automatic behaviour are difficult to self assess for the client with somatoform disorder due to dissociative features being present. In order to assess the implicit aspects of body experience, non-verbal tools such as physical tests, behavioural observations (Emck, Plouvier & van Lee, 2012; Lausberg, 2009) or artistic expressions may reveal relevant information not available through self-report questionnaires (Assmann, Borkenhagen & von Arnim, 2010). Body drawings, as a form of self-report of body experience, may be appropriate because drawings rely less on conscious reflective mechanisms of the brain, are non-intrusive and are quick and easy to administer (Betts, 2006).

Projective assessment techniques, particularly drawing a person or a figure of self, have been debated. The scientific evidence for the validity and reliability of drawings as a reflection of psychological characteristics is weak both as a measure of subjective interpretation as well as for scoring objective features (e.g., Betts, 2006; Lilienfeld, Wood & Garb, 2000). Increasing clinical experience of the observer also does not appear to improve validity of these measures for psychological diagnostic purposes and the validity seems not to add information to other assessment methods (Lilienfeld et al., 2000). However, when body- and illness-related issues need to be assessed, drawings have been found to be of value. Research in patients with cardiovascular diseases (Broadbent, Ellis, Gamble, & Petrie, 2006; Reynolds, Broadbent, Ellis, Gamble, & Petrie, 2007), headache (Broadbent, Niederhoffer, Haguac, Corter, & Reynolds, 2009), brain injury (Jones et al., 2016), eating disorders (Guez, Lev-Wiesel, Valetsky, Kruszewski Sztul, & Pener, 2010) and Cushing's syndrome (Tiemensma et al., 2012) showed correlations between objective physical features of drawings of the affected body part, such as size or detail, and clinical severity, illness perception and distress. Moreover body drawings have been indicated to be sensitive to change in a small randomised controlled trial involving dance movement therapy for patients with fibromyalgia; the intervention group used more details and made larger drawings of themselves after six months of therapy than the treatment-as-usual group (Bojner Horwitz, Kowalski, Theorell & Anderberg, 2006). Self-report questionnaires did not reveal this positive change; a finding also confirmed by video interpretation techniques.

Assessment in somatoform disorder generally encompasses a diagnostic interview and other verbal measurement tools. Although body drawings can be part of assessment and therapy in mental health care (Oster & Crone, 2004), they have thus far not been studied as part of assessment in somatoform disorder. Non-verbal instruments such as body drawings are used by art therapists in our treatment centre, because it is assumed that they help to reveal implicit information about the relationship to the client's body. Our study was primarily designed to test the premise that certain characteristics of body drawings can give an indication of the severity of the troubled relationship to the client's body. In analogy to most illness-related research of drawings (e.g., Guez et al., 2010; Jones et al., 2016; Tiemensma et al., 2012), we chose to evaluate a rating procedure focusing on objective characteristics of body drawings as these can be scored in a quantitative, scientifically reliable way (Chirila & Feldman, 2012) and such a procedure is more easily applied and replicated by others. Therefore, the aim of our study was to examine whether objective features of own body drawings, made by people with somatoform disorder, can produce complementary information to self-report questionnaires of own body experience. To that end the reliability, factorial validity and sensitivity to change in observer scores with regard to the physical features of body drawings made by people with somatoform disorder were examined. The physical features chosen were those that art therapists considered to be an indication of the severity of problems in body experience.

To attain preliminary knowledge of the construct validity of the scales found in the factor analyses, we examined the association with a single rating given by art therapists on the severity of the dysfunctional relationship to the body as shown in the drawing and with scores on a body-related self-report questionnaire: the Dresden Body Image Questionnaire (DBIQ-35, Pöhlmann, Roth, Brähler & Joraschky, 2014).

In line with previous observations of small correlations between different modes of assessment (Ganellen, 2007), we expected to find small correlations between body drawings that represent implicit experiences and questionnaire scores that assess explicit awareness of the body. Although medium correlations have been reported elsewhere (Bojner Horwitz et al., 2006, Broadbent et al., 2006, Tiemensma et al., 2012), the dissociation that may occur in somatoform disorder was expected to reduce the size of possible correlations. Since clinical severity, illness perception and distress have been associated with size and details of drawings (e.g., Bojner Horwitz et al., 2006; Broadbent

et al., 2009), the scales of the DBIQ-35 that have most in common with these aspects were expected to correlate with the scores of the drawings, namely: vitality and acceptance of the body.

Moreover, we evaluated the sensitivity to change in scores by comparing drawings made before and at the end of multi-disciplinary treatment. This comparison indicates the possible relevance of assessment of drawings as outcome measures.

METHODS

Participants

This study was conducted at a tertiary mental health centre, specialising in psychosomatic medicine. Clients admitted to this institution have had medically unexplained symptoms on average for 10 years, have received about 5 previous treatments for somatoform disorder in primary or secondary care and have comorbid mood, anxiety, or a personality disorder in about half of the cases (van der Boom & Houtveen, 2014). People referred to treatment for somatoform disorder completed self-report questionnaires and were asked to make drawings of their bodies as part of the diagnostic procedure. At the time of our study, somatoform disorder was diagnosed by trained psychologists according to DSM IV criteria (American Psychiatric Association, 2000) and confirmed by the resident medical doctor and psychiatrist. Clients that were diagnosed with a somatoform disorder as the primary diagnosis were considered for multidisciplinary treatment focusing on body-related mentalisation, acceptance and commitment therapy, cognitive-behavioural modulation, and the dynamic family environment therapy. Exclusion criteria for treatment in this centre are a) a diagnosis of hypochondriasis or body dysmorphic disorder; b) a diagnosis of addiction, bipolar disorder, or psychosis; c) presenting in a crisis situation requiring immediate attention; or d) currently receiving treatment from a specialised physician outside the centre. The study was conducted in accordance with the principles of the Declaration of Helsinki (Revision, Fortaleza, Brazil, 2013) and it was approved by the Institutional Review Board of the mental health centre (2013-30/oz1317/ck). All participants provided written informed consent.

In the diagnostic phase, drawings from 180 clients were analysed. Forty-one of these drawings could not be linked to a client file because no name was provided on the

paper. Nevertheless these were included in the factor analysis in order to analyse as many drawings as were available. Sixty-one clients also completed the DBIQ-35 in the same time period as their first drawing and 67 made a second drawing after treatment.

The mean age of the 180 clients was 41 years ($SD=12$, range 17-66, 41 age unknown) and 75% were female (5 gender unknown). The detailed diagnoses of the clients that were linked to a file were: undifferentiated somatoform disorder (33%), conversion disorder (19%), pain disorder (11%), other primary diagnoses (affective, anxiety and personality disorder; 17%) and unknown (21%).

The subgroup that made a second drawing ($n=67$, 77% female) were all clients with somatoform disorder as a primary diagnosis, who had received multidisciplinary treatment, including art therapy. The mean length of treatment was 14 ($SD=7$, range 7 to 31) months and there were no significant differences in age, gender, questionnaire or drawing scores between this subgroup and the group that did not make a second drawing.

Instruments

Body drawings. Participants were instructed to pay attention consecutively to the different parts of their body and subsequently draw how they experienced their body, using a lead pencil on an A3 sized (441 x 325 mm) sheet of paper. Participants were free to choose the orientation of the sheet (landscape or portrait).

In order to decide which features of the body in the drawings should be considered, five specialised art therapists met to arrive at a consensus on which aspects of the body drawings they considered significant in somatoform disorder. Interrupted lines, incorrect proportions and disconnected or missing body parts were considered signs of disconnection or dissociation from the body. Accentuated and magnified parts were seen as a preoccupation with these parts of the body and the omission of senses or hiding body parts as disconnection from other people. Omission of gender features was linked to possible discomfort with gender characteristics in the body. The content of surroundings was considered an indicator of the degree of perceived safety in the world, in line with Gerge and Pedersen (2017). With regard to position on the sheet, placement in the middle was associated with importance and present state (Gerge, 2017), whereas placement to the left was connected with the past and to the right with the future. In line with the literature, the size of the body depicted was seen as an

indicator of pain and discomfort (Bojner Horwitz et al., 2006), i.e. the more paper used reflected less suffering, unless where the drawing was too big for the sheet. The use of symbols and words in drawings occurred too infrequently and was therefore considered too individualistic to make any general interpretations.

After defining the relevant items, testing the usability was achieved by scoring 20 drawings and redefining the categories and finally a 12-item observation scale was devised comprising physical features of body drawings that could be scored not only by trained art therapists but also by untrained observers. Scores were given for nine objective features (1. the presence of eyes in the drawing, 2. the number of other senses, 3. the presence of hands and 4. of feet, 5. the number of limbs (with elbow or knee), 6. surroundings, 7. the position of the body on the sheet of paper, 8. angle of perception and 9. fit to the page, see Table 1) and three observation scores (gender clarity, unity of the body and presence of accentuated parts). Also the size of the drawing was calculated by multiplying the length by width of the depicted body.

In order to assess the inter-rater reliability, all items in 39 drawings were scored independently by two research assistants. In addition to this, the specialised art therapists provided a general rating of their assessment of the severity of the dysfunctional relationship to the body on a scale from 1 (healthy) to 7 (very severely disturbed relationship to the body). To assess inter-rater reliability of these art therapist ratings, 29 drawings were scored independently by three art therapists. All other drawings were scored by single art therapists. Neither the client nor the phase of treatment were known by the art therapists. All drawings were rated for relationship to the body by the art therapists but 12 had missing values on the observer ratings, for example where the client drew a symbolic body.

Questionnaire. The Dresden Body Image Questionnaire (DBIQ-35, Pöhlmann et al., 2014; Scheffers, van Busschbach, et al., 2017) is a 35-item questionnaire with positively and negatively worded items comprising five subscales: body acceptance (e.g. "I wish I had a different body"), vitality (e.g. "I am physically fit"), physical contact (e.g. "Physical contact is important for me to express closeness"), sexual fulfilment (e.g. "I am very satisfied with my sexual experiences") and self-aggrandizement (e.g. "I use my body to attract attention"). Level of agreement with items was scored on a 5-point Likert scale ranging from 1= "not at all" to 5= "fully". Higher subscale scores indicate a more positive

body experience. Internal consistency of the subscales (Dutch version) in a non-clinical sample was good, varying from Cronbach's $\alpha = .74$ for the subscale physical contact to $\alpha = .91$ for the subscale sexual fulfilment (Scheffers, van Busschbach, et al., 2017; Scheffers, van Duijn, Bosscher, Wiersma, & van Busschbach, 2017). People with somatoform disorder scored substantially lower on all subscales than a non-clinical sample (Scheffers, Kalisvaart, et al., 2017).

Data analysis

SPSS Version 20 was used for all statistical analyses. Inter-rater reliability was computed using Cohen's Kappa (Landis & Koch, 1977; Siegel & Castellan, 1988) for nominal variables and intra-class correlations for ordinal and continuous variables (Hallgren, 2012).

In order to rate global individual differences, in lieu of interpreting the observations in terms of signs (Betts & Groth-Marnat, 2014), categorical principal components analysis was used to identify dimensions in the observations. The nominal and ordinal scores of the pre-treatment drawings were transformed into continuous, normal distributed scores, with categorical principal components analysis. Subsequently, these transformed variables were rotated, using principal components analysis with oblimin rotation (Linting, Meulman, Groenen & van der Kooij, 2007). Criteria for excluding items for factor analysis were a factor loading $<.40$ or a loading $>.32$ on two or more factors (Costello & Osborne, 2005). For the determination of the number of factors, the scree plot of Eigenvalues and interpretability of factor solutions were used. Internal consistency of the subscales was examined with Cronbach's α .

Factor scores based on the transformed item scores after categorical factor analysis were correlated with scores on the DBIQ subscales and the severity rating, using Spearman's ρ for non-normal and ordinal distributions. Items that did not load on a factor were not analysed separately, except for the size of the drawings, since this feature was shown to be relevant in former research (Bojner Horwitz et al., 2006; Broadbent et al., 2006; Reynolds et al., 2007). Size was analysed separately for landscape and portrait orientation of the sheets.

Results of the participants who made drawings before and after treatment were analysed per factor and separately for the art therapist rating using repeated measures

analysis of variance (normal score distributions) and with Wilcoxon matched-pair signed-rank test (skewed score distributions).

RESULTS

Inter-rater reliability

Inter-rater reliability was excellent for seven items ($ICC > .75$ or $\kappa > .80$), substantial ($.61 \leq \kappa \leq .80$) with regard to surroundings and position on the sheet and fair ($.21 \leq \kappa \leq .40$) for gender clarity. Two observation scores (unity of the body and accentuated parts) had poor inter-rater reliabilities ($.21 \leq ICC \leq .40$) and were not used in further analysis. The inter-rater reliability for the art therapist ratings, based on the ratings of three therapists, was fair ($ICC = .55$).

Factor analysis

Table 1 shows the results of the factor analysis. Categorical principal components analysis indicated a 2-factor structure (explained variance 61%). Factor 1 (explained variance 35.2%) comprised items referring to details of the body presented in the drawing: eyes, other senses, gender characteristics and the angle of perception. Factor 2 (explained variance 26.2%) comprised basic elements of the body drawings: limbs, feet, hands and the drawing fitting within the page. Two items (surroundings and position on the sheet) and size did not load on any factor. Internal consistency of the two factors was good: Cronbach's $\alpha = .76$ for details and $\alpha = .73$ for basic elements and their inter-correlation was low ($r = .10$). Factor 2, the basic elements factor, was strongly skewed: 69% of the initial drawings had an optimal score, representing a correct basic drawing with hands, feet and limbs present which fitted within the dimensions of the sheet of paper.

Table 1

Pattern Matrix with factor loadings of the physical features of 180 body drawings* and category scores based on transformed scores after categorical principal components analysis.

Item	Factor loadings		Category scores
	Details	Basic elements	
Presence of eyes	.91	.01	0 No eyes 1 Eyes without pupils 2 Eyes with pupils
Number of other senses	.91	-.02	0 Zero 1 One 2 Two or three
Angle of perception	.69	-.26	0 Back or unclear 2 Front, side or several sides
Gender clarity	.53	.13	0 No 2 Yes
Presence of feet	-.08	.85	0 No feet 2 Feet present
Number of limbs (with elbow or knee)	.18	.80	0 Zero or one limb 1 Two limbs 2 Three or four limbs
Fit to the page	-.13	.72	0 Too big 2 Small or fitting
Presence of the hands	-.02	.70	0 Nowhere 1 Hidden or behind the body 2 Visible
Surroundings**			1 Natural surroundings 2 No surroundings 3 Symbolic and negative surroundings
Position on the sheet**			1 Left 2 In the middle 3 Right 4 Several positions

*Extraction Method: Principal Components Analysis.

