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Back into Life: Effects of embodied therapies on patients with schizophrenia

ABSTRACT

Embodiment is a hot topic in psychotherapy. While its principles seem ready to be applied to psychosomatic issues, they are currently at proof in the treatment of psychiatric diseases. Schizophrenia is an often chronic, severe mental illness and involves high suffering of the person affected. While medication can successfully address positive symptoms of the illness, it can only slightly influence negative symptoms. The *embodiment approach* as well as associated *embodied therapies* understand the illness as a form of *disembodiment* of the self. They focus on a mind-body connection and demand a treatment, which not only aims at symptom reduction, but strives for the increase of individual well-being. In the light of high depression and suicide rates of patients with schizophrenia, the integration of embodied therapies into established treatment plans might constitute a way to address challenges of the disorder as well as unmet therapeutic needs of patients.

In 2010, Röhricht and Papadopoulos developed a body psychotherapy-based treatment manual that has been found to decrease negative affect in schizophrenia. In a study¹ conducted at the University of Heidelberg 2012-2015 within the EU-project "TESIS", we replicated Röhricht and Papadopoulos' results and found additional increases in well-being in the self-reports of patients. In the following article we discuss the results of the TESIS project in Heidelberg regarding current research on schizophrenia treatment. Furthermore we present DMT/BPT as an embodied therapy and underline the advantage of its integration into psychiatric treatment. Further research is needed to strengthen the finding that embodied therapies can notably address affective aspects of schizophrenia and successfully influence the course of the disease.

Key words: Schizophrenia – Embodiment/Disembodiment – Dance Movement Therapy (DMT) – Body Psychotherapy (BPT) – Embodied Therapies – Negative Symptoms – Well-Being

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¹ We would like to thank study therapists Martina Bopp, Ariane Konrad, and Anja Holzinger for conducting the movement therapy sessions; Judith Raeke, Laura Mehl, Janna Kelbel, and Christina Gallinat for organizing and coordinating the assessments, data collection, and data entry; Dr. Dusan Hirjak for trainings and coordination of medical assessments; Max Ludwig, Rixta Fambach and Waltraud Werkmann for support; we would like to thank all our volunteers and last but not least our patients. The study was conducted within the Marie Curie ITN grant "TESIS – Toward an Embodied Science of Intersubjectivity" by Prof. Dr. Dr. Thomas Fuchs and Prof. Dr. Ezequiel DiPaolo.

1 Schizophrenia in the Light of the Embodiment Debate

Unmet needs in the treatment of schizophrenia

Comprising a number of psychopathology domains, schizophrenia appears as a heterogeneous clinical syndrome. It is considered one of the most severe mental disorders and comes along with high suffering for the individuals and caregivers affected (Buchanan & Carpenter, 1994; Deutsche Gesellschaft für Psychiatrie Psychotherapie und Nervenheilkunde (DGPPN), 2006). Three quarters of patients suffering from schizophrenia experience recurrent and persistent symptoms with a substantial impact on their daily and social life and full remissions are rare (National Collaborating Centre for Mental Health (NCCMH), 2014). The illness is characterized by positive psychotic symptoms, such as delusions, hallucinations, and disorganization of thought and behavior, as well as negative symptoms, which are conceptualized as a deficit or loss of functions and include blunting or flattening of affect, alogia/aprosody, avolition/apathy, anhedonia, and asociality (Arango, Buchanan, Kirkpatrick, & Carpenter, 2004; Blanchard & Cohen, 2006; Carpenter, Heinrichs, & Wagman, 1988).

