

Embodied cognition and body psychotherapy: The construction of new therapeutic environments

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Abstract

New approaches in the philosophy of mind defend the idea that basic forms of cognition and human intersubjectivity are deeply and inextricably embodied and embedded. In its more extreme forms this approach to mind and cognition opposes the idea that cognition is always or primarily a matter of forming mental representations of that environment (Gallagher & Hutto, 2008; Hutto & Myin, 2013). Taking these ideas seriously in the context of therapy directs us to the way therapy can be enhanced by modifying environmental and social affordances and the way clients interact with them as opposed to how they represent them. These conceptual and methodological paradigms encourage a rethinking of existing applications, inspired by reformulating the theoretical foundation that underpins practice in body psychotherapy (BPT; e.g. Geuter, in press). Given the emerging evidence base for BPT in the treatment of severe mental health problems (e.g. Röhricht, 2009) it is timely to question whether its intervention strategies can be better understood as a kind of applied embodied cognition. In this paper we only explore BPT practice from a framework of its more radical variants. We explore new ways that effective therapeutic embodied engagements might be realised, while casting fresh light on how therapists can successfully venture into the everyday life of their patients and their interactions with significant others. This includes discussing a revised version of encounter groups and “marathon” workshops as well as experimental solutions such as “Virtual Reality” clinics.

Keywords: *embodiment, enactivism, embodied cognition, body psychotherapy, therapeutic environment, philosophy, intersubjectivity.*

1. Paradigm changes in theory and practice of body psychotherapy

There is a long tradition of emphasising the importance of working with and through the bodily realities and subjective body experiences in psychotherapy. The literature refers to a variety of different schools and employs terms such as “Body Psychotherapy”, “Body-Oriented Psychological Therapy”, “Somatic Psychology” etc. According to Heller (2012) Body Psychotherapy (BPT) is an umbrella term for all psychotherapies “that explicitly use body techniques to strengthen the developing dialogue between patient and psychotherapist about what is being experienced and perceived ... the body is considered a means of communication and exploration” (p. 1).

In BPT, the body is not understood as distinct from the mind – an entity that stands over and against it. Also, based on its holistic view of human existence, the therapeutic process in BPT fundamentally differs from those within so called talking therapies. BPT addresses the inseparable cognitive, emotional, perceptual and physical aspects of self-experiences within a given psychosocial context. Distinctive hallmarks of all body psychotherapies are: 1. Body activity and experiences are considered fundamental for the exploration of self and other in dialogical enactments, and hence they are regarded as important for diagnostic and therapeutic processes in therapy; 2. Due to its experiential and enactive nature, the therapeutic relationship in BPT is centred around immediate and interactive self / body experiences, involving body awareness, (at times) direct

physical contact (e.g. touch) and psychomotor expression; 3. The full range of expressive behaviours (posture, gestures, facial expression, movement) is flexibly and dynamically engaged; these are therapeutically utilised as required; 4. BPT recognises and emphasises the importance of creativity and personal resources/skills/capabilities for effective affect- and self-regulation.

Theory and practice in BPT has changed significantly over time. Body psychotherapy has been motivated by and formulated in terms of heterogeneous theoretical frameworks. Following a brief description of those historic roots and developments, we suggest in this article that BPT can find a new fruitful underpinning within the framework of radically embodied and enactive cognition. Hereby the paradigm is shifting emphasis from the “what” is experienced to the “how” of experiencing.

Historically, the development of BPT started with two main ideas at the beginning of the last century. Wilhelm Reich (1933), a psychoanalyst, proposed that conflict creates not only defence mechanisms but also patterns of resistance in body systems, and that such resistance can be addressed not only by verbal means but also through body techniques. The second main root developed independently out of body pedagogies where the main idea was that bodily systems could be regulated through active mindful observing, perceiving and sensing of one’s own body. Later, influenced by Humanistic Psychology and developments within the field of Psychoanalysis, experiential and experimental methods came forward. Specific importance was assigned to personal resources and interpersonal dynamics over drives and instincts (e.g. Soth, 2009). This fostered an emphasis on self-actualisation and the “here and now” aspects of the therapeutic relationship; therapist began exploring the psychic structure in the context of empathic and creative embodied intersubjectivity and for the restoration of a participative bodily self. Fuchs (2011) accordingly suggests reconsidering the unconscious as “the unrecognised reverse side of our experience and conduct” (p. 94). It is “not an intra-psychic reality residing in the depths ‘below consciousness’. Rather, it surrounds and permeates conscious life ... It is an unconscious which is not to be found inside the individual, but in his relationship to others” (p. 100).