Rotation Method: Oblimin with Kaiser Normalisation.

** Factor loadings $\leq .18$ in categorical factor analysis and therefore not included in rotated solution.

As an example Fig. 1 shows a body drawing of a woman with a history of physical abuse who could not connect to her body. The drawing shows no details and shows a lack of basic elements.

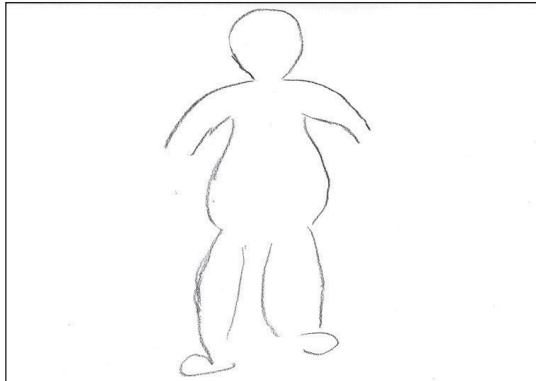


Fig. 1. A drawing by a woman with a history of physical abuse who could not connect to her body. Details and some basic elements are missing.

Construct validity

Table 2 shows the correlations of scores based on the objective features of the body drawings ($n=168$) with the art therapist rating ($n=180$) and the scale scores on the DBIQ-35 ($n=61$). The severity rating correlated with both factor 1, the details factor (Spearman's $\rho = -.53$, $p < .001$, $n=168$) and factor 2, the basic elements factor (Spearman's $\rho = -.34$, $p < .001$, $n=168$). Correlations between self-reported body experience and the scores based on the objective features of the drawings were small and non-significant. In landscape drawings the size of the body correlated with the Acceptance scale of the DKB-35 (Spearman's $\rho = .50$, $p < .05$, $n=23$); not significant were the correlations of the size of landscape drawings with Vitality (Spearman's $\rho = .09$, $p = .69$, $n=23$) and of the size of portrait drawings with Acceptance (Spearman's $\rho = -.16$, $p = .38$, $n=33$) and Vitality (Spearman's $\rho = -.10$, $p = .58$, $n=32$).

Table 2

Correlations (Spearman’s ρ) of scores at the factors *Details* and *Basic elements* of 168 body drawings with global ratings of severity by art therapists and scores on scales of the Dresden body image questionnaire (DBIQ-35).

	<i>n</i>	Body drawing factor scores	
		Details	Basic elements
Art therapist rating	168	-.53**	-.34**
DBIQ Total	61	.13	.18
DBIQ Vitality	61	.14	.05
DBIQ Acceptance	61	.22	.09
DBIQ Sexual fulfilment	61	.08	.17
DBIQ Physical contact	61	.08	.18
DBIQ Self-aggrandisement	61	.18	.08

**correlation is significant at $p < .01$ level (two-tailed).

Sensitivity to change

Table 3 shows the results with regard to sensitivity to change. Scores of the drawings after treatment ($n = 67$) were significantly higher showing more details and basic body elements than the drawings before therapy. Before therapy, 76% of the drawings showed optimal drawing of basic elements and after therapy 84%. The *details factor* improved two or more points (out of eight) in 36% of the drawings. The percentage of drawings that had a *details score* above 6 increased from 31% before to 53% after therapy. The mean art therapist rating decreased significantly with a medium effect size (Cohens $d = 0.63$). As examples Fig. 2 and Fig. 3 show body drawings before and after therapy.



Table 3

Medians and mean of pre- and post-treatment drawings.

	<i>N</i>	Pre-treatment	Post-treatment	<i>p</i>
Details				
Median (inter-quartile range)	66	6 (5-8)	7 (6-8)	.001
Basic elements				
Median (inter-quartile range)	65	8 (8-8)	8 (8-8)	.034
Art therapist rating				
Mean (<i>SD</i>)	67	4.42 (1.38)	3.58 (1.27)	<.001

The differences were tested with Wilcoxon matched-pair signed-rank test for *Details* and *Basic elements* and repeated measures analysis of variance for the art therapist rating.

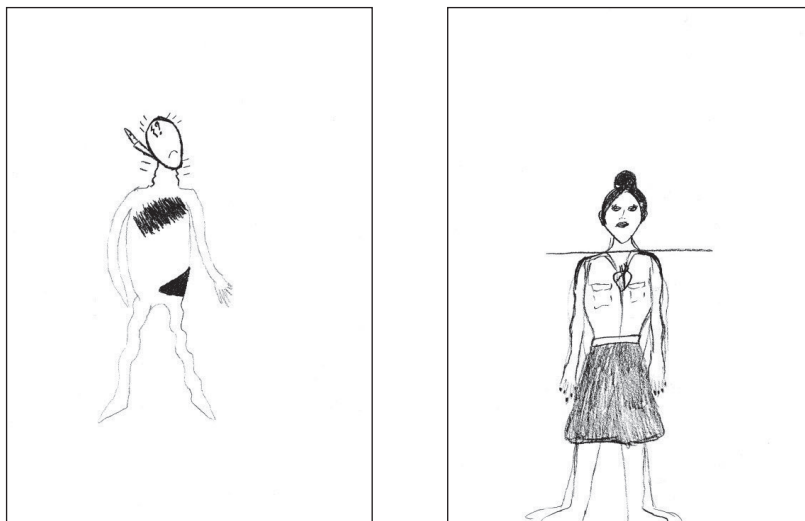


Fig. 2. Drawings by a women who had endured several traumatic bodily experiences and regained confidence in her (painful) body during treatment. The drawings before (left) and after (right) therapy, 18 months later, reflect optimal scores in basic elements on both occasions and a change in the details score from 3 to 8 (theoretical range 0-8).

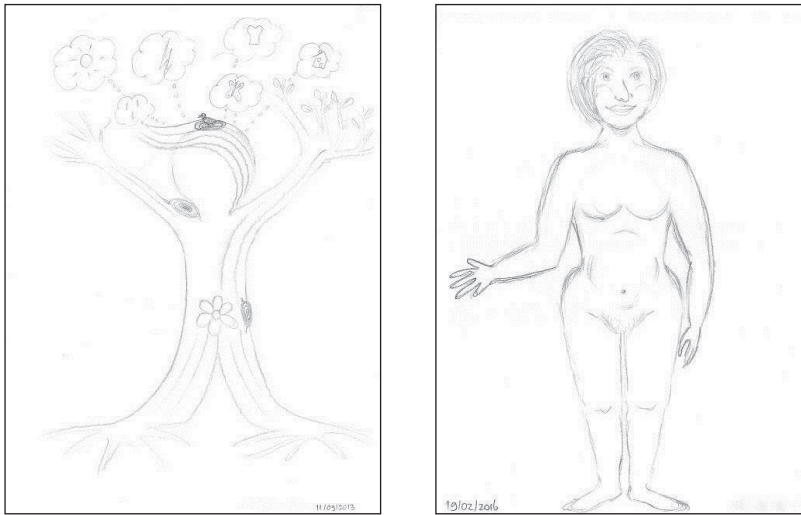


Fig. 3. Two drawings by a woman who mostly trusted her intellect, but regained connectedness with her body after stating that it did not feel like herself before. The drawings before (left) and after (right) therapy, 29 months later, reflect a symbolic drawing at start (no factor scores) and an optimal score on basic elements and details after treatment.

DISCUSSION

This study examined objective features of body drawings as an assessment tool in persons referred to treatment for somatoform disorder. Inter-rater reliability tests indicated accurate scoring of several features of body drawings by untrained observers, unfamiliar with the client and treatment phase. Regarding factorial validity, the objective features reflected two factors (details and basic elements) with adequate internal consistency and low inter-correlation. Both factors correlated with a rating of the relationship to the body by specialised art therapists but not with self-reported measures of the DIBQ. The change in factor scores post therapy reflected improvement.

The selected items were considered important by art therapists and only reliable items were used in the analysis. Compared to other research, where aspects of drawings such as the integration of body parts, facial expression or body shape outline are rated on a scale (e.g., Broadbent et al., 2009; Eskelinen & Ollonen, 2010; Guez et al., 2010), our items leave little room for subjective interpretation. This is likely to be an asset in terms of reliability, if it is not at the cost of validity, where the study is concerned with

reflection of underlying body-related pathology. Although both factors, details and basic elements, reflect rather technical statistical reductions of the individual differences in drawings, they nevertheless still seem to provide relevant information. The details in the drawings, the presence of eyes, other senses, a (visible) angle of perception and gender characteristics, have in common an ability to personalise (give identity to) the features of the body, whereas the basic elements, presence of hands and feet, fit on the page and the number of limbs, seem to form the outline of a common human figure. In other words, one could say that the two factors represent global ratings of either the content or form of the body, a distinction that has been made before while interpreting drawings (Betts & Groth-Marnat, 2014). The amount of body details in drawings has been used as a characteristic in other research (Bojner Horwitz et al., 2006) but this might represent a more general measure than our *details factor* which consists of items that are considered to give identity to the body.

Considering the meaning of the *details factor* especially the *angle of perception* gives identity to the person by making the body visible (shown from the front) or by concealing it by drawing the body from the back. The other items also add to the identity of the body: eyes and other senses define the face and also express connection to the world (Gerge, 2017; Küchenhoff & Agarwalla, 2012), a connection which may feel troubled when experiencing physical symptoms (Lind et al., 2014; Luyten et al., 2013). Gender features are supposed to give a gender identity to the body. In somatoform disorder, embodying a painful or tired body can be hard (Affrell, Biguet, & Rudebeck, 2007; Luyten et al., 2013). The change recorded in drawing more details after treatment may reflect the process of improved acceptance of the client's embodied identity.

Regarding the meaning of the second factor, a non-optimal score on basic elements appears to be unusual. The drawings were made after completing an attention focussing body scan and an instruction to draw the body as experienced. Therefore, omitting parts of the body that are easy to be aware of (Danner et al., 2017) suggests a sign of deviance. Some clients drew only a head which may indicate non-acceptance of the body, not being connected to the body, or a strong sense of living in their heads as has been reported previously in somatoform disorder (Lind et al., 2014). Others omitted one basic element, such as a foot or an arm, possibly expressing disconnection with this specific part of the body, as has been reported after trauma (Gerge, 2017) and may be part of conversion disorder. Some made a sketch of the body in which the basic

elements were omitted or which fell outside of the confines of the sheet of paper. This also might reflect difficulty relating to the whole body. Overall, the basic elements factor seems to represent acceptance of and connection to the body.

The nomothetic approach of our study included the risk of overlooking the idiosyncratic, individual experiences of the body that was drawn. Less precise aspects, such as omissions, were incorporated in our scoring but the more nuanced features such as interrupted lines, incorrect proportions, clothing and accentuated parts that were indicated by art therapists before the study, were not incorporated in the analyses. Studying these nuances may require a more personalised approach, using the verbal account of the client and the expertise of the art therapist (Betts & Groth-Marnat, 2014; Gerge, 2017). Case studies that offer more precise information about aspects of drawings that change over time as the client improves, may further inform the assessment of body drawings in persons with somatoform disorder.

The correlations of both factor scores with the more general ratings of experienced art therapists indicated that the objective scores do give a reflection of the severity of the dysfunctional relationship to the body as observed by professionals, which endorses the validity of the factor scores. In research into Cushing's syndrome, correlations between a severity rating of symptoms made by professionals using drawings and the Cushing's syndrome severity index were high - around .50 (Tiemensma et al., 2012). In the absence of a generic illness severity score for persons with somatoform disorder, no conclusions can be drawn as to the extent to which the factor scores or ratings by the trained professionals actually reflect the severity of a dysfunctional relationship to the body.

Small and non-significant correlations between the factor scores and the self-reported body image scores are in contrast to previous observations of medium correlations between details in drawings and the self-reported illness perceptions of patients with myocardial infarction (Broadbent et al., 2006), depression and anxiety in patients with fibromyalgia (Bojner Horwitz et al., 2006) and perceived personal control and consequences of illness in patients after remission of Cushing's syndrome (Tiemensma et al., 2012). In line with the findings of another study (Bojner Horwitz et al., 2006), analyses tentatively indicate that a larger sized body in the landscape oriented drawings may reflect acceptance of the body but the sample size was too small to draw firm conclusions. The lack of correlation between drawings and the self-report

questionnaire used in our study may suggest that drawings and self-reports of the body represent different aspects of the way people relate to their bodies, specifically in clients with somatoform disorder, viz. implicit processes are reflected in drawings and explicit, cognitive processes in self-reports. Somatoform dissociation may explain a disconnection between these modes of processing in this specific group (Nijenhuis, 2000, Price & Mehling, 2016) leading to different outcomes for the drawings compared to the questionnaires. Research is needed to verify these speculations.

Another possible validity check was the analysis of change after therapy. Both body drawing factor scores reflected a positive change after therapy. In previous research, the number of body details increased significantly in fibromyalgia patients after 6 months of dance movement therapy, compared to a control group (Bojner Horwitz et al., 2006). In our study, also the post therapy rating of the relationship to the body reflected a positive change. The effect size was medium, which is comparable to changes in the Symptom Checklist (SCL-90) somatisation scores in a similar group ($d=0.51$; Houtveen, van Broeckhuysen-Kloth, Lintmeijer, Bühring & Geenen, 2015). This tentatively suggests that the body drawings in the current study reflect an improved relationship to the body as the scores increased after multidisciplinary treatment. To summarise the findings of this study with respect to the possible validity of the factor scores, the correlation with the ratings of the art therapists and the significant changes after therapy suggest validity of the scoring method.

A strength of this study was the relatively large sample size and the inclusion of an analysis of pre-to-post-treatment changes. A factor analysis of the objective features of body drawings has not been reported upon frequently (Betts, 2006) and this way of reducing the data diminishes the chance of casual results. However this reduction of objective, quantitative data to two dimensions limits the wealth of information that drawings and the subjective verbal account of the client may produce (Betts, 2006). Collecting and interpreting idiosyncratic information is more complex but its clinical applicability for assessment, treatment and treatment evaluation would be worthwhile studying as well. Another limitation is the generalisability: we do not know whether these findings also apply to persons with somatoform disorder not referred for specialised treatment. Also no comparisons were made to matched control groups from the general population or to samples with somatoform disorder receiving no, or less intensive treatment. Regarding other limitations, the *surroundings* and *position on the*

sheet of paper were not analysed separately because they did not load on any factor. Also *unity of the body* and *accentuated parts* were not incorporated due to weak inter-rater reliabilities. These features seem relevant for assessing body experience and might be scored more reliably when art therapists are trained. Other factors that might have influenced the contents of drawings were not considered, e.g. artistic skills, motivation of the client and a possible training effect through exposure to art therapy as part of multidisciplinary treatment. Since basic elements of the body were mostly drawn correctly, a ceiling effect for this factor was observed. This resulted in little differentiation between participants and might also have played a role in the observed low correlations with the questionnaire data.