Although schizophrenia has been defined as a clinical entity for over a century and pharmacological as well as psychological treatment have drastically improved over the last years, the majority of the illness's burden is unavertable in the light of current knowledge. While pharmacological interventions with atypical neuroleptics succeed in treating acute psychotic states by reducing positive symptoms, persistent negative symptoms are often unmet (Kirkpatrick, Fenton, Carpenter, & Marder, 2006). They frequently are associated with treatment-refractory processes, illness chronicity, and therefore particularly poor function and quality of life (Blanchard, Kring, Horan, & Gur, 2011; Kirkpatrick et al., 2006). No drug has yet received Food and Drug Administration (FDA) approval for an indication of negative symptoms (Kirkpatrick et al., 2006). Furthermore, pharmacological interventions, which have been the mainstay of treatment since their introduction in the 1950s, have a number of limitations: Heterogeneous treatment responses and a high incidence of disabling side effects lead to a trial-and-error-strategy with respect to treatment choice (Lally & MacCabe, 2015; NCCMH, 2014). Many patients pass through a number of hospitalizations and medication changes until they find a somewhat tolerable way to live with their illness and the medical side effects.

Embodiment and Embodied Affectivity – answers from a new perspective

The interest in the body-mind connection is certainly not a new phenomenon. Western psychology, psychiatry, and psychotherapy though still tend to separate mind and body and predominantly focus on cognitive processes. Emotions for example are mainly regarded as results of information processing led by a learned act of evaluation or appraisal of a given situation (Fuchs & Koch, 2014).

The lack of satisfying treatment options for schizophrenia, however, has paved the way for acceptance of a more broadly-based, interdisciplinary and innovative approach: Combining theoretical ideas and practical implications from the areas of philosophy, psychology, psychiatry and neuroscience, the approach of *embodiment* depicts a field of research and practice, which investigates the circular interaction of mind, brain, organism and environment in the etiology and treatment of psychiatric disorders (Koch & Fuchs, 2011; Martin, Koch, Hirjak, & Fuchs, 2016). Underpinned by phenomenological concepts and neuroscientific findings, the *embodiment paradigm* focuses on the implicit functioning of the body in everyday perception and performance (Fuchs, 2012; Fuchs & Koch, 2014; Fuchs & Schlimme, 2009; Gallagher, 2005; Koch & Fuchs, 2011; Merleau-Ponty, 1962). Cognitive processes are regarded as deeply rooted in the body's interaction with the world, the 'lived body' being a transparent medium or background to all our experiences (Fuchs, 2005; Wilson, 2002). By constituting our pre-reflective sense of self and agency, the body allows us to attune to the environment and to others (Fuchs & Schlimme, 2009).

This is understood most easily regarding the emergence of human emotions: Using the term *embodied affectivity* Fuchs and Koch (2014) describe the complexity of emotional life as a circular interaction between affective qualities and affordances of the environment and bodily resonance in the form of sensations, postures, expressive gestures, and movement tendencies. Feelings are seen as circular interactions or feedback cycles between *affection* (a bodily resonance or sensation: e.g. "blushing" for shame), and *e-motion* (bodily action readiness and movement tendencies, e.g. trying to flee the shameful situation). Being always relational, emotions include embodied action tendencies, in terms of movements towards or against an actual or implicit counterpart (Kafka, 1950). "Without emotions, the world would be without meaning or significance; nothing would attract or repel us and motivate us to act" (Fuchs & Koch, 2014). This extends the circular model of *embodied affectivity* into the social sphere: The facial, gestural or postural expression of an emotion is part of its bodily resonance, which not only feeds back into the feeling, but also induces processes of *interaffectivity* by being perceived by others (see (Fuchs & Koch, 2014) for a visualization of the model of *interaffectivity*). At the same time, we experience the kinaesthetic aspect and intensity of the opponent's emotions. A circular interplay of expression and impression or reaction is created, running in split seconds, constantly modifying each partner's bodily state and connecting two bodies in interbodily resonance or *intercorporeality* (Merleau-Ponty, 1964).