Research findings in the field of embodied cognition and affective neuroscience stimulated the latest shift in theory and practice of BPT. The main focus is now upon the central importance of conscious bodily experiencing, emotion regulation and interactive (relational) self-management (e.g. Geuter, 2009 and in press, Röhrich, 2011). BPT treats meaning as originating in processes of embodied experiences and interactive relationships with others and the wider environment. Johnson (2007) suggests that meaning is grounded in bodily experiences. Meaning making – a

centre piece of any psychotherapy - is a process operating through our embodied experiences and emotional encounters, our sensory-motor responses to changes of the environmental milieu, “‘mind’ and ‘body’ are merely abstracted aspects of the flow of organism-environment interactions that constitutes what we call experience” (Johnson, 2007, p. 12).

Accordingly, clinical practice in contemporary body psychotherapies diverted gradually away from predominant efforts aiming at perceived patterns of resistance in body systems towards a flexible and integrated approach of both verbal and bodily engagement. In the past, BPT concentrated on working with chronic habitual motor responses to conflict – those that result in fixed muscular pattern of tonic contraction against the release of (supposedly suppressed) impulses and somatic responses to conflict. This form of embodied therapy progressed towards a therapeutic process aiming to help individuals in their efforts to regulate their interacting in the best possible, needs-based, way. Personal strengths and capabilities are recognised and effectively utilised whilst addressing dysfunctional response patterns to primary deficits and a history of adversity. In BPT such engagements explicitly and centrally include working with and through the range of somatic processes such as directing attention to, and thus changing, one’s breathing pattern or subtle and gross motor activity (facial expression, gestures, posture, movement, intonations). This, for example, proves useful as a means of adjusting emotional responses.

At the same time, body awareness techniques are utilized with a view to emphasise the importance of embodied activity for one’s state of mind. This involves for example working with different items on the body surface, attentional shifts with contemplative exploration of different body parts or introducing analogies with natural objects such as feather, stone, wood and the like. Interventions of this kind are combined with perception of hitherto unfelt emotions and affective regulation techniques, all in the context of interactions that unfold through the therapeutic relationship. Crucially, body psychotherapists achieve their results not exclusively through discourse and reflection but through dynamically interactive embodied engagements. This is achieved by directly engaging in affective resonance with and utilising the full range of the client’s emerging impulses and responses, bringing these to the fore through - for example - body awareness, movement and mirroring exercises. This suggests that therapeutic relationships established in BPT can be given a new theoretical grounding as they appear to be most naturally understood within an embodied and enactive framework of mind and cognition.

Going back to the roots of BPT, it is interesting to note that Reich had attempted to understand the living process within the context of drive theory and later

within the theory of the ultimate motivation of all living entities. He was searching for a universal force whilst proposing the existence of some kind of not yet discovered form of “energy” as the main bonding and holding principle of living matter (Heller, 2012, pp. 494ff). Enactivists, drawing on the theory of autopoiesis originating with Maturana and Varela (1992), suggest a different route that can be utilised for embedding the theory of body psychotherapy within the wider theory of life. Maturana and Varela (1992) recognise the self-organisational structure of living processes as the main unifying principle of life and mind. The living is characterised as a structure that is constantly recreating itself and re-establishing its boundaries. Living entities have an autopoietic organisation and as autonomous units they create their own boundaries in tension with the surrounding environment. Because living entities are constantly and actively producing themselves, being and acting are two sides of the same coin. Even on a very basic level when cells divide and reproduce in their internal biological milieu this is, in part, in response to their interacting with external factors. Maturana and Varela call this ‘structural coupling’: environment and organism are mutually dependent on each other; perception, emotion and action cannot be separated, and have to be therefore processed in parallel within therapeutic settings and environments.

2. A Radically Enactive Perspective - and potential consequences for psychotherapy

The embodied cognition movement has matured into a flourishing research program with many branches. Embodied cognition has come of age. Even traditionalists who view this program with scepticism admit embodied cognitive science is now a force to be reckoned with, one that: “is sweeping the planet” (Adams, 2010, p. 619). The main driver of its growth is a continuous stream of empirical findings that provide “substantial evidence in support of the pervasive occurrence of embodied cognition” (Goldman, 2012, p. 80). It is now beyond serious dispute that cognition is embodied in important and surprising ways.