The present study indicates that drawings of the body do provide information about clients with somatoform disorder that seems inaccessible through a self-report questionnaire, which is an incentive for further research. A next step in research is to expand this project by assessing a wider range of data from the perspective of the therapist and the verbal account of the client who is drawing his or her body. Also the influence of body awareness and somatoform dissociation on assessments of body drawings can be examined and whether body drawings can add to the standard assessment used in clinical practice and treatment evaluation. Research comparing the body drawings of persons who dissociate less from their bodies than people with somatoform disorder, could contribute to revealing more of the value of body drawings for the assessment and treatment of clients with a troubled relationship to their bodies. For clinical use, drawings of the body can be a valuable tool because of their non-intrusiveness and the ease with which they can be scored objectively, as well as for the opportunity they offer the client and therapist to talk about and relate to the body as experienced. Post treatment body drawings can also be used to capture changes during therapy.

To conclude, several objective ratings of the drawings were indicated to be reliable, two internally consistent constructs were found, correlation with ratings of the drawings by experts and sensitivity to change indicated potential clinical significance and the absence of correlation with a self-report measure suggested that analyses of body drawings yield information other than body-related questionnaires provide. This indicates that analyses of body drawings may be a promising assessment tool in somatoform disorder.

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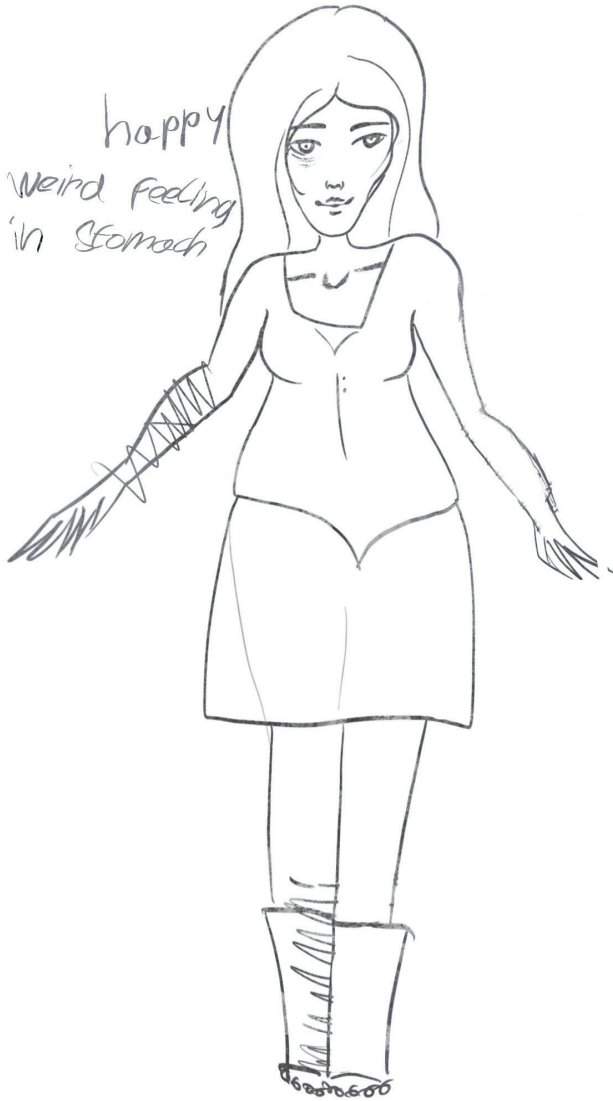
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CHAPTER 6



Picturing disturbed body-experience: A comparison of body drawings in somatoform disorder and a general population sample

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ABSTRACT

Objective: Patients with somatic symptom disorder and somatoform disorder are considered to have a troubled relationship to their body that is hard to assess with self-report questionnaires alone. Aim of this study was to examine the value of body drawings as an assessment tool.

Method: Compared were objective features of own body drawings from 179 patients referred to treatment for somatoform disorder from an original study and 173 age-and-sex matched persons from the general population.

Results: Only one of the two original factors was replicated in the general population sample. Groups did not score differently on this factor that reflected details in drawings. Contrary to expectation, the association of observation scores of drawings and self-reported scores was not stronger for the general population sample. Analysis in the general population sample tentatively indicated that the perspective of the drawer potentially influences observation scores.

Conclusion: This comparative study indicates that the two groups picture a similar mean number of details in drawings of their own body. Because both the factor structure and association with self-report measures differed between the groups, scorings of body drawings appear to reflect a different meaning for patients with somatoform disorder and people from the general population.

INTRODUCTION

Patients with somatoform disorder (DSM-IV, APA, 2000) or somatic symptom disorder (DSM-5, APA, 2013) experience chronic distressing somatic symptoms. A common feature of these patients is the troubled relationship to their body: they experience their body as being dysfunctional (Röhricht, 2011) and have difficulty acknowledging and understanding body signals (Henningsen et al., 2018; Kalisvaart et al., 2012; Nijs et al., 2008, Sertoz et al., 2009). This body experience can be a focus in the treatment of somatoform disorder (Baptista et al., 2013; Houtveen et al., 2015) and its assessment is helpful in the process of indication for treatment and effect-evaluations (van Dessel et al. 2014). The use of self-report questionnaires alone, addressing conscious aspects in a verbal way, may not be sufficient to assess body-relatedness in its full range. The more implicit sides of body experiences such as body identity, posture, movement patterns and automatic behavior are difficult to self-assess for the patient with somatoform disorder (Ganellen, 2007). Therefore, to rely not only on conscious reflective mechanisms, we examined body drawings of the own body as an assessment tool of implicit body experiences (Kalisvaart et al., 2018).

Assessment of body experience through drawings has been examined, for instance, in cardiovascular disease (Broadbent et al., 2006; Reynolds et al., 2007), headache (Broadbent et al., 2009), brain injury (Jones et al., 2016), eating disorders (Guez et al., 2010), pain (Bernhoff et al., 2017), Cushing's syndrome (Tiemensma et al., 2012) and fibromyalgia (Bojner Horwitz et al., 2006). These studies in patients with somatic problems showed that drawings reveal clinical severity, illness perceptions and distress (Broadbent et al., 2018). In our previous study a rating instrument was developed to score objective characteristics of body drawings made by persons referred to treatment for somatoform disorder (Kalisvaart et al., 2018). Inter-rater reliability tests indicated accurate scoring of several features of body drawings by untrained observers. Two factors with adequate internal consistency and low inter-correlation best summarized the observation scores: 'details' (eyes, other senses, gender characteristics and the angle of perception) and 'basic elements' (limbs, feet, hands and the drawing fitting within the page). Objective ratings of the drawings were shown to be related to subjective scorings by art therapy experts of the degree to which drawings reflected disturbed body experience. Moreover, objective ratings of body drawings after

therapy indicated an improvement. Objective ratings of drawings however were not correlated with questionnaire scores of body experience. To get more insight into the validity and utility of this tool, the current study compares drawings by people from the general population with the previously collected drawings in the people with somatoform disorder.

One issue that needs further clarification is whether objective characteristics of own body drawings in people with a somatoform disorder and people in the general population reflect more or less the same constructs. The original two-factor model primarily reflects technical aspects of body drawings ('details' and 'basic elements') and is therefore expected to be similar for drawings of a general population sample. To test this, the factor-analytic structure of the instrument should show the same domains in both groups. Thus, a first research question, before comparison of the scores between patients with somatoform disorder and the general population is made, is whether the two-factor model from the original research is replicated in the general population.

If the factor structure is the same, scores can be compared and the question is whether ratings of body drawings from people with somatoform disorder are different from those of people from the general population. Self-report questionnaires quite consistently indicate a more positive body experience of persons from the general population than of persons with mental or physical symptoms (Scheffers et al., 2017a, 2018). Furthermore, in our previous study, body drawings of patients with somatoform disorder after therapy showed more 'details' and 'basic elements', which suggests that improved body experience is reflected in "better" body drawings. Therefore, we expect that people from the general population will obtain higher scores on body drawing ratings than people with somatoform disorder.

A third research question addresses the association between ratings of body drawings and self-report scores of body experience. Although assessments of body drawings may to a certain extent correlate with self-reports, a leading assumption underlying this study is that both measures also reflect different aspects of body experience. In our previous study with a homogeneous somatoform disorder sample no significant univariate correlations of body drawing scores with self-report scores of body image were found. Even if this is partly due to the different modes of assessment (Ganellen, 2007), it might also reflect a real difference, i.e. that body drawings represent implicit and questionnaire scores explicit awareness of the body. Moreover, in the group

with somatoform disorder the discordance between assessments of implicit and explicit awareness may also reflect somatoform dissociation, the tendency to disconnect from the body, which has been described in patients with somatoform disorder (Lind et al., 2014; Kienle et al. 2017; Nijenhuis, 2000). Based on this notion, we expect that the correlation between self-report and body drawing scores is more pronounced in people from the general population than in people with somatoform disorder.

Finally, if the factor structure and results in the general population sample do not correspond with the above mentioned expectations, then the question arises as to the origin of this difference. Possibly, people with less dominant dysfunctionality of the body and somatic symptoms, may draw their body from another perspective, for example expressing their physical identity and appearance. Thus, a fourth research question in the general population sample is whether the perspective of the drawing is associated with objective scores of body drawings and with the number of somatic symptoms. We expect that persons with few somatic symptoms may primarily have an identity-oriented perspective on their body, which will be shown in higher scores on the two factors ('details' and 'basic elements') that characterize this identity. Lower scores on the two factors are expected when the perspective reflects (dys)functionality of the body and somatic symptoms. Also, identity-oriented drawings are expected in people with less somatic symptoms, and (dys)functional and symptom-oriented drawings in people with more somatic symptoms.

To summarize, in order to further examine the validity and utility of a body drawing tool for assessing body experience in somatoform disorder, drawings from a matched general population group were compared to those from the original study. It was examined whether 1) the two-factor structure of body drawing ratings found in the somatoform group was replicated in the general population sample, 2) body drawing ratings differed between the two groups, 3) drawings and self-report scores had a stronger correlation in the general population than somatoform sample, and 4) the perspective of drawings was associated with factor scores reflecting objective features of drawings and with symptom severity in the general population.

METHODS

Participants

In our previous study, 180 own body drawings were collected from persons in the diagnostic phase of a tertiary mental health centre specialised in psychosomatic medicine (Kalisvaart et al., 2018). Patients admitted for treatment generally have had somatic symptoms on average for 10 years, have received about 5 previous treatments for somatoform disorder in primary or secondary care and have a comorbid mood, anxiety, or personality disorder in about half of the cases (van der Boom and Houtveen, 2014). The data from this group were collected in the period of DSM-IV classifications and therefore the group is described as “somatoform disorder sample”. A detailed description of this group was provided in our previous publication (Kalisvaart et al., 2018).

For the current study, to acquire a comparison sample from the general population, three research assistants collected data in several settings, such as work, sports clubs, scouting, school and family, matching their group of participants as much as possible with the patient group on gender and age (18-65 years). Excluding seven persons older than 65, produced an adequately age-and-sex-matched group of 173 persons. In the somatoform disorder group one person was older than 65 and was therefore excluded from the comparative analyses. The study was conducted in accordance with the principles of the Declaration of Helsinki (Revision, Fortaleza, Brazil, 2013) and was approved by the Institutional Review Board of the mental health centre (2013-30/oz1317/ck) for the somatoform group and was granted a waiver by the Medical Ethical committee of the University Medical Centre Groningen for the general population group. All participants provided written informed consent.

Instruments

Body drawings. Similar to data collection in the somatoform group, small groups with a maximum of five participants were instructed to pay attention consecutively to the different parts of their body and subsequently to individually draw how they experienced their body. They used a lead pencil on an A3 sized (420 x 297 mm) sheet of paper. Participants were free to choose the orientation of the sheet (landscape or

portrait). Drawings that represented a symbol instead of a body were excluded from analyses.

The drawings were rated on ten objective characteristics that had been shown to have good inter-rater reliability in the previous study (Kalisvaart et al., 2018). Principal components analysis showed a two-factor solution. Four items loaded on the factor 'details': presence of eyes, number of other senses, angle of perception and gender clarity. Another four items loaded on the factor 'basic elements': limbs, feet, hands and the drawing fitting within the page. Both factors had adequate Internal consistency (Cronbach's $\alpha = .76$ and $.73$). The two items that did not load on any factor, surroundings and position on the sheet (factor loadings $\leq .18$ in categorical factor analysis), were not included in rotated solution and analyses in the previous study.

To assess the perspective of the drawings, one additional item was included in the current study for the observers of drawings from the general population sample: the perspective of the drawing was graded in one of three categories: 1) functionality of the body and somatic symptoms, 2) body as identity and 3) unclear or a combination of 1 and 2. This 'perspective score' was rated by two observers together.

Questionnaires.

The *Dresden Body Image Questionnaire* (DBIQ-35, Pöhlmann et al., 2014; Scheffers et al., 2017b) is a 35-item questionnaire with positively and negatively worded items comprising five subscales: body acceptance (e.g. "I wish I had a different body"), vitality (e.g. "I am physically fit"), physical contact (e.g. "Physical contact is important for me to express closeness"), sexual fulfilment (e.g. "I am very satisfied with my sexual experiences") and self-aggrandizement (e.g. "I use my body to attract attention"). Level of agreement with items is scored on a 5-point Likert scale ranging from 1= "not at all" to 5= "fully". Higher subscale scores indicate a more positive body experience. Internal consistency (Cronbach's α) of the subscales (Dutch version) was good, varying from $.74$ to $.91$ in a non-clinical sample (Scheffers et al., 2017a, 2017b) and from $.78$ to $.92$ in people with somatoform disorder. People with somatoform disorder scored substantially lower on all subscales than a random non-clinical sample (Scheffers, et al., 2018). In our study, 65 persons from the somatoform group completed the paper-and-pencil version of the DBIQ, some weeks before making their drawing and 145 persons

from the general population group completed a digital questionnaire in the weeks after making their drawing.