In recent years, a growing body of research supports the theory of *embodiment* and *embodied affectivity*. When individuals adopt or produce emotion-specific postures, facial expressions or gestures, they tend to experience associated emotions and their preferences, judgement and attitudes are affected: The mere taking on of a dominant versus a submissive body posture for example has been shown to cause changes in self experience, testosterone levels, saliva and

risk-taking behavior (Carney, Cuddy, & Yap, 2010). Approach movements, such as arm flexion, caused subjects to rate arbitrary Chinese ideographs more positively, than when doing avoidance movements, such as arm extension (Cacioppo, Priester, & Berntson, 1993). And different movement qualities (sharp vs. smooth movements) and rhythms in handshakes have been shown to influence social perception and reaction towards an unknown examiner (Koch, 2011). Conversely, when individuals' expressive movements are inhibited, the experience of associated emotions as well as the processing of corresponding emotional information is constricted: The injection of botulinum toxin (Botox) into the frowning muscles for example impaired the participants' understanding of written negative content as criticism (Havas, Glenberg, Gutowski, Lucarelli, & Davidson, 2010).

In addition, underlining the theory of *interactivity*, nonverbal synchronicity in psychotherapeutic interaction predicted therapy outcomes for different patients (Ramseyer & Tschacher, 2011).

Schizophrenia as a form of disembodiment

Against this background, schizophrenia is regarded as a fundamental disturbance of the embodied self, or a *disembodiment*. This includes a weakening of the basic sense of self, a disruption of implicit bodily functioning and, as a result, a disconnection from the intercorporeality with others (Fuchs, 2005; Parnas, 2003; Sass & Parnas, 2003). A disembodied self does not 'inhabit' the body any more, in the sense of using for granted its implicit structure, emotional resonance, and automatic performances (Fuchs, 2005, 2012). The loss of tacit self-awareness results in an alienation of somatosensory perception, emotional expression, movement and action: Somatic sensations usually experienced as the tacit medium of an attitude or affect – not experienced consciously – are detached from their motivational context (Sass, 2000), leaving the patient incapable of making sense of felt emotions, as well as adequately expressing or following them. Negative symptoms such as flat affect and loss of drive and desires may be regarded as a result of this *disembodied affectivity*. Moreover, units of meaningful actions such as reading or getting dressed are fragmented and the resulting fragments suddenly shift into consciousness. This leads to a pathological explication and a hyperreflexive awareness to normally tacit aspects of everyday life (Fuchs, 2005; Sass & Parnas, 2003). Eventually, in an advanced state of the illness the subject might lose the sense of agency for his or her own emotions or actions, leading to delusions of manipulation or alien control (positive symptoms) (Fuchs, 2015; Fuchs & Schlimme, 2009; Sass & Parnas, 2003). Disturbed self-experience usually manifests itself in altered body experiences. Affected individuals experience disturbances in their body image, such as the enlargement or diminution of certain body parts or unusual movement sensations in the body (e.g., "My brain always slips down the back of my head"). They may also report not feeling at home in their body, feeling disintegrated or fragmented – for instance as if their body was torn apart – or being afraid of body loss, resulting in increased mirror exposure or compulsive rituals (Priebe & Röhrich, 2001).

Hirjak et al. (2013) consider the altered self-experience as a sequence of steps reaching from divergent body sensations to delusion. Fuchs (2012) highlights that from a phenomenological perspective the slow degradation of self-experience, awareness, and action, which can be traced back to unremarkable prodromal stages and even to the patients' childhood, appears as more relevant to the comprehension of the disorder than positive symptoms of acute schizophrenia. In contrast to current neuropsychological theories, which attribute the core disturbance of the illness to higher order cognitive processes ('theory of mind', 'meta-representation') (Frith, 2004), the phenomenological approach locates the main disorder on a lower level, emphasizing basic abnormalities of bodily mediated consciousness that underlie and antecede the disparate assortment of symptoms in schizophrenia. It thereby not only allows for positive and negative symptoms and their interrelation to be seen from an integrative angle (Fuchs & Schlimme, 2009; Sass & Parnas, 2003) but more generally for dualistic concepts of mind and body to be overcome.