Phenomenologically informed *enactive* views on embodied cognition emphasise the idea that perception is “for action” – it is *action oriented* – and that this action-orientation shapes most cognitive processes (Noë, 2004). Other, extended mind approaches, highlight the ways that body and environment can dynamically scaffold and take up some of the cognitive load (Menary, 2007). Accordingly the notion of cognition is broadened to include processes that happen between body and environment. In a process of problem solving, for example, extended mind approaches defend the idea that one doesn’t always arrive at solutions by thinking everything through by means of pure internal intellection. Rather, one may sometimes discover a solution to a problem through the manipulation of

different artefacts or technologies in the local environment. This may be as simple as using a pen and notebook to work out a mathematical problem (Clark & Chalmers, 1998). In the clinical context, this might take the form of arranging or manipulating the environment so as to facilitate the completion of a certain complex task, in the way a physical therapist organises the environment when promoting targeted activity.

Although these enactive, embodied and extended approaches to mind demand a significant philosophical rethink of traditional ideas about the nature, location and extent of minds it is still possible to understand these approaches in more or less radical ways. Despite the consensus that embodied and extended cognition must be taken seriously, there is continued disagreement about its nature. In many variations embodied and extended approaches keep faith with the idea that mental representations and contents are still, in some way or other, involved in the relevant mental activities. Radical (or replacement) accounts of enactive and embodied cognition, in contrast, take things further than, say, conservative sensorimotor and extended functionalist approaches to cognition (Wheeler, 2005; Clark, 2008).

Radical embodied and enactive accounts characterise cognition as essentially a kind of organismic activity taking the form of sensitive interactions stretching across the brain, body and environment (Dreyfus, 2002; Gallagher & Varela, 2003; Gallagher, 2005; Thompson, 2007; Chemero, 2009; Hutto & Myin, 2013). Inspired by scientific developments in robotics, dynamical systems theory and ecological psychology, the basic idea of cognition as embodied activity finds philosophical support from the phenomenological, American naturalist and Buddhist traditions of thought. The distinguishing feature of these more radical approaches is their wholesale opposition to the mainstream view that cognition essentially involves the collection and transformation of information in order to represent the world; fundamentally they challenge accounts of cognition that “take representation as their central notion” (Varela et al., 1991, p. 172), seeking to move away from the idea that the primary and defining work of minds is always, and at its base, that of representing and computing. Adopting the radical perspective, then, requires a major rethinking in our conception of bodies, brains and minds and how they are related. According to radical variants of enactivism and embodied cognition, the mind is not “in the head” – nor is cognition primarily a matter of manipulating representations; rather, mental activity is in the fullest sense truly distributed across body and environment.

To adopt the radical enactivist framework as a way of thinking about psychotherapeutic practice requires moving beyond the standard ways of thinking and talking about body-mind interactions. It requires therapists to work with individuals in a holistic manner where the mind is what the body does in its coupling

with an environment. Importantly, because environments are not just physical, but are also social and cultural, bodily engagement has social-cultural significance. Taking this last point seriously requires recognition that enactivism is not just a framework for understanding lone, isolated individuals moving about the environment. It applies equally to intersubjective and social processes – which are also conceived of in terms of embodied engagements and interactions. This is especially relevant for therapeutic practices. The enactivist perspective forces a shift in focus away from thinking of mental life as something that occurs exclusively within individuals. Instead, mental life is out in the open, and is something that happens in interactions between individuals, others and the features of their environment. Perception and cognition in the therapeutic process are modulated through bodily movements, postures, expressions, gestures, and actions of both the therapist and the patient. These may be primarily communicative actions, but the bodily aspects of such actions contribute to a co-creation of meaning, or what De Jaegher and Di Paulo (2007) call ‘participatory sense making’, which is central to the therapeutic process. Therapeutic interactions are intersubjective processes in which patient’s problems and possibilities for treatment can be understood as interactions between and with others and the world.