The participants from the general population also completed the *Patient Health Questionnaire* (PHQ-15; Kroenke et al., 2002). The PHQ-15 is a fifteen-item instrument to assess the severity of somatic symptoms. It comprises somatic symptoms, such as headache, dyspnea, indigestion and nausea, each scored from 0="not bothered at all" to 2="bothered a lot". Sum scores of 5, 10 and 15 represent cutoff points for low, medium, and high somatic symptom severity, respectively. The questionnaire was shown reliable and valid in different health care settings and in the general population (Kocalevent et al., 2013).

Analysis

SPSS Version 22 was used for all statistical analyses. In the original study, categorical principal components analysis had yielded two factors: details and basic elements. In order to estimate goodness of fit of this factor solution in the general population group, confirmatory factor analysis would have been the preferred analysis. However, this could not be done due to a ceiling effect and limited variance in the data of the general population sample. Therefore, to answer the first research question, an explorative categorical principal components analysis, similar to the one previously used in the somatoform sample was used in the general population sample as well. After transformation of the nominal and ordinal scores of the drawings into continuous, normal distributed scores using categorical principal components analysis, the transformed variables were rotated, using principal components analysis with oblique (oblimin) rotation (Linting et al., 2007). Criteria for excluding items for factor analysis were a factor loading $<.40$ or a loading $>.32$ on two or more factors (Costello and Osborne, 2005). For the determination of the number of factors, the scree plot of Eigenvalues and interpretability of factor solutions were used. Internal consistency of the subscales was examined with Cronbach's α .

Second, Mann-Whitney tests were used to compare the factor scores of both groups and analyses of variance to compare DBIQ-35 scores. Third, to examine the hypothesis that the associations between the ratings of body drawings and self-report scores of body drawings were stronger in the general population than in the group with somatoform disorder, a linear regression analyses was performed predicting DIBQ-35

total scores from ratings of body drawings and group (general population vs. somatoform disorder). In Block 1, group and z-scores of body drawings were entered and in block 2, the body drawings \times group interaction. To interpret a significant interaction, regression lines for the two groups were plotted for people scoring low (-1 *SD*) and high ($+1$ *SD*) on body drawings (Aiken and West, 1991).

To examine the fourth research question, in the general population sample the perspective of drawings (identity vs. functionality) was correlated with symptom severity (PHQ-15) and ratings of the drawings using Spearman's ρ .

RESULTS

Descriptives

Table 1 shows age, gender and DBIQ-35 scores of both groups. No differences in mean age ($p=.90$) or gender distribution ($p=.30$) were found. Mean DBIQ-35 scores on the total scale and all subscales differed significantly ($p<.001$, Cohen's $d=.84$ for physical contact to $d=2.24$ for vitality) with patients obtaining lower scores on all aspects of body experience.

In 83.6% of the general population group, somatic symptom severity as measured with the PHQ-15 was low, in 13.1% medium symptom severity was reported and 3.3% of the population scored high. The sum of these last percentages is higher than the 8.1% men and 10.3% for women with medium or high PHQ-15 scores that was observed in a study of the German general population (Kocalevent et al., 2013).

Table 1

Characteristics of the participants from the general population and somatoform disorder samples: age, gender and scores on the scales of the Dresden body image questionnaire (DBIQ-35).

	General population (n=173)	Somatoform disorder (n=179)
Age, mean (SD), years	40.9 (13.9)	40.7 (12.1)
Age, inter-quartile range, years	27-53	30-52
Age, range, years	18-65	17-65
Gender (% female)	75.3	70.3
DBIQ total, mean (SD)	3.41 (.40)	2.46 (.65)
DBIQ acceptance, mean (SD)	3.72 (.67)	2.88 (1.01)
DBIQ vitality, mean (SD)	3.51 (.55)	2.12 (.75)
DBIQ physical contact, mean (SD)	3.70 (.62)	3.06 (1.06)
DBIQ Sexual fulfilment, mean (SD)	3.70 (.73)	2.31 (1.14)
DBIQ Self-aggrandizement, mean (SD)	2.74 (.53)	2.11 (.66)

Note. Age was registered for 146 persons from the general population and 138 patients with somatoform disorder. DBIQ-35 scores were obtained from 145 persons from the general population and 65 patients with somatoform disorder.

To give an impression of the body drawings in both groups, fig. 1 shows drawings with varying amounts of details and basic elements. In the general population sample, the ratings of the observers showed that 45.7% drew their body from the perspective of functionality and somatic symptoms, 28.3% drew their body as identity and 26.0% drew a mixture or unclear perspective.



Fig. 1. Body drawings from persons from the general population (A to D) and patients with somatoform disorder (E to H) showing:

- A. no basic elements, all details, identity;
- B. most basic elements, no details, functionality;
- C. all basic elements and details, identity,
- D. all basic elements and details, both identity and functionality;
- E. a symbolic drawing with no score due to symbolic drawing;
- F. some basic elements and no details;
- G. all basic elements and few details and
- H. most basic elements and all details.

Factor structure of ratings of drawings

Table 2 shows the results of the exploratory factor analyses in both groups. Categorical principal components analysis in the general population group indicated a 3-factor structure, based on Eigenvalues >1.0 and interpretability of the factors (explained variance 61,8%). Factor 1 (explained variance 30.4%) was identical to factor 1 ('details') of the somatoform disorder sample and comprised items referring to details of the body presented in the drawing: eyes, other senses, gender characteristics and the angle of perception. Factor 2 (explained variance 20.3%) comprised three 'basic elements' of the original somatoform model: limbs, feet and hands, in combination with surroundings. Factor 3, (explained variance 11.1%) comprised position on the sheet and fit to the page. Internal consistency of the three factors was adequate for 'details' (Cronbach's $\alpha = .81$) and low for factor 2, 'basic elements' ($\alpha = .35$) and factor 3, 'page' ($\alpha = .20$). Because of the low reliability of the second and third factors and their divergence with the original model, further analyses were done with the 'details' factor only.

Differences between groups

Inter-quartile ranges of scores on the 'details' factor were five to eight in both samples and the median of the general population group was one point higher (7) than in the somatoform group (6) but the difference was not significant ($p = .10$). Regarding general characteristics of the drawings, subjects from the general population sample made no symbolic drawings of the body vs. 6.1% of the somatoform disorder group.

Table 2

Pattern Matrix with factor loadings* of the physical features of body drawings of the general population group ($n=173$) and the somatoform disorder group ($n=167$) and category scores based on transformed scores after categorical principal components analysis.

Item	Factor loadings						Category scores
	General population sample			Somatoform disorder sample			
	Details 1	Basic Elements 2	Page 3	Details 1	Basic Elements 2		
Presence of eyes	.92	.03	.15	.91	.01	0 No eyes 1 Eyes without pupils 2 Eyes with pupils	
Number of other senses	.92	.01	.14	.91	-.02	0 Zero 1 One 2 Two or three	
Angle of perception	.84	.19	.07	.69	-.26	0 Back or unclear 2 Front, side or several sides	
Gender clarity	.63	-.12	-.22	.53	.13	0 No 2 Yes	
Presence of feet	.16	.64	.06	-.08	.85	0 No feet 2 Feet present	
Number of limbs (with elbow or knee)	-.04	.77	-.16	.18	.80	0 Zero or one limb 1 Two limbs 2 Three or four limbs	
Presence of the hands	-.04	.61	.16	-.02	.70	0 Nowhere 1 Hidden or behind the body 2 Visible	
Surroundings	-.11	.64	.16	**	**	2 Natural surroundings 1 No surroundings 0 Symbolic and negative surroundings	
Fit to the page	.00	.10	.83	-.13	.72	0 Too big 2 Small or fitting	
Position on the sheet	.12	-.29	.67	**	**	0 In the middle 1 Left 2 Right or several positions	

*Extraction Method: Principal Components Analysis. Rotation Method: Oblimin with Kaiser Normalisation.

** Factor loadings $\leq .18$ in categorical factor analysis and therefore not included in rotated solution.

Association between self-report and drawings

In regression analyses, self-report (DBIQ-35) scores of body experience were not significantly associated with scores on the ‘details’ factor, while total DBIQ-35 scores were higher for the general population group ($t=-12.80, p<.001; b=-.951$ [95%CI: -1.025;-.877]) and an interaction effect between group and ‘details’ was found: $t=2.39, p=.018; b=.171$ [95%CI: .099;.243]. Post-hoc analyses showed that a similar interaction effect was found for scores on the subscale ‘acceptance’ but not for other subscales. Group effect: $t=-7.65, p<.001; b=-.891$ [95%CI: -1.007;-.775]; interaction: $t=3.05, p=.003; b=.345$ [95%CI: .232;.458]. Fig. 2 displays the interaction effects. The graphs show that for people from the general population the association between the total DBIQ-35 score and ‘details’ in drawings was not stronger than for patients with somatoform disorder.

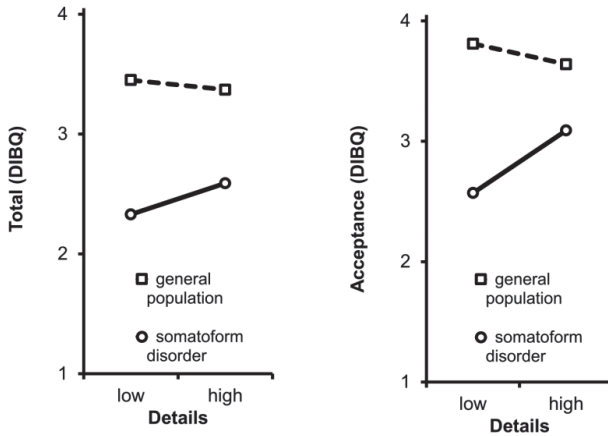


Fig. 2: Self-reported scores of body experience (total and acceptance scores on the DIBQ-35) for people from the general population and people with somatoform disorder scoring low and high on ‘details’ of body drawings.

Perspective of drawings

In the general population sample, the 'details' factor correlated with the perspective of drawings (Spearman's $\rho=.29, p<.001, n=173$): persons that drew a functional body or somatic symptoms scored less details (median=6, $n=79$) than persons that drew their physical identity (median=8, $n=49$). Also a correlation was found between the perspective of drawings and somatic symptom severity as measured with the PHQ-15 (Spearman's $\rho=-.19, p<.05, n=122$): persons that drew the functional body reported more somatic symptoms. The PHQ-15 was not correlated with scores on the 'details' factor (Spearman's $\rho=.05, p=.62, n=122$).

DISCUSSION

This validation study of a scoring model for body drawings in somatoform disorder that was tested in a general population sample, showed that 'details' were equally represented in the drawings of both groups. The other factor, 'basic elements', was not replicated in the drawings from the general population. Linear regression analysis showed that the correlations of self-reported body experiences (DBIQ-35 questionnaire) with the 'details' score of drawings was not stronger in people from the general population than in patients with somatoform disorder. Persons in the general population group who drew their body from the perspective of functionality and somatic symptoms pictured less details than those that drew their physical identity.

The observation that only the 'details' factor included similar internally consistent items in both groups, was probably due to the restriction of range of scores in the 'basic elements' factor in the general population with virtually all participants scoring high. As a consequence, only ratings of details in drawings could be compared between groups and they were found to be not dissimilar. Moreover, in the general population sample somatic symptoms as reported with the PHQ-15, did not correlate with 'details' suggesting that symptoms do not play a role in drawing details. The only difference in drawings was that twelve patients with somatoform disorder drew a symbolic body versus none of the general population. These results indicate that body drawings, at least details in the drawings, do not reflect (negative) body experience and cannot be used to discriminate groups with and without body-related problems .

Additional results in the general population sample, however, suggest that the perspective of the drawing may make a difference: drawings that show functionality and somatic symptoms of the body contain less details than drawings of the body as identity. This difference between functionality and identity is characteristic for the body-related development that patients may go through during treatment (Gyllenstein et al., 2010) when they switch from 'being' their symptoms to a person 'having' bodily experiences. Drawing a symbol instead of the body might be considered a phase preceding the ability to draw the body with symptoms or a body identity. Therefore, tentatively this result might indicate that the increased details in drawings after therapy in the original study (Kalisvaart et al., 2018) have to do with changes in perspective towards embodied identity as reflected in more details in drawings of the body. This implies that it might be useful to add an "identity" dimension to an observation instrument for drawings of patients with somatoform disorder. Such a dimension might emphasize the quality and expression of the details and placement and posture on the paper, as was done in earlier research with drawings of oneself (Binson and Lev-Wiesel, 2018; Lev-Wiesel and Drori, 2000). The validity of this dimension should be verified in new research.

The association between body-related self-report and drawing scores was less in the general population than in the somatoform disorder group. This rejects our hypothesis that somatoform dissociation might be reflected in lack of correlation between more and less conscious body experiences in the somatoform disorder group. Perhaps the lack of association in the general population reflects a real difference with body drawings representing implicit body experience and questionnaire scores representing explicit awareness of the body. It could be that some people with somatic symptoms show their negative body experience in drawings as well as in self-report whereas persons that have no somatic symptoms chose a broader perspective (identity or functionality, or both) that relates less to self-report scores. Thus, a hypothesis resulting from the current study is that differences in disease severity may affect both self-report and drawing scores in the somatoform disorder group.

Strengths of this study are the large matched comparison sample from the general population and the use of objective characteristics of drawings. Limitations are the smaller number of questionnaire data and the lack of perspective data in the somatoform group. The relatively large subsample with medium to high somatic

symptom severity in the general population sample may suggest that the group is not fully representative of the general population. However, because somatic symptom severity was not correlated with 'details' scores, this effect may be low. Although groups were matched and exposed to the same procedure in making drawings, there are context differences that may have influenced the results. Making a body drawing as part of a diagnostic phase may emphasize a focus on symptoms more than the everyday settings in the general population. Also the general population sample was given a digital version of the self-report questionnaires whereas the patients with somatoform disorder used paper-and-pencil. We cannot fully exclude that this yielded different results, although a previous study showed that internet findings are consistent with findings from traditional methods (Gosling et al., 2004).

To conclude, this study indicates that patients with somatoform disorder and people from the general population picture a similar mean number of details in drawings of their own body. Because both the factor structure and the association with self-report measures differed between the groups, scorings of body drawings appear to reflect a different meaning for the two groups. Analysis in the general population sample tentatively indicated that the perspective of the drawer potentially influenced observation scores of drawings. Considering previous findings, assessment and further validation of drawings using the scoring template seems appropriate in groups with somatic symptoms but less in the general population.