Embodied Therapies – a treatment supplement for schizophrenia

As we have seen, affect and cognition are considerably influenced by body posture and movement as well as by the bodily expression of others (Koch & Fuchs, 2011). This is of particular importance for psychotherapy, for it complements new, innovative ways to influence and change emotions and pathological behavior, aside from cognitive means (Fuchs & Koch, 2014; Martin et al., 2016; Pohlmann, Koch, & Fuchs, 2016). By conceptualizing body, mind, action and perception as a unity, embodied therapies, such as Body Psychotherapy (BPT) or Dance and Movement Therapy (DMT), stress the need to target body experiences in order to change emotions and behavior, specifically in the case of severe mental disorders when verbal dialogue can be difficult (Fuchs & Koch, 2014; SabineC Koch & Fischman, 2011; Koch & Fuchs, 2011; Röhrich, 2009; Tschacher, Munt, & Storch, 2014). Aside from the usage of general psychotherapeutic mechanisms, BPT as well as DMT focus on the improvement of body awareness and the support of inter-bodily resonance in order to provide a coherent self-experience as well as an adequate social exchange. Thereby they both assume that emotion and motion are reciprocally linked (Cruz & Koch, 2015). While BPT has developed from a psychodynamic background to an independent therapeutic approach, DMT understands itself as one of the creative arts therapies (dance, drama, music, and art therapy). Working mostly in a one-on-one context, BPT combines specific body-oriented, non-verbal interventions with insight-oriented, verbal techniques to obtain behavior modification (Röhrich, 2009). DMT beyond that focuses on the therapeutic use of expressive movement and aesthetics to further emotional, cognitive, physical, and social integration, expression, as well as well-being of the individual (American Dance Therapy Association, 2015). DMT primarily takes place in group settings. Despite the heterogeneity of different body-oriented methods, common main principles can be found: By emphasizing the meaning of sensorimotor experience and body motion for cognition, affect, and (inter)action, both disciplines operate at the center of emotional

processing and self-regulation. Furthermore, the therapeutic process can take both directions: reaching from cognitive dimensions to a deeper body-self-awareness or starting with body-sensations leading towards insight into psychosocial realities. Most experienced BPT/DMT therapists balance both sides (Caldwell, 2012).

2 Towards an Embodied Science of Intersubjectivity (TESIS)

The EU-funded Marie Curie ITN project "Toward an Embodied Science of Intersubjectivity (TESIS)", which unified thirteen European research centers, was one of the first grand projects explicitly based on an embodied perspective. Funded by the Marie-Curie ITN program it aimed to develop a comprehensive framework for embodied intersubjectivity applicable in the biomedical sciences, the humanities, and society in general (<https://tesisnetwork.wordpress.com/>). Among other topics, the TESIS Heidelberg Node aimed to understand whether and how embodied therapies can improve the treatment of schizophrenia.

Previous findings suggested promising results: A general meta-analysis covering 23 primary trials found positive effects on well-being, quality of life (QoL), mood, affect and body-image as well as a reduction of symptoms across a variety of populations treated with dance movement therapy (Sabine Koch, Kunz, Lykou, & Cruz, 2014). Furthermore the National Institute for Clinical Excellence (NICE) stated that, 'arts therapies', such as DMT, art therapy, drama and music therapy, were currently the only interventions (both psychological and pharmacological) to demonstrate consistent efficacy in the reduction of negative symptoms (National Collaborating Centre for Mental Health (NCCMH), 2014). Following these findings, a randomized controlled trial was conducted in order to investigate symptom reduction of specifically negative symptoms and shed light on effects of embodied therapies on well-being of schizophrenic patients (approved by the local ethics committee of the Medical Faculty of the University of Heidelberg and registered with DRKS, German Clinical Trials Register: DRKS00009828, <http://apps.who.int/trialsearch/>). Data was assessed and analyzed following a double-blind, two factorial design, comprising the factors *Time* (before and after the treatment) and *Group* (treatment or control group).

To get an overview of inclusion and exclusion criteria, the study procedure as well as the statistical analysis, see Figure 1. Detailed information on the recruitment and randomization procedure, sample characteristics and assessment methods are provided in (Martin et al., 2016; Pohlmann et al., 2016). This article focuses on specific treatment characteristics of BPT/DMT and the outcome for the patients.