The bodily aspects of intersubjective interactions include both pre-reflective bodily self-awareness and awareness of the other’s body. In the case of social interaction, as in the case of action, body awareness is different than in non-active observation or in reflective self-consciousness of one’s body. For example, in action that involves reaching and grasping, the felt differentiation between hand and arm across the wrist is reduced (de Vignemont et al., 2009). That is, in action, the hand is not experienced as a body part differentiated from the arm, but is experienced as continuous with the arm: likewise the arm with the shoulder. In the case of intersubjective interaction, as we engage with the other, there is a mutual activation or resonance between bodies that dynamically inform the interactive process. Merleau-Ponty (1962) refers to this as an *intercorporeity* – an intersubjective embodied interaction that involves proprioception and kinaesthesia. This embodied engagement on the part of therapist and patient, and more generally, the relational interaction between them, forms part of the clinical reasoning and assessment processes, whether the therapist or the patient are reflectively aware of it or not.

This is a different model from the standard representationalist one which conceives of intersubjective relations in terms of third-person observation, where all of the important processes occur within the individual’s head. Purely observational judgments made by the therapist on the basis of visual observation of the patient in various bodily postural

attitudes differ from judgments made in the context of action or interaction between therapist and patient. Embodied interaction is dynamic, and as such, is not simply something that one or the other individual accomplishes on his own. In the intersubjective context, perception is often *for inter-action* with others, where perceptually-guided embodied interaction becomes part of the process that allows mutual understanding (De Jaegher et al., 2010; Gallagher, 2009a).

The kind of understanding that emerges through embodied interaction depends in part on what Trevarthen (1979) calls ‘primary intersubjectivity’ – the mutual perception of facial expressions, postures, movements, gestures, and the give and take of sensory-motor processes. This concept is supported by evidence from developmental studies that suggest infants engage in embodied intersubjective practices from birth (Meltzoff & Moore, 1994; Trevarthen & Aitken, 2001). In such engagements timing and emotional attunements are essential. Although minor disturbances in timing and attunement can be quickly repaired in the ongoing interaction, more serious disruptions can lead to a failure of understanding. In addition, since such interactive processes are always situated, i.e. they always happen within particular contexts, the participants’ understanding of the context or situation enters into their understandings of one another.

This idea of an enactive, embodied attunement between individuals has direct application in the clinical setting. Research on therapist-patient interaction demonstrates how the facial expression of the therapist mirrors patient’s restrained feelings (e.g. Merten et al., 1996; Dreher et al., 2001). Mimetic-affective interaction in the first therapy hour is a valid predictor for later psychotherapeutic success or failure (Rasting & Beutel, 2005). The therapist’s attuning to the cues, signs and symptoms of the patient takes the form of a process of *coordination to* and *coordination with* as described by Fuchs and De Jaeger (2009). The former involves individual unidirectional embodied actions; for example in the beginning of a session while the therapist orients herself and talks to the patient or settles the patient into position. The latter, in contrast, involves interaction and encompasses coordination *with* the patient. In these interchanges between therapist and the patient within a specific environment, both participants give and take, using a variety of bodily expressions: gaze direction, positioning, utterances and intonations, gestures, facial expressions, hands-on or other physical intentional interactions.

The full story of enactive social interaction includes more than this immediately embodied, primary intersubjectivity. It also includes ‘secondary intersubjectivity’ (Trevarthen & Hubley, 1978), in which physical environment and social context play an

important role in making understanding possible.¹ Secondary intersubjectivity involves just those aspects of understanding that are drawn from the particularities of the situation, and accomplished through joint attention and joint action, resulting, when things go well, in a shared sense of agency and a participatory sense-making. This implies that the everyday life settings in which the cognitive life of the patient plays out, including features of the clinical setting, can be critically important for the therapeutic process. The clinical setting – that is, the actual physical and social environment of the clinic – can be a major tool for the therapist’s specialist practice, and the clinic’s features may make a significant difference to successful embodied interactions.

3. Exploring Radically Enactive Approaches in Body (oriented) psychotherapy

We have discussed the important features of a truly and radically embodied, enactive and environmentally embedded account of basic cognition and experiencing. Taking this sort of approach to mind seriously requires therapists to be sensitive to the complexity of intra- and interpersonal, cultural, historic and ecologic circumstances of individuals. These – and not just what is inside the person, neither in their ‘minds’ or ‘bodies’ – must be taken into account when attempting to alleviate stress and or change the pattern of self-regulatory responses to a range of challenging, distressing, problematic, traumatic, adverse factors or events. Exploring aspects of these ways of experiencing