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CHAPTER 7



Development of the Body-Relatedness Observation Scale: a feasibility study

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ABSTRACT

Objective: One characteristic of somatoform disorder (DSM-IV) and somatic symptom disorder (dsm-5) is the troubled relation of patients to their body. To assess body-relatedness in its full range, observation by a physical therapist may add valuable information to self-report questionnaires. This study examines the feasibility of the Body-Relatedness Observation Scale (BROS), an instrument for the standardized observation of patients with somatic symptom disorder by a physical therapist.

Methods: In cross-sectional analyses the factorial validity and inter-rater reliability of observer scores were studied. Physical therapists observed 191 patients performing two short exercises lying face up. Fourteen potential indicators of body-relatedness were selected for observation, covering four domains: execution of instructions, perception of the body, muscle tension, and behavioral adaptation to somatic symptoms.

Results: Inter-rater reliabilities were excellent for four observation scores ($ICC > .75$ or $Kappa > .80$), substantial for two ($.60 < ICC < .75$ or $.60 < Kappa < .80$), fair for two ($.40 < ICC < .60$ or $.20 < Kappa < .40$) and poor for six. Items in particular relating to patients' ability to perceive the body had low inter-rater reliabilities. Categorical principal components analysis with the eight reliable scores indicated a 1-factor structure including seven items with Cronbach's alpha .69.

Conclusion: This initial analysis of a structured physical therapeutic observation for people with somatic symptom disorder indicated modestly sound psychometric quality of observations of execution of instructions, muscle tension and behavioral adaptation, but not of patient's ability to perceive the body adequately. This shows that these observations are feasible when restricted to observable behavior and it indicates the viability of further validation of the BROS.

INTRODUCTION

Patients with somatoform disorder (DSM-IV)¹ or somatic symptom disorder (dsm-5)² experience chronic distressing somatic symptoms. A common feature of these patients is their troubled relationship to their body.^{3,4} They are, for instance, considered to perceive their body as dysfunctional^{5,6} and to have difficulty acknowledging and understanding body signals and adapting their behavior to these signals.^{4,7-9} This 'body-relatedness' can be a focus in the treatment of somatoform disorder.¹⁰ It has been defined as awareness of the body and self, by understanding, accepting and adjusting to bodily signals, by respecting and regulating the body, by trusting and esteeming oneself and by being autonomous with regards to one's body.⁴ Assessment of disturbed body-relatedness in people with somatoform or somatic symptom disorder could be helpful in the process of indication and contraindication for specific treatments and evaluation of treatments.¹¹ Physical therapists might help in assessing problems in body-relatedness by observing the patient while moving in a standardized situation.

Patients with somatoform disorder often struggle with their body^{12,13} and some authors suggested that they may be trying to take control of their physical symptoms by withdrawing^{14,15} or dissociating¹⁶ from their bodies. The use of self-report questionnaires alone, addressing conscious aspects in a verbal way, may therefore not suffice to assess body-relatedness in its full range.¹⁷ The more implicit sides of body-relatedness such as body perception, bodily identity, or the way body-relatedness is expressed in posture and movement patterns and automatic behavior are hard to self-report for the patient. In order to assess these implicit aspects of body-relatedness, nonverbal tools like physical tests and behavioral observations may reveal relevant information that is not available through self-report questionnaires. Physical therapists have a long tradition of observing and testing physical parameters like strength, balance, endurance, muscle tension and motor coordination.¹⁸ Particularly physical therapists that specialize in mental or psychosomatic disorders, also incorporate the psychosocial factors that are inseparable from the bodily functioning in their treatment.¹⁹ In clinical practice, aside from using questionnaires, e.g., to assess self-reported body image²⁰ or somatoform dissociation,¹⁶ a physical therapist will often interview the patient²¹⁻²³ and observe body-relatedness while interacting with the patient.

Within psychosomatic and psychomotor approaches,²⁴ observational instruments have been developed that are based on the assumption that the body is inseparable from the mind.²⁵ Body-examinations that use palpation and touch, like the Resource Oriented Body Examination (ROBE-II),²⁶ focus on postural patterns, respiration, reactions to physical touch, decreased movements and muscular consistency in order to determine a “psychomotor profile”. Most of the subscales of the ROBE-II differentiate between persons referred for treatment of somatoform disorder and a group of health care professionals.²⁶ Touch can be a powerful assessment tool since it is neurologically incorporated into the interoceptive pathway.^{27,28} However, the experience of touch may feel intrusive to patients with a complicated body-history such as trauma²⁹ and it may not provide relevant information about behavioral adaptation to somatic symptoms. “Hands-off” observations use standardized exercises and interviews to assess, for example, movement quality (Body Awareness Scale–Health, BAS-H;³⁰ Body Awareness Rating Scale, BARS)³¹ and body experience in children.^{32,33} These observations have turned out to provide valid and clinically valuable information.^{31,33} However, a specific “hands-off” observation to assess body-relatedness in somatoform disorder has not been developed.

Healthy adaptation to somatic symptoms is described as body-informed functional movement effort,^{31,34} with a paced activity pattern and respect for physical and mental limitations.⁹ Also a flexible reaction of muscle tension and respiration and bodily balance are mentioned as characteristics of healthy movement.^{25,31} In people with chronic pain and chronic fatigue syndrome patterns of over activity, activity avoidance and a combination of both have been described,³⁵⁻³⁷ together with rigid reactions of muscle tension and respiration.³⁸ These maladaptive patterns may arise when the person has difficulty acknowledging and understanding body signals,^{15,25,39} or to adapt behavior to these signals.^{13,40} Thus, to adequately support and understand patients with somatic symptoms and to provide appropriate treatment interventions, physical therapists are considered to be able to assess the severity of problems in body-relatedness, particularly the abilities to execute instructions and to perceive the body, patterns in muscle tension and behavioral adaptation to the specific somatic symptoms.

The aim of this study was to examine the feasibility of an instrument for the standardized observation of body-relatedness by a physical therapist in patients with somatoform or somatic symptom disorder. To that end, we developed and

psychometrically evaluated a scoring tool for a physical therapeutic observation procedure that is commonly used in the diagnostic phase in a treatment center. The inter-rater reliability and factorial validity of the observer scores were examined, and the observer scores were tentatively correlated with self-report assessments of body-relatedness, viz. body image and somatoform dissociation. Feasibility criteria were inter-rater reliability and a meaningful solution in principal component analysis. In agreement with previous observations of small correlations between different sources of information,¹⁷ we expected small correlations between physical therapeutic observation scores that represent the therapist's assessment of body-relatedness and questionnaire scores that assess the patients explicit awareness of body-related attitudes and behavior.

METHODS

Participants

This study was conducted at a tertiary mental health center, specializing in the treatment of somatoform disorder and somatic symptom disorder. Patients admitted to this institution have had somatic symptoms on average for 10 years, have received about 5 previous treatments for somatoform disorder in primary or secondary care and have a comorbid mood, anxiety, or personality disorder in about half of the cases.⁴¹ People referred to treatment for somatoform disorder completed self-report questionnaires and were assessed by a physical therapist as part of the diagnostic procedure. At the time of data collection in this study, somatoform disorder was diagnosed by trained psychologists according to DSM-IV-TR criteria¹ and confirmed by the resident medical doctor and psychiatrist.

The study was conducted in accordance with the principles of the Declaration of Helsinki (Revision, Fortaleza, Brazil, 2013)⁴² and it was approved by the Institutional Review Board of the mental health center (2014-01/oz1329). All participants provided written informed consent for use of the data for scientific purposes.

Observation data from 191 patients referred for treatment of somatoform disorder were analyzed. Fifty-three patients completed one or more questionnaires within the two months before their physical therapeutic observation. From the other 139 patients

questionnaire data were not used because of a longer time period between self-report and observation ($n=83$) or missing data ($n=55$).

Instruments

BROS

Development of the Body-Relatedness Observation Scale (BROS) was initiated by one of the physical therapists in order to standardize physical therapeutic observation of body-relatedness. A team of seven physical therapists who were specialized in somatoform disorder then further refined and implemented the observation. In two consensus meetings, 14 items were chosen for their specific physical therapeutic content and diagnostic value in the context of body-relatedness of patients with somatoform or somatic symptom disorder. These items comprised four categories: the ability to execute the instructions (EI) and perceive the body (BP), muscle tension (MT) and behavioral adaptation (BA) to the specific somatic symptoms (see Table 1).

Therapists discussed the execution and tested the usability of all relevant items and scoring categories in clinical practice. Items were formulated in such a way that inter-rater agreement between the seven therapists was expected to be optimal. The scoring scales were chosen so that they best fitted the items, resulting in categorical and ordinal scales. One item was added concerning the amount of movement limitations to be able to control the influence of physical limitations on the BROS score. Construction criteria were that the observation scale should make it possible to distinguish between levels of body-relatedness and that it should be suitable for patients with all kinds of physical complaints. Moreover, fast administration of the observations should be possible. Finally, physical therapists with routine expertise should be able to perform the observations.

The test consists of two short exercises (10 minutes total) in which the patient lies face up on a bench with knees bent and feet flat on the surface. First the patient is asked to move both knees from left to right. Next the patient is asked to straighten one leg after another, while keeping knees level. No instruction is given about pace, movement range and duration. The physiotherapist observes with little comments, asks questions about the physical experience and, in doing so, brings the patient's attention towards the body, muscle tension and other options in movement and behavior. The therapist asks

for example what parts of the body participate in this movement and if the patient can execute the exercise in a more comfortable way or with less effort.

To gain insight into the inter-rater reliability, assessments of 12 patients were recorded on video and scored a second time by one of the other physical therapists (randomly chosen).

Questionnaires

To evaluate self-reports of body-relatedness, the Dresden body image questionnaire (DBIQ-35) and Somatoform dissociation questionnaire (SDQ-20) were used.

Dresden body image questionnaire (DBIQ-35)

The DBIQ-35^{20,43} is a 35-item questionnaire with positively and negatively worded items comprising five subscales: body acceptance (e.g. "I wish I had a different body"), vitality (e.g. "I am physically fit"), physical contact (e.g. "Physical contact is important for me to express closeness"), sexual fulfilment (e.g. "I am very satisfied with my sexual experiences") and self-aggrandizement (e.g. "I use my body to attract attention"). Level of agreement with items is scored on a 5-point Likert scale ranging from 1= "not at all" to 5= "fully". Higher scores indicate a more positive body experience. Internal consistency of the subscales in a group of patients with somatoform disorder varied from Cronbach's $\alpha = .78$ for 'physical contact' and 'self-aggrandizement' to .92 for the subscale sexual fulfilment; patients with somatoform disorder scored substantially lower on this scale than a non-clinical sample.⁴⁴ In this study the total score of the DBIQ is used.

Somatoform dissociation questionnaire, SDQ-20

The SDQ-20⁴⁵ measures the severity of 'somatoform dissociation' by asking to rate 20 symptoms such as analgesia ("Sometimes my body, or part of it, is insensitive to pain"), kinesthetic anesthesia ("Sometimes it is as if my body, or part of it, has disappeared") and motor inhibitions ("Sometimes I am paralyzed for a while"). The items are scored on a 5-point Likert scale ranging from 1="not at all present" to 5="very much present". The instrument has good psychometric characteristics and differentiates between dissociative disorders (high scores), somatoform and eating disorders (medium scores) and affective and anxiety disorders (lower scores).^{16,45}

Data analysis

SPSS Version 22 was used for all statistical analysis. Inter-rater reliabilities were computed using Cohen's Kappa^{46,47} for nominal variables and intra-class correlations (one-way random single-measures) for ordinal and continuous variables.⁴⁸ In order to derive dimensions from the observation items, categorical principal components analysis was used. This procedure transforms the nominal and ordinal scores into continuous, normal distributed scores. The criterion for excluding items for factor analysis was a factor loading $<.40$ or a loading $>.32$ on two or more factors.⁴⁹

Subsequently the transformed variable scores were converted into item scores that were used to examine the internal consistency of the scales with Cronbach's alpha. The total score was computed by summing these new item scores.

Associations between the dimension score of the BROS and questionnaire scales were computed using Spearman's ρ for non-normal and ordinal distributions.

RESULTS

The mean age of the 191 participants was 42.1 years (SD=13.1, range 18-68) and 68% was female. All persons had somatic symptoms and the detailed diagnoses were: undifferentiated somatoform disorder (39.0%), conversion disorder (19.8%), pain disorder (31.6%) and other primary diagnoses (affective, anxiety and personality disorder; 9.6%); 14 diagnoses were missing. Concerning the movement limitations as observed by the physical therapists: 45 % of the participants moved easily, 37% moved somewhat less easily and 19% moved with difficulty.

The 53 persons that were included in the correlational analysis with questionnaire scores were representative for the whole group, considering age and questionnaire data, but more women were included compared to the group that did not fill out questionnaires within the two months period (81.1% versus 63.9%, $p=.03$).

Inter-rater reliability

Inter-rater reliability (Table 1) was excellent for four observation scores (ICC $>.75$ or Kappa $>.8$), substantial for two scores ($.60 < \text{ICC} < .75$ or $.61 < \text{Kappa} < .8$), and fair for two scores ($.40 < \text{ICC} < .60$ or $.21 < \text{Kappa} < .4$). Six items had poor reliability (ICC $<.40$ or Kappa

<.21) and were not used in further analysis. Four of them concerned perceiving the body (BP2 to BP5) and two concerned adapted behavior (BA4 and BA5).

Table 1: The fourteen initial items and inter-rater reliabilities in order of strength of Kappa or ICC.