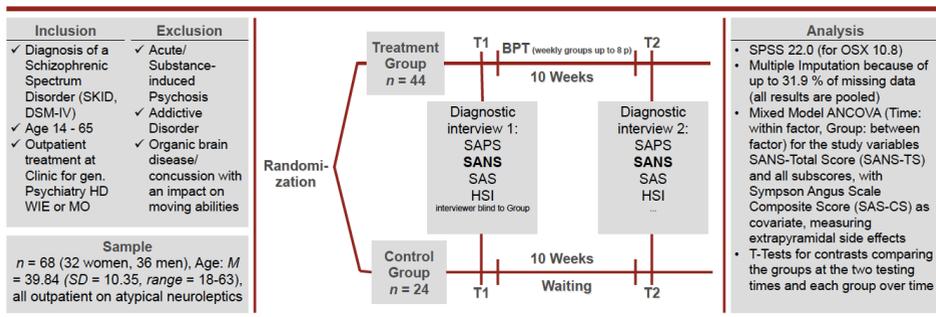


Figure 1: The RTC part of the TESIS project in Heidelberg

3 Manualized Embodied Therapy (BPT/DMT) for Patients with Schizophrenia

The embodied intervention of the TESIS project was a combination of BPT and DMT and therefore is named BPT/DMT throughout this paper. It was based on the treatment manual by Röhricht and Papadopoulou (2010), specifically developed for the work with schizophrenic patients and conducted aside from the usual medical treatment (second generation antipsychotics, such as clozapine, olanzapine, aripiprazole, or risperidone). By integrating sensory awareness and movement techniques, the manual targets core body-image disturbances (boundary loss, disembodiment) and widens the range of responsive, expressive, and communicative behaviors (movement and speech) in order to reduce emotional withdrawal (Röhricht, Papadopoulou, Holden, Clarke, & Priebe, 2011). BPT/DMT took place in groups of up to 8 participants in the Centre for Psychosocial Medicine in Heidelberg, the Psychiatrisches Zentrum Nordbaden (PZN) in Wiesloch and the Johannes-Diakonie in Mosbach, each over a period of 10 weeks (two sessions per week, 20 sessions à 90 minutes). BPT/DMT groups were run by three different dance/ movement therapists (all specifically trained in the usage of the manual) and attended by at least one co-therapist to allow for an intensive care. Whenever indicated, the therapists carried out context or disease-specific modifications.

The main goals of the treatment were:

1. To apply body-oriented non-verbal interventions to reconstruct a basic and coherent ego-structure, strengthen self-referential processes and hence ipseity ("mine-ness") as a prerequisite for safe social interaction
2. To widen and deepen the range of emotional responses to environmental stimuli – particularly intersubjective ones – on the basis of enhanced contact with one's own bodily reality with physical anchor points in the external world and other participants/therapists

3. To help patients explore a range of expressive and communicative behaviors (movement and speech) in order to reduce emotional withdrawal and improve affective modulation (Röhrich and Papadopoulos, 2010).

Sessions consisted of different individual, pair and group exercises. After a first session aiming at familiarization among the participants with each other, the therapist and the therapeutic elements, the sessions followed a repetitive structure: (1) opening circle, (2) warm-up section, (3) structured task section, (4) creative movement section, and (5) closing circle/verbal integration. The last session focused on group-closure and options for continuing therapy.

To provide an idea of the therapy sessions and single interventions, excerpts for each of the five structural parts from "A treatment manual: body oriented psychological therapy for chronic schizophrenia" (Röhrich and Papadopoulos, 2010) are listed below:

1. **An excerpt from "The opening cycle: focusing on body-self and engagement"**

Introduction to sessions including function of the group

Each group begins with a ceremonial/ritual activity to demarcate the transition from the ordinary everyday world into the therapeutic space. Participants are asked to take off their shoes and to sit in a circle either on chairs or on the floor. The group starts with an opening "ceremony", allowing each individual participant to settle safely within the physical and social environment. In the first session, the therapist will explain some basic principles of the therapeutic intervention, introduce rules and give very simple and clear instructions. At this stage of the group, the therapist is as re-assuring as possible. (Röhrich & Papadopoulos, 2010, p. 11)