IRR	Item	Inter-rater reliability	95% CI
Excellent	EI1 Is the exercise executed exactly as instructed or following patient's own interpretation?	K=1.0	*
	MT1 Does the patient hold the tension?	ICC=.90	.71 to .97
	MT2 Can the patient try out gradations of muscle tension?	ICC=.78	.42 to .93
	BA1 Does the patient respect his/her physical limitations?	ICC=.77	.39 to .93
Substantial	BA2 How careful is the patient with him/herself?	K=.75	*
	EI2 Does the patient understand the instructions?	ICC=.65	.17 to .88
Fair	BP1 Can the patient feel more after directions from the physical therapist?	ICC=.44	-.13 to .79
	BA3 Is the patient starting movement from action or from rest?	K=.38	*
Poor	BP2 Can the patient perceive his/her physical limitations?	ICC=.35	-.23 to .76
	BA4 Is there a tendency to persevere or to hold back?	K=.17	*
	BP3 Can the patient sense the body as a whole?	ICC=.13	-.46 to .65
	BP4 Can the patient feel what he/she is doing?	ICC=.10	-.46 to .62
	BP5 Are bodily signals noticed by the patient?	ICC=-.31	-.72 to .29
	BA5 How big is the discrepancy between the behavior during the exercise and during everyday life?	ICC=-.33	-.75 to .30

*No 95% confidence interval is given for Kappa scores

EI=execution of instructions, MT=muscle tension, BP=body perception, and BA=behavioral adaptation



Table 2: Component matrix with factor loadings of the reliable items of the body-relatedness observation scale and category scores based on transformed scores after categorical principal components analysis of scores in 191 patients.

	Factor loading	Item categories	Transformed item score	Final item score
BA1 Does the patient respect his/her physical limitations?	.73	No	-1.14	0
		Partly	-.03	1
		Yes	1.56	2
BA2 How careful is the patient with him/herself?	.71	Rough	-.94	0
		Carefully	1.09	2
		Fearfully	1.09	2
MT2 Can the patient try out gradations of muscle tension?	.67	Not/hardly	-1.83	0
		I	-.04	1
		On average	.18	1
		I	1.87	2
BA3 Is the patient starting movement from action or from rest?	.62	Very well	2.38	2
		From action	-.48	0
		From rest	2.11	2
BP1 Can the patient feel more after directions from the physical therapist?	.48	No	-1.65	0
		Partly	-1.44	0
		Yes	.67	1
EI1 Is the exercise executed exactly as instructed or following patient's own interpretation?	-.46	According to personal interpretation	1.55	0
		Exactly as instructed	-.66	1
MT1 Does the patient hold the tension?	.46	Yes	-.44	0
		No, the patient relaxes during moments of rest	2.31	1
EI2 Does the patient understand the instructions?	-.38	Yes		
		Partly	*	*
		No		

Extraction Method: Principal Component Analysis.

1 component extracted. Explained variance=36.1%, Eigenvalue=2.53, Cronbach's alpha=.69

*No item scores were assigned because the factor loading was <.40

EI=execution of instructions, MT=muscle tension, BP=body perception, and BA= behavioral adaptation

Factor analysis

Categorical principal components analysis was executed with the eight fair to excellent reliable items. Because of the small number of items a one factor solution was chosen to test homogeneity within the whole instrument (Table 2). The item “Does the patient understand the instructions?” was deleted due to a low factor loading ($<.40$). The final factor solution consisted of seven items (explained variance 36.1%, Eigenvalue 2.53). Internal consistency of the final items of this factor, Cronbach's alpha, was .69 and did not increase when any item was deleted. The final score contained one item about execution of the instructions, two about flexibility in muscle tension, three about adapted behavior, and one about perception of the body. The seven items that were not included concerned body perception (four items, BP2 to BP5), adapted behavior (two items, BA3 and BA4) and execution of instructions (EI2).

Table 3: Frequencies of the items of the final BROS score with median, range, and 25th and 75th percentiles of total score in 191 patients

	Item categories	Frequency %
BA1 Does the patient respect his/her physical limitations?	No	31.9
	Partly	44.0
	Yes	24.1
BA2 How careful is the patient with him/herself?	Rough	53.5
	Careful	20.3
	Cautious	26.2
MT2 Can the patient try out gradations of muscle tension?	Not/hardly	15.7
	I	38.2
	On average	33.5
	I	11.5
	Very well	1.0
BA3 Is the patient starting movement from action or from rest?	From action	81.6
	From rest	18.4
BP1 Can the patient feel more after directions from the physical therapist?	No	6.3
	Partly	25.1
	Yes	68.6
EI1 Is the exercise executed exactly as instructed or following patient's own interpretation?	According to personal interpretation	29.1
	Exactly as instructed	70.9
MT1 Does the patient hold the tension?	Yes	84.2
	No, the patient relaxes during moments of rest	15.8
	<hr/>	
<u>Total score</u>		
Median	5	
Range	0-11	
Percentile 25	3	
Percentile 75	7	

EI=execution of instructions, MT=muscle tension, BP=body perception, and BA= behavioral adaptation

Descriptives

Table 3 shows the frequencies of scores on the final items of the BROS. The range of the total score was one to eleven with a median of five. A higher score means a positive body-relatedness as assessed by the physical therapist. Tentatively exploring this final score, no differences were found neither between women and men nor between diagnostic groups. A small correlation was found with age (Spearman's $\rho = -.15$, $p = .05$, $n = 182$), with younger patients scoring more positive on the BROS than older patients. The BROS total score had no correlation with movement limitations (Spearman's $\rho = -.01$, $p = .85$, $n = 183$).

Self-report questionnaires

In the group of 53 patients that had body-related observations within the two months after their self-report assessment, the correlations of the BROS factor score with 'body image' (Spearman's $\rho = .06$, $p = .73$, $n = 39$) and 'somatoform dissociation' (Spearman's $\rho = .21$, $p = .15$, $n = 50$) were not significant.

DISCUSSION

This feasibility study shows that, in patients with somatoform disorder, the Body-Relatedness Observation Scale has fair to excellent inter-rater reliability for most scores concerning execution of instructions, muscle tension and adapted behavior but not for items concerning perception of the body. Categorical factor analysis with the reliable items produced a one-dimensional solution with seven items. The internal consistency of this factor did just not reach an acceptable level of .70. The observed BROS score did not correlate with self-report scores of 'body image' or 'somatoform dissociation'. Strengths of this study are the large sample of patients with somatoform disorder, the practice-based development of the BROS by physical therapists with years of expertise in working with this group, and the use of hands-off observations of behavior. While other studies assess movement quality and focus on functional movement³¹ and bodily characteristics such as respiration, posture, muscular consistency and balance,^{26,30} they do not appraise behavior in relationship to physical symptoms. Methodological weaknesses are that not enough observations were included to achieve an adequate internal consistency for this first version, the absence of a golden standard instrument to examine construct validity and the small group ($n = 53$) used to analyze the

association with self-reports. Unclear is the external validity beyond patients with complex problems, high psychiatric comorbidity and a long disease and treatment history. Where activation, graded exercise and distraction are recommended for patients with mild or moderate symptoms,⁸ therapists in this tertiary care center emphasize body awareness and respecting physical limitations before activating the patient. Therefore assessing and treating disturbed body-relatedness may differ for patients with mild to moderate complaints and severe somatoform or somatic symptom disorder.

Especially the items referring to body perception showed a low inter-rater reliability, perhaps partly due to combining two modes of observation, live and by video. The inter-rater reliability of body perception items of our observation procedure is also clearly at odds with comparable assessments in children that showed excellent inter-rater reliability for observations of abilities to attend to bodily sensations, to perceive and become aware of bodily feelings and to accept and interpret bodily signals.³³ However, this is a procedure beyond mere observation that integrates verbalizations of what the person is experiencing to assess the ability to perceive and be aware of the body.³¹ It is questionable whether a similar extensive procedure with three sessions as used by Emck and coworkers³³ is usable and valid in adults. It is also questionable whether such a complex concept as body perception can be assessed by just observing. The specific situation (lying on a bench and being observed) may invoke atypical awareness of the patient, and different therapists may be sensitive to varying cues. For an eventual extension of the BROS, we propose to add items about body perception that are observable. For example, our item "Can the patient feel what he/she is doing?" could be replaced with "Does the face of the patient show feelings when moving the body?" and the item "Are bodily signals noticed by the patient?" could be replaced with "Does the patient show tension, tiredness or pain when moving?".

The observation scores of physical therapists were not significantly correlated with patients' self-report scores of body image and somatoform dissociation. In previous studies, correlations of body-related observation scales and self-report questionnaires show a mixed pattern. Medium to strong associations of body-related observation scales with self-report scales of symptoms, distress and quality of life such as the short form health survey (SF-36) or the Symptom Check List (SCL-90) were found.^{30,31,50} In contrast, more body-oriented self-report scales assessing body image, somatoform

dissociation and kinesiophobia⁵⁰ were indicated to be not correlated with observation scales. This difference in correlations might suggest that the overlapping part of observation scores and self-report scores of symptoms, distress and quality of life reflect individual differences in a similar underlying variable, e.g., experienced and expressed disease severity, while, in contrast, the lack of overlap between body-related observations by the physical therapist and body-related self-reports of the patient may reflect that they represent different aspects of body-relatedness. This underscores the need to use an observation scale of body-relatedness besides (self-report) experience scales. Of course, both modes of assessment need further validation.

The internal consistency of the brief 7-item BROS of .69 was just not high enough to get the label 'adequate', which would be achieved with a Cronbach's alpha of .70. Research in a sample that is more mixed in terms of complexity of pathology might show higher reliability. Moreover, items could be added to increase the internal consistency of the BROS in assessing individual differences. Especially the assessment of body perception remains challenging and might be enhanced by including items that are better observable. Overall, the BROS seems to assess aspects of body-relatedness that are not captured in self-report questionnaires and that may help to improve evaluation of patient characteristics and treatment effectiveness. A next step would be studying the sensitivity to change, the diagnostic value of the BROS for the treatment process, and the generalizability to patients with mild or moderate disorders. In conclusion, this initial analysis of a structured physical therapeutic observation for people with somatoform disorder or somatic symptom disorder indicated modestly sound psychometric quality of observations of execution of instructions, muscle tension and behavioral adaptation, but not of patient's ability to perceive the body. This shows that these observations are feasible when restricted to observable behavior and it indicates the appropriateness of further validation of the BROS.

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CHAPTER 8



GENERAL DISCUSSION

Box 1. MAIN FINDINGS OF THE STUDIES

Chapter 2: Persons with somatic symptom disorder can have disturbed body awareness. Body-oriented interventions such as psychomotor therapy can treat body awareness problems on the level of basic body signals, giving meaning in the here and now, or in the context of personal history. Such experience-based interventions offer a variety of learning opportunities that focus on the body with symptoms and seem to add to verbal interventions. The scientific base for these interventions, however, is still poor.

Chapter 3: According to clients with somatic symptom disorders and their therapists, body-relatedness includes awareness of the body and self by understanding, accepting and adjusting to bodily signals, by respecting and regulating the body, by trusting and esteeming oneself and by being autonomous. This definition and structure of body-relatedness may help professionals to improve interdisciplinary communication, assessment, and treatment, and it may help clients to better understand their symptoms and treatment.

Chapter 4: The mostly large differences in self-reports of body image between clients with somatic symptom disorder and a comparison sample from the general population as well as differences between diagnostic subgroups underline the importance of body image in clients with somatic symptom disorder. The results indicate the usefulness of assessing body image and treating negative body image in clients with somatic symptom disorder.

Chapter 5: Own body drawings were studied as a form of assessment for body experience and several objective ratings were indicated to be reliable. Two internally consistent constructs, “details” and “basic elements”, summarized these objective ratings. Correlation of objective ratings with ratings of the drawings by experts as well as sensitivity to change indicated potential clinical significance and the absence of correlation with a self-report measure suggested that analyses of body drawings yield information other than body-related questionnaires. These findings indicate that analyses of body drawings may be a promising assessment tool in somatic symptom disorder.

Chapter 6: The study of body drawings in a matched general population sample indicated that clients with somatic symptom disorder and people from the general population picture a similar mean number of details in drawings of their own body. Analysis in the general population sample tentatively suggested that the perspective of the drawer potentially influenced observation scores. Because both the factor structure and the association with self-report measures differed between the groups, scorings of body drawings appear to reflect a different meaning for the two groups. Assessments using the scoring template that was found in chapter five may be more useful in the context of somatic symptoms than in the general population.

Chapter 7: In the initial analysis of a structured physical therapeutic observation for people with somatic symptom disorder modestly sound psychometric quality of observations of execution of instructions, muscle tension and behavioral adaptation were found, however not of clients’ ability to perceive the body adequately. This shows that these observations are feasible when restricted to observable behavior and it indicates the viability of further validation of the body-relatedness observation scale (BROS).

GENERAL DISCUSSION

This dissertation examined the definition of body-relatedness and the feasibility of its assessment in somatic symptom disorder. Assessment of body-relatedness could be helpful in the process of indication and contraindication for specific treatments and to evaluate the changes in the client's relationship to the body during treatment. The main findings of this dissertation are shown in box 1 and discussed in this chapter. The general discussion is organized around four themes: 1) the domains of body-relatedness, 2) the role of body-relatedness assessments among the core outcome measures of somatic symptom disorder, 3) assessments of body-relatedness at the interface between scientific research and clinical practice, and 4) the promise of observing movement behavior in these clients. The final paragraphs address future research and the clinical implications of this dissertation.

DOMAINS OF BODY-RELATEDNESS

The first objective of this thesis was to capture all aspects of relating to the body that are possibly relevant for persons with somatic symptom disorder. The resulting model of body-relatedness, with understanding, acceptance, adjustment, respect, regulation, trust, self-esteem, and autonomy as cornerstones, reflected a dualism with a division between body- and self-awareness. This was not characteristic for the culture in the setting at that time¹ but seems to reflect the common way of mind-body thinking. The timing of the study was just before the treatment center decided to introduce body mentalization-based therapy and acceptance and commitment therapy. These historical and contextual developments may challenge the validity of the model but still the clients and professionals have yielded a broad range of themes that appear relevant for somatic symptom disorder regardless of time and setting.²⁻⁴

Looking back at the work, the question arises whether the assessment methods that were studied in the other chapters of this dissertation (DBIQ-35 as self-report, own body drawings and physiotherapeutic observation) more or less covered the domains that were specified in the first empirical chapter and what additional studies might be useful. Table 1 outlines how the assessments of this dissertation could be placed in the model of body-relatedness. Since the domains are practice-based and wide, no directly

corresponding assessments are assumed but all measurements have been placed in the seemingly most appropriate domain.

Table 1. Matrix showing the studied assessment methods and the seemingly most appropriate domains of the model of body-relatedness that are covered.

Body-relatedness	DBIQ-35 body image questionnaire	Body drawings objective ratings	BROS physiotherapeutic observation
Understanding			Execution of instructions
Acceptance	Acceptance Physical contact	Basic elements, Combining perspectives of symptoms and identity	
Adjustment			Adapted behavior
Respect	Physical contact	Symbolic drawings	
Regulation	Vitality		Muscle tension
Trust	Sexual fulfilment		
Self-esteem	Self- aggrandizement	Details	
Autonomy			

Note: DBIQ-35 = Dresden Body Image Questionnaire, BROS = Body-relatedness observation scale.