2. **An excerpt from "Warm up and grounding: techniques to promote self-awareness, emotional stimulation and reality-testing through the body"**

Self-exploration of body surface

Participants explore in a number of direct physical ways the actual boundaries and surfaces of their own body; this is achieved through gentle tapping with the hands or more powerful clapping against the different parts of the body. This exercise is sometimes extended to include quite strong tapping against the chest with an accompanying voicing of the breath. Additionally, "bean bags" are used to add weight to specific body parts as well as to tap against body parts to bring attention through visual, auditory and sensory stimuli. Verbalizations regarding the quality of the physical sensation, the experience of body/skin boundaries and body dimensions in space are encouraged throughout whilst the therapist may draw specific attention of individuals to their observed reactions.

Exploring natural rhythms

Pulse, breathing and rhythm also play a fundamental part in the warm-up. In addition to attending to breathing rhythms, participants may be asked to clap or walk the rhythm of

their own heart beat, and experience the tempo of other group members' pulse rhythms. As the treatment program progresses a fuller range of warm-up activities are included in the sessions. (Röhrich & Papadopoulos, 2010, p. 15)

3. An excerpt from "Structured tasks: strategies to address dysfunctional self-regulation and body image aberration

Ipseity/mine-ness, social withdrawal

A range of mirroring techniques is used in this part of the session to strengthen the sense of self, and more specifically to demarcate where 'I' end and the 'other' begins. Mirroring can be limited to gestures, or posture and gestures, or it can also include locomotion of the whole body. Empathy can be stimulated through the mirroring exercises.

Examples: Participants are asked to pair up and face each other. One person (A) will take the lead and the other (B) will follow. First A improvises a movement phrase with or without music, either staying stationary and moving with gestures in one's own kinesphere, or travelling from one place in the room to another, and B attempts to mirror this movement as precisely as possible. Later the leadership is transferred from A to B. Variations on dyad mirroring include group mirroring based on free improvisations or themes such as sporting gestures. Here, one member of the group will suggest a movement pattern such as the serving action in a game of tennis and the other group members will mirror it; each person in the group will have an opportunity to take the lead and share a movement pattern that they create. This can be done with or without music. (Röhrich & Papadopoulos, 2010, p. 18)

4. An excerpt from "Creative movements: expressing emotions, working with self-potentials"

Creative mirroring to a diverse range of music (according to individual preferences, patients are encouraged to bring their own music to sessions).

- Creating a group collage: one at a time and without discussion each member is invited to add material (e.g. cloths, feathers, balls etc.) to create a group image on the floor. This is followed by a discussion in which each participant would say something about how they saw the image evolving, what they "saw" as the final image or theme and how it felt to have their contributions altered or added to by the other members.
- Encouraging creative movement with different effort qualities
- Exploring states: two efforts together, i.e. awake/dream
(Röhrich & Papadopoulos, 2010, p. 21)

5. An excerpt from "The closing cycle: verbalization and integration of experiences

Finally, in this part of the session participants are being supported to gradually disengage from the group process and each other and return to themselves. Usually specific body-oriented exercises are suggested including guided relaxation, self-massage, deep breathing,

polarity exercises. In addition in the closing circle participants are encouraged to reflect on all the events of the group including the aspects that they have enjoyed and those that they have found difficult. This includes reflection on individual problems in relation to the various areas of psychopathology, depending on group dynamics and introspective abilities of participants. Group members are informed that this feedback is important in the planning of future sessions so that they can begin to take some responsibility for the contents of the sessions (Röhricht & Papadopoulos, 2010, p. 23).