Regarding the DBIQ-35 only the ‘Acceptance’ and ‘Self-aggrandizement’ scales seem to correspond to a certain extent with domains of the model, although the questionnaire concerns the whole body and appearance and not particularly acceptance of somatic symptoms as was indicated in our study (chapter 3). Acceptance of symptoms is an important issue in the treatment of somatic symptom disorders.⁵ The ‘Vitality’ scale is placed in the ‘regulation’ row since influencing tiredness and increasing physical fitness

are part of this domain, but it could also be considered a symptom instead of an aspect of the relationship to the body. 'Physical contact' is placed in the 'respect' and 'acceptance' rows, assuming that appreciation of touch is connected to the level of respect to the body as well as to acceptance of the body. 'Sexual fulfilment' is a measurement in these studies that can be seen as a reflection of 'trust' in the body.

The drawing of the own body provides an impression of how the person with somatic symptoms experiences the own body. In clinical practice drawing one's body through a symbol is seen as an inability to experience the body as one's own, which is part of the 'respect' domain. Leaving out basic elements is thought to indicate disconnection or dissociation from the body, which might be related to non-acceptance. Acceptance on the other hand might be expressed by combining the perspectives of identity and somatic symptoms. As details may portray the identity, details in drawings may best be placed in the self-esteem domain. The physiotherapeutic observation concerns direct observable behavior and seems to cover 'adjustment', 'regulation' and, to some extent, 'understanding'.

Regarding all assessments of this dissertation, it is remarkable that this last domain 'understanding', that refers to listening to one's body and knowing and recognizing its signals, is considered most important by professionals and clients but is barely covered. Some measure of interoceptive awareness, defined as the conscious perception of sensations from inside the body that create the sense of the physiological condition, and the autonomic nervous system sensations related to emotions⁶, is needed for this domain, as well as assessment of the client's knowledge of basic psychophysiology.

Also the domains of trust and autonomy are not or only weakly covered by observations, drawings and the questionnaire. These themes might best be covered by an interview.

To conclude the assessment methods cover a considerable part of the body-relatedness model but the most important domain, 'understanding', still lacks appropriate assessment. Maybe a combination of a questionnaire concerning body awareness^{e.g.6}, an interview and observation by a physical therapist with focus on knowing and understanding bodily signals, might cover a considerable part of this domain.

BODY-RELATEDNESS AND CORE OUTCOME DOMAINS

The European Network on Somatic Symptom Disorders group recommended consensus-based outcome domains in order to facilitate comparison of clinical trials.⁷ They distinguish: 1. classification of disorder, comorbid mental and physical conditions, 2. assessment of somatic symptoms, 3. psychobehavioral features, 4. illness consequences 5. consumer satisfaction, and 6. unwanted negative effects. Most of the body-related outcomes we studied concern the third domain: psychobehavioral features. According to the consensus group, this domain contains potential mechanisms of symptom development and maintenance, such as health anxiety, amplified perception of symptoms, bodily vigilance, avoidance behavior, insufficient emotion regulation, acceptance and symptom coping skills. For acceptance no questionnaires are suggested and the DBIQ-35 scale could be suitable but also, for instance, the Acceptance and Action Questionnaire (AAQ-2⁸) might be considered here. Regarding avoidance behavior and symptom coping skills a behavioral observation such as the BROS seems appropriate, and body drawings may perhaps shed some light on amplified perception of symptoms. The DBIQ-35 vitality scale fits in the second domain of somatic symptoms and both the vitality scale and the sexual fulfilment scale may be regarded as illness consequences, the fourth domain. For this domain the Short Form-36⁹ and two disability scales^{10,11} are suggested to assess health-related quality of life and disability. Vitality is also covered by the SF-36 but only the Pain Disability Index¹⁰ has an item that refers to the frequency and quality of one's sex life. Therefore the sexual fulfilment scale of the DBIQ-35 might be a suitable addition. Overall, the DBIQ-35, as a self-report questionnaire assessing acceptance and sexual fulfilment, could be a suitable addition to the suggested assessment tools and its further evaluation, for example regarding sensitivity to change, is worthwhile.

The consensus document on outcome measurements⁷ aims at efficiently comparing research and may therefore suggest easy accessible, commonly used instruments: questionnaires and structured interviews. Mechanisms of change such as domains of body-relatedness, however, may require more in-depth, experience-based and behavioral assessment methods.

BODY DRAWINGS: SCIENTIFIC RESEARCH AND CLINICAL PRACTICE

In the treatment of severe somatic symptom disorder there is a need for complementing questionnaire data with other assessments. Body drawings have been used for years in our and other treatment centers and clients as well as therapists appreciate the visual information they offer about personal body experience and changes during treatment. For a science-practitioner there could be added value of using objective, reliable features of drawings as an assessment instrument. The fifth chapter approached the body drawings in a scientific way, using the expertise of art therapists to develop more reliable and objective scores of own body drawings. The analyses indicated, also to persons who are not specialized in art therapy, that drawings to a certain extent contain relevant information that is consistent with subjective ratings of therapists. Next, the sixth chapter indicated that the information derived from body drawings is hard to compare between clients with somatic symptom disorder and people from the general population. It seems that the relevant information comes forth in drawings when the actual problem, the body with symptoms, is depicted, and less when the body is drawn from the perspective of physical identity. This is in line with a systematic review of drawings of illness that indicates that pictures of the illness or symptoms as experienced, are related to illness perceptions and health outcomes across many conditions.¹²

This dissertation did not test what objective appraisals of drawings can add in clinical practice to the conversation between client and therapist who both build on the impression and experience of the body that is drawn. Both scientific and clinical expertise have their strengths and limitations for such a conversation, for example concerning comparability or specificity, but there is a historic tendency in individuals to prefer the one over the other.¹³ It seems relevant to continuously search for shared language and representations in the multidisciplinary treatment of people with severe somatic symptom disorder, acknowledging everyone's expertise. Knowing that there will be more going on in an individual therapeutic process than any assessment instrument can capture, it remains worthwhile to not only invest in research on self-report instruments but to examine the challenging field of personal experiences and changes in body-relatedness as well, using other methods. For the sake of clinical validity some abandonment of inter-item reliability might be necessary since the

methodological standards for questionnaires may not be achievable for methods that are considered valid in experience-based clinical practice. This kind of research could, for instance, be done by studying a combination of different modes of assessment.¹⁴ Moreover, observational instruments could be further developed by following and evaluating an individual process with body drawings, in which the client explains which features of the drawing reflect the essence of the drawing and the art therapist can describe what is core in specific drawings.

OBSERVING MOVEMENT BEHAVIOR

In the context of somatic symptoms observing movement behavior seems relevant but so far it has not been studied much for clients with somatic symptom disorder. Several physiotherapeutic^{e.g.15,16} and dance therapeutic¹⁷ observations are described but they primarily relate the quality of movement to psychological characteristics rather than observing the movement patterns in relation to the 'here and now' situation of the body and somatic symptoms. Also psychomotor therapy observations have been developed for persons with somatic symptoms^{18,19} but further research on these appears to be complicated, probably because movement situations and interactions are often too complex and time-consuming, which restricts the development of usable, reliable and valid assessments. This was also the case with a standardized psychomotor observation that originally was meant to be part of this dissertation: interrater reliability was insufficient for "controlled approach", an exercise that is used by psychomotor therapists to diagnose the ability to feel and indicate personal boundaries in various kinds of client groups.²⁰ With the BROS as presented in this thesis, a more plain exercise, a first step towards standardized observation of movement behavior in relation to the body and somatic symptoms was made. Based on our study it seems worthwhile to further develop this physiotherapeutic observation by examining the instrument in four ways: whether the internal consistency can be improved by adapting items, whether the current assessment is sensitive to change, whether it has predictive value for the treatment process, and whether it is useful in other physiotherapeutic settings. Possibly, when technology proceeds, observation of movement behavior may be extended with electronic data collection which also can help to detect affective states.²¹

The assessment of interoceptive awareness appears to be more difficult than observing movement behavior. It could be examined further using clear observable features of movement behavior. For that purpose figure 1 of the introduction provides a framework: the client can be maladaptively aware of the somatic symptoms, for example through hypervigilance, sensitization, avoidance or neglect.³ This is at the cost of adaptive awareness of the whole body, that gives signals that might be used to enhance healthy behavior.²² Assessing balanced body awareness –not in a hypervigilant nor an avoiding way– regarding symptoms and the whole body, might perhaps best be done by combining an exercise, such as the BROS, with a structured interview. The therapist could ask how and in what parts the client is aware of the body, and to what extent thoughts, feelings, and behaviors interfere with “objective” perception. This kind of assessment acknowledges the DSM-5 definition of somatic symptom disorder: distressing symptoms, in combination with disproportionate and persistent thoughts, high level of anxiety about health, or excessive time and energy devoted to these symptoms²³. The context of actually involving the body may be of added value to a diagnostic interview or self-report alone. Still it remains challenging to develop such an assessment of the relevant aspects of interoceptive awareness that is reliable as well as valid.

RECOMMENDATIONS FOR FUTURE RESEARCH

This dissertation is situated in the starting phase of a long journey. The results give reason to proceed with further research that takes account of both clinical validity and scientific reliability.

1. A prominent need for body-relatedness in somatic symptom disorder is the development of an appropriate assessment of the domain “understanding”. This domain comprises interoceptive awareness and knowledge of bodily signals, and might be studied with a combination of an interview and observation by a physical therapist, possibly complemented with a questionnaire concerning body awareness as well as assessment of the client’s knowledge of basic psychophysiology.
2. The DBIQ-35 results justify further research on its applicability in clinical trials, such as sensitivity to change.
3. The body drawings could be studied more in-depth by combining different modes of assessment or by following through individual treatment processes, asking client and therapist to reflect on the essence of the mechanisms of changes that are visible in the drawings.
4. The physiotherapeutic observation, BROS, can be further developed by improving its internal consistency with adapted items, and examining its sensitive to change, its predictive value for the treatment process, and its utility for other physiotherapeutic settings. On the long run electronic data collection of movement behavior may become part of such an assessment.

All of these projects have the ultimate goal of clarifying the less conscious body-related processes in order to optimize therapeutic interventions.

CLINICAL IMPLICATIONS

This dissertation acknowledges how complicated it can be for a client to relate to a body with somatic symptoms, let alone for a researcher to assess this relationship. A general conclusion is that experience-based assessments are feasible and provide other information about body-relatedness than self-report questionnaires, and that the studied assessments indicate relevant aspects of the client's process of change.

For clinical practice the model with the definition and structure of body-relatedness provides clear domains that can be selected as a focus in treatment. The DBIQ-35, body drawings, and the BROS can be used to assess problematic domains and tentatively to measure treatment progress. All methods can serve as a starting point for client and therapist to figure out what mechanisms maintain the symptoms and should be addressed in treatment, with preference for experience-based assessments that can help the client to become more aware of less conscious processes.

Hopefully this dissertation has encouraged the inquisitiveness of clinical scientists to study body experience in somatic symptom disorder.

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SAMENVATTING

Mensen met een somatische-symptoomstoornis (DSM-5; voorheen ‘somatoforme stoornis’), hebben last van lichamelijke klachten die samengaan met veel en buitensporige gedachten, gevoelens of gedragingen rondom deze klachten. Hun lichaam vertoont problemen die moeilijk te begrijpen en te hanteren zijn, laat staan dat ze op te lossen of te accepteren zijn. Voor cliënten kan het dus moeilijk zijn om zich tot zo’n lichaam te verhouden.

De behandeling van somatische-symptoomstoornissen bestaat in het algemeen uit voorlichting over het samenspel van lichaam en geest, activering en psychotherapeutische interventies, met de bedoeling om symptomen te verminderen en het functioneren en welbevinden te verbeteren. Dit kan gedaan worden door een huisarts, fysiotherapeut of psycholoog, en bij ernstiger problemen in een multidisciplinaire setting. Er zijn bescheiden effecten van psychologische interventies gevonden op symptomen, functioneren en welbevinden. De onderbouwing voor effectieve interventies is matig en er moet verder onderzoek gedaan worden om deze cliënten beter te kunnen helpen.

Ervaringsgerichte “vaktherapieën”, zoals vormen van fysiotherapie, ergotherapie, beeldende of kunstzinnige therapie, psychomotorische therapie en danstherapie worden gezien als waardevolle aanvulling op gesprekstherapie. Ze lijken goed aan te sluiten bij de klachten, die eerder als lichamenlijk dan als psychologisch probleem worden ervaren, en de actieve ervaring geeft de cliënt een mogelijkheid om zich bewust te worden van lichaamssignalen en gedragspatronen die met woorden en denken vaak moeilijker te bereiken zijn. Zo kan een cliënt al doende leren om vaste gedragspatronen te veranderen, het lichaam meer te gaan waarderen en accepteren en om een meer “belichaamde” identiteit te ontwikkelen.

De effectiviteit van vaktherapieën is echter nauwelijks onderzocht bij somatische-symptoomstoornissen of aanverwante syndromen zoals fibromyalgie. Er zijn wel systematische reviews gedaan naar interventies voor lichaamsbewustzijn en voor ontspanning, maar de kwaliteit van de onderzoeken is matig waardoor de gevonden effecten weinig bewijskracht hebben. Eén van de problemen bij het doen van onderzoek naar vaktherapieën is het gebrek aan passende uitkomstmaten. Er zijn weliswaar

vragenlijsten die concepten zoals lichaamsbewustzijn, lichaamsattitude en somatoforme dissociatie meten maar ze zijn weinig onderzocht bij somatische-symptoomstoornissen en ze meten alleen datgene waar de ondervraagde bewust over kan nadenken en praten. Wetenschappers en professionals in de klinische praktijk hebben geopperd dat deze cliënten zich minder of anders bewust zijn van hun lichaam en daarom levert een vragenlijst waarschijnlijk niet alle relevante informatie op voor behandeling en evaluatie. Voor effectiviteitsonderzoek van vaktherapieën bij somatische-symptoomstoornissen zijn aanvullende meetinstrumenten gewenst die de informatie over de verhouding tot het eigen lichaam ('body-relatedness') naar voren haalt waarover de cliënt zelf minder goed kan rapporteren, zoals lichaamsbewustzijn, beleving van gedissocieerde delen van het lichaam, bewegingspatronen en automatisch gedrag. Deze aspecten worden in de klinische praktijk onder meer onderzocht met behulp van gestandaardiseerde observaties en lichaamstekeningen; methoden die nog geen wetenschappelijke onderbouwing hebben.