4 The Impact of BPT/DMT on Patients with Schizophrenia

In total we analyzed 68 patients with schizophrenia: 32 women and 36 men, with a mean age of 39.84 years ($SD = 10.35$) and with a mean duration of 15.92 ($SD = 10.00$) years of schizophrenic symptoms. As it is usual in schizophrenic populations, due to motivational reasons there was a large number of drop-outs during the treatment period (exact sample statistics are given in (Martin et al., 2016) and (Pohlmann et al., 2016).

As part of the larger TESIS study a number of psychosocial variables as well as the general functioning of the patients were assessed: The amount of positive symptoms was recorded using the Scale for the Assessment of Positive Symptoms (SAPS) (N. C. Andreasen, 1984), the amount of negative symptoms was assessed with the Scale for the Assessment of Negative Symptoms (SANS) (Nancy C. Andreasen, 1984), the overall severity of psychopathological symptoms was addressed using the Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962), and the social, occupational and psychological functioning of participants was assessed using the Global Assessment of Functioning (GAF) Scale (Hall, 1995). Because negative symptoms can be evoked or enhanced by antipsychotic medication, extrapyramidal side effects were recorded as a control variable, using the Simpson-Angus Scale (SAS/EPS in German) (Simpson & Angus, 1970). Furthermore, subjective well-being was measured with the Heidelberger State Inventory (HSI) (Koch, Morlinghaus, & Fuchs, 2007).

Affirming previously found positive effects of embodied therapies on patients with schizophrenia (Röhricht et al., 2011; Röhricht, Papadopoulos, Suzuki, & Priebe, 2009; Röhricht & Priebe, 2006) the results of our research are encouraging: As anticipated in the TESIS project, BPT/DMT significantly reduced overall negative symptom severity in the treatment group when provided in addition to usual medical treatment. It specifically reduced blunted affect and deficits in attention (Martin et al., 2016). Because antipsychotic medication remained stable during the assessment period and extrapyramidal side effects were controlled for in the analyses, the improvement found was independent of any change in positive symptoms or side effects. Resulting moderate effect sizes as well as the mean symptom reduction of 20.65% can be regarded as clinically substantial, when applying cut-off criteria of Levine, Leucht and others (Levine & Leucht, 2013; Rector, Seeman, & Segal, 2003). Furthermore, subjective psychological well-being of patients in

the treatment group increased significantly during the time of the TESIS intervention, while it didn't change at all for the control group (Pohlmann et al., 2016). Figure 2 and 3 visualize the outcome changes (for respective statistics see (Martin et al., 2016; Pohlmann et al., 2016)).

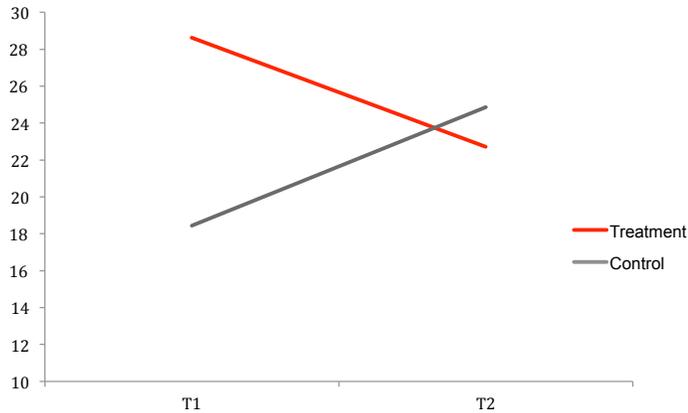


Figure 2. Changes of negative symptoms in treatment and control group of the TESIS project

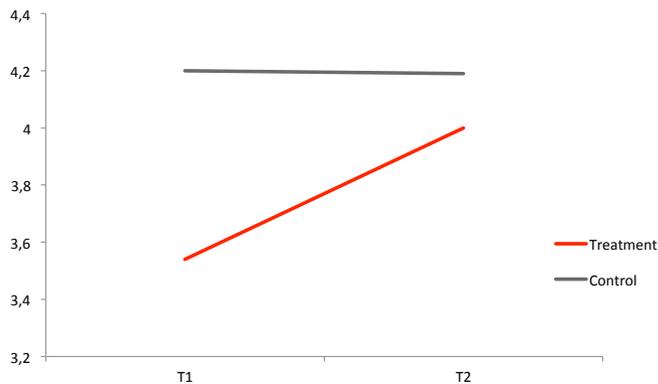


Figure 3. Changes of well-being in treatment and control group of the TESIS project

Compared to medical and cognitive behavioral interventions (CBT), the impact of embodied therapies is encouragingly high: Chakos et al. (2013), who assessed symptom reduction after treatment with antipsychotics, found mean negative symptom reductions ranging between 3 and 15% for the respective antipsychotic agent and Leucht and colleagues report small to medium effect sizes varying between 0.09 and 0.32 (Stefan Leucht et al., 2009; S. Leucht,

Pitschel-Walz, Abraham, & Kissling, 1999). Elis and colleagues (2013), who reviewed more than twenty studies assessing the effects of additional CBT on negative symptoms in schizophrenia, report effect sizes ranging from small to large. The heterogeneity of the therapies' format and length as well as unspecified effect sizes, however, impeded the computation of a mean effect size and the drawing of interpretive conclusions. Moreover, in recent literature, negative symptoms are associated with depressive symptoms. Therefore, adjunctive therapy with antidepressants has gained center stage for their reduction. Singh et al. (2010) reviewed 23 trials and found moderate effects of treatment with antidepressants when given in addition to the usual treatment with antipsychotics. Yet, considering the amount of disturbing side effects of treatment with antipsychotics alone and poor treatment adherence to pharmacological interventions in general, adding up different medical therapies might not be in the interest of the patient. This is particularly important considering the patients' well-being as an important measure of their subjective experience of health. From the perspective of embodied affectivity, depression is characterized by a lack of bodily resonance (Fuchs, 2012). Since movement therapy can specifically address the affective dimension of schizophrenia and negative symptoms were shown to impair well-being by causing a high amount of suffering (Andrews, Sanderson, Corry, Issakidis, & Lapsley, 2003), it is likely that a reduction of negative symptoms mediates a more favorable psychological state and in turn increases subjective well-being. This might have been one of the reasons why subjective well-being significantly increased in our treatment group.

5 The Future of Embodied Approaches in Schizophrenia Treatment

There is no mental disease that does not affect the body, and in turn is affected via the body. Embodied therapies have the great potential to reach patients on their nonverbal level - the level of their 'lived' body (Fuchs & Schlimme, 2009). Accordingly, embodiment approaches have started to gain grounds in psychotherapy research and play an increasingly important role in the treatment of severe mental disorders such as schizophrenia.

The results of our research about the impact of embodied therapies on schizophrenia are encouraging. As described above mere medical treatment or a cognitive approach alone does not satisfy the idea of a modern biopsychosocial treatment approach. Complementing cognitive methods, embodied therapies improve clinical intervention strategies and fill a gap towards a more integrative, person-centered treatment of schizophrenia. Further research is needed to determine the underlying factors of the found symptom reductions as well as the improvement of well-being. Some scholars and many practitioners argue that merely quantitative research is not capable of capturing the various mechanisms of change of embodied therapies (Chace, 1957; Sabine Koch et al., 2014; Landy, 1993). To analyze therapeutic mechanisms of change, such as the therapeutic relationship, aesthetic experience and expression, flow and creativity, qualitative and quantitative and perhaps even new, innovative research approaches (vgl. Schiepek & Aichhorn, 2013) are

needed. Further evidence-based research can lead to an establishment of embodied therapies in the common treatment of severe mental disorders. This always implies an integration of embodied therapies into existing, well-established treatment structures. Like CBT, embodied therapies work best when basic inhibitory self-regulation is reestablished by the appropriate dosage of an antipsychotic agent. Medical treatment, CBT and embodied therapies together may therefore deliver the most adequate model for state-of-the-art schizophrenia treatment.

6 Conflict of Interest

The authors declare that there are no conflicts of interest in relation to the subject of this study.

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