Dit promotieproject staat aan de basis van onderzoek naar lichaamsgerichte therapieën bij somatische-symptoomstoornissen: het definiëren van de aspecten van de verhouding tot het lichaam die door behandeling kunnen worden verbeterd en het ontwikkelen en valideren van meetinstrumenten die in de praktijk kunnen worden gebruikt om deze 'body-relatedness' te kunnen inschatten. Onderzoeksdeelnemers binnen dit project waren cliënten van Altrecht psychosomatiek, Eikenboom, een derdelijns, top-GGZ behandelcentrum voor ernstige somatische-symptoomstoornissen, in Zeist.

Als introductie wordt eerst de klinische praktijk van het bevorderen van lichaamsbewustzijn bij mensen met somatische-symptoomstoornissen geschetst (hoofdstuk 2). De klachten kunnen zo veel aandacht opeisen dat de cliënt zich minder bewust is van normale lichaamssignalen die helpend zijn voor gezond gedrag, en soms heeft de cliënt door een gecompliceerde levensloop ook onvoldoende geleerd om lichaamssignalen te voelen. De cliënt kan leren om zich meer bewust te zijn van het lichaam op het niveau van basale signalen zoals ademhaling en spierspanning ('actiegericht'), op het niveau van betekenis van lichaamstaal in het hier en nu ('ervaringsgericht') en op het niveau van het levensverhaal dat het lichaam met haar vaste patronen vertelt ('ontdekkend-conflictgericht'). Dergelijke lichaamsgerichte

interventies, die meestal door een psychomotorisch therapeut of psychosomatisch fysiotherapeut worden uitgevoerd, sluiten goed aan bij de aard van de problematiek maar er is behoefte aan verdere wetenschappelijke onderbouwing.

Vervolgens start het onderzoekgedeelte van het proefschrift met de zoektocht naar relevante elementen van de verhouding tot het lichaam, 'body-relatedness', bij somatische-symptoomstoornissen (hoofdstuk 3). Interviews met vijf beginnende cliënten, vijf cliënten met een geslaagde behandeling en tien professionals van verschillende disciplines hebben geleid tot 71 kernuitspraken over wat een cliënt kan leren in de relatie tot het eigen lichaam. Deze uitspraken zijn door 22 cliënten en 20 professionals gegroepeerd en via hiërarchische clusteranalyse teruggebracht tot het model van 'body-relatedness'. Er zijn acht dimensies gevonden die onder twee hoofdthema's vallen: lichaamsbewustzijn (lichaam verstaan, aanvaarden en begrenzen) en zelfbewustzijn (lichaam respecteren, reguleren, vertrouwen, waarderen en autonomie ervaren). Dit model kan handvatten geven voor uitleg aan cliënten, diagnostiek en behandeling, overleg met behandelaars en onderzoek naar passende meetinstrumenten.

Een eerste meetinstrument dat is onderzocht (hoofdstuk 4), is een bestaande vragenlijst voor lichaamsattitude: de Dresdner Körperbildfragebogen (DKB). Deze lijst heeft vijf subschalen: lichaamsacceptatie, vitaliteit, zelfwaardering, lichamelijk contact en seksuele tevredenheid. De DKB-scores van 657 cliënten van Altrecht psychosomatiek zijn vergeleken met die van 761 mensen uit de algemene bevolking. Beide groepen bleken de lijst op een zelfde manier te interpreteren, waardoor vergelijking van de antwoorden gepast is. Op alle schalen bleken de cliënten met somatische-symptoomstoornissen een negatievere attitude ten aanzien van het eigen lichaam te hebben. De verschillen waren groot en vitaliteit sprong er het meest negatief uit bij de cliënten. Mannelijke cliënten scoorden positiever dan de vrouwen op lichaamsacceptatie, seksuele tevredenheid en zelfwaardering. Daarnaast waren cliënten met conversie (uitvalsverschijnselen zonder neurologische schade) positiever over hun vitaliteit en lichaamsacceptatie dan de andere cliënten, die bijvoorbeeld pijn of chronische vermoeidheid hadden. Met dit project is zichtbaar gemaakt hoe negatief de lichaamsattitude van mensen met somatische-symptoomstoornissen is en dat de DKB een geschikte vragenlijst is om dit in kaart te brengen.

Vervolgens is onderzocht of tekeningen van het eigen lichaam zoals de cliënt het beleeft, betrouwbare en nuttige informatie opleveren over de verhouding tot het lichaam (hoofdstuk 5). Daarvoor hebben beoordelaars 180 tekeningen van cliënten in de aanmeldfase gescoord op objectieve kenmerken zoals de afwezigheid van lichaamsdelen, formaat en positie op het papier (A3). Er bleken twee dimensies te onderscheiden in de items die betrouwbaar gescoord konden worden: details (ogen, andere zintuigen, man/vrouw duidelijk en voor-, zij- of achteraanzicht) en basiselementen (ledematen, passend op het papier, handen en voeten). De scores op deze twee dimensies hingen samen met het oordeel van de ernst door kunstzinnig therapeuten. Ook bleken de tekeningen na een therapietraject (bij 60 tweede tekeningen) meer details en basiselementen te bevatten. De tekeningscores hadden echter geen verband met DKB-scores, hetgeen kan betekenen dat tekeningen en vragenlijsten verschillende aspecten van lichaamsbeleving meten.

Om meer duidelijkheid te krijgen over de waarde van lichaamstekeningen zijn ook tekeningen verzameld uit de algemene bevolking (hoofdstuk 6), waarbij gezorgd is dat de leeftijden en de man/vrouw verhouding vergelijkbaar waren met de cliëntengroep. De twee gevonden dimensies bleken niet helemaal te passen bij de tekeningen van mensen uit de algemene bevolking omdat die groep minder afwijkingen in basiselementen tekende. Daarom zijn alleen de details in tekeningen vergeleken en die waren niet aantoonbaar verschillend tussen beide groepen. Ook bleek, anders dan verwacht, de samenhang tussen detailscores en de lichaamsattitude, zoals gemeten met de DKB, bij de algemene bevolking nog minder dan in de cliëntengroep. Vooraf was al bedacht dat personen zonder lichamelijke klachten misschien hun lichaam vanuit een ander perspectief tekenen. Daarom was bij de algemene bevolking vastgelegd of de tekening klachten en functioneren uitdrukte, of juist de lichamelijke identiteit of een mix van beide. Tekeningen met klachten bleken minder details te bevatten dan tekeningen van de lichamelijke identiteit en misschien verklaart dat ook het in hoofdstuk 5 gevonden verschil tussen voor- en nametingen bij cliënten. Er werd in dit onderzoek weinig steun gevonden voor gebruik van de scorelijst in de algemene bevolking. De lijst lijkt het meest geschikt voor mensen die lichamelijke klachten ervaren.

Tot slot is een korte observatie van beweging en de verhouding tot het lichaam door psychosomatisch fysiotherapeuten onderzocht (hoofdstuk 7). De cliënt wordt

daarbij gevraagd om in ruglig de knieën naar links en rechts te bewegen en daarna de benen om en om te strekken. De fysiotherapeut beoordeelt of de oefening wordt begrepen, hoe goed de cliënt zich bewust is van zijn lichaam en klachten, welke automatische patronen er zijn en in hoeverre het bewegingsgedrag passend is bij de lichamelijke klachten. Het bleek dat de fysiotherapeuten weinig overeenstemming hadden bij het beoordelen van lichaamsbewustzijn. Met de overige scores kon een schaal met zeven observatie items gemaakt worden: uitvoering volgens instructie, start vanuit rust of activiteit, zorgvuldigheid, spanning vasthouden, variatie in spierspanning, lichaamsbewustzijn na aanwijzing en grenzen respecteren. Deze observatieschaal, de BROS (Body-Relatedness Observation Scale), voldeed net niet aan de eisen voor inhoudelijke samenhang en moet dus nog doorontwikkeld worden met meer of passender items. Toch laat dit project zien dat gestandaardiseerde gedragsobservatie door fysiotherapeuten haalbaar is en de moeite van vervolgonderzoek waard.

Terugblikkend op het hele project worden in hoofdstuk 8 een aantal bredere thema's besproken. Zo wordt bekeken of met de onderzochte meetinstrumenten ook daadwerkelijk alle dimensies van 'body-relatedness' worden gemeten, en dat blijkt niet zo te zijn. De belangrijke dimensie 'verstaan' van het lichaam, dat wil zeggen het voelen en begrijpen van lichaamssignalen, zat oorspronkelijk in de fysiotherapeutische observatie maar de items die daarover gingen, bleken grotendeels onbetrouwbaar. Ook 'autonomie' werd niet gemeten en 'vertrouwen' komt slechts indirect naar voren in de DKB-schaal 'seksuele tevredenheid'. Deze drie dimensies kunnen misschien met een interview worden uitgevraagd maar vooral lichaamsbewustzijn blijft lastig om te beoordelen. Dat is complex omdat de mate van lichaamsbewustzijn per situatie kan verschillen, omdat het moeilijk via zichtbaar gedrag te beoordelen is en omdat aandacht voor het lichaam zowel te veel als te weinig kan zijn (te alert of juist negeren van signalen). 'Verstaan' omvat ook het begrijpen van lichaamssignalen en dat zou misschien wel met een vragenlijst gemeten kunnen worden.

In het afsluitende hoofdstuk wordt ook ingegaan op de kerndomeinen voor onderzoek bij somatische-symptoomstoornissen. In het algemeen worden voor grote onderzoeksprojecten vragenlijsten gebruikt die breed erkend zijn omdat daarmee vergelijking met ander onderzoek makkelijker is. Gebruik van de DKB als uitkomstmaat voor lichaamsattitude zou ook waardevol kunnen zijn voor grotere projecten, vooral

vanwege de schalen 'acceptatie' en 'seksuele tevredenheid', die relevant zijn maar in weinig andere vragenlijsten voorkomen. Tekeningen en fysiotherapeutische observatie zijn moeilijker te gebruiken voor een grootschalige opzet maar kunnen juist voor verdiepend onderzoek en voor de klinische praktijk een meerwaarde hebben naast vragenlijsten.

Naar aanleiding van de scorelijst voor lichaamstekeningen wordt nog ingegaan op de schijnbare tegenstelling tussen wetenschap en praktijk. Het instrument is gebaseerd op de klinische ervaring van kunstzinnig therapeuten en meet twee dimensies die wetenschappelijk onderbouwd zijn. Daarmee wordt voor buitenstaanders bewezen dat de tekeningen waardevolle informatie bevatten. Toch omvat de scorelijst niet alle aspecten van tekeningen zoals die in de praktijk aan de orde komen. De waarde van het instrument zit vooral in de mogelijkheid om tekeningen te vergelijken en daarmee een maat voor de verstoorde verhouding tot het lichaam te krijgen. Wetenschap en praktijk hebben elkaar in dit project versterkt om de waarde van ervaringsgerichte methoden onder de aandacht te brengen.

Het beoordelen van de kwaliteit van beweging is in meer studies gedaan maar de inschatting of het gedrag passend is bij de lichamelijke klachten, zoals in ons fysiotherapieproject, is nog weinig beschreven. Aan het begin van dit promotietraject is dit ook met een psychomotorische therapie observatie geprobeerd maar de bewegingsopdrachten bleken zo moeilijk om betrouwbaar te beoordelen dat er gekozen is om alleen met de eenvoudige fysiotherapeutische opdracht verder te gaan. Misschien kan de fysiotherapie observatie nog zo verder ontwikkeld worden dat ook het lichaamsbewustzijn beoordeeld kan worden, bijvoorbeeld met gerichte vragen over gevoelens tijdens de oefening.

Een algemene conclusie van dit proefschrift is dat het meten van 'body-relatedness' met ervaringsgerichte methoden haalbaar is en andere informatie oplevert dan vragenlijsten. Dat geeft reden om door te gaan met onderzoek naar ervaringsgerichte therapieën bij somatische-symptoomstoornissen. Vooral het voelen en begrijpen van lichaamssignalen zou beter meetbaar gemaakt moeten worden en verder kan gekeken worden of de DKB gevoelig genoeg is om verandering te meten, hoe tekeningen veranderen in de loop van een behandeltraject, hoe de fysiotherapeutische observatie verbeterd kan worden en misschien hoe moderne technologie kan bijdragen aan het meetbaar maken van bewegingsgedrag. In de klinische praktijk kan het model

van 'body-relatedness' gebruikt worden om uitleg te geven en behandeldoelen te bepalen, en kunnen de meetinstrumenten gebruikt worden om zicht te krijgen op de mechanismen die de klachten in stand houden. Hopelijk inspireert dit proefschrift onderzoekers en therapeuten om de expertise rond lichaamsbeleving bij somatische-symptoomstoornissen verder te ontwikkelen.

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CURRICULUM VITAE

Hanneke Kalisvaart was born in 1969 in Haaften. She went to the Gymnasium Camphusianum in Gorinchem and got inspired by her experiences in volleyball to aim for a profession that makes use of sports to help people. Therefore, she chose to study human movement sciences at Vrije Universiteit in Amsterdam. During that study she became interested in the impact of serious illness and somatic symptoms on well-being, and in 1993 she graduated on a thesis about relaxation techniques for cancer patients. She had several jobs as a psychomotor therapist in psychiatric settings and combined these with research projects on body-cathexis of deaf persons with psychiatric problems and on cardiovascular risk factors in persons with affective, anxiety, and somatoform disorder. Since 2004 she is working as a psychomotor therapist and researcher at Altrecht psychosomatic medicine, Eikenboom. She started her research by interviewing clients and colleagues about relating to a body with somatic symptoms and by studying experience-based assessments. In 2009 she started training in sensorimotor psychotherapy and certified in this body-oriented approach in 2015. After her first international scientific publication in 2012, her PhD trajectory at Utrecht University officially started in collaboration with Windesheim University of Applied Sciences. She will continue to work at Altrecht psychosomatic medicine and try to further study and develop body-oriented (psycho)therapies for persons with somatic symptom disorder.

Hanneke is married to Cris and they have two daughters. She plays the trombone in a wind orchestra and still loves sports, at the present time rowing.

Relating to a body with somatic symptoms can be hard but is considered crucial for improvement and acceptance of symptoms.

This thesis is a pioneering effort to scientifically capture this 'body-relatedness' in somatic symptom disorder from the perspective of clients and different professional disciplines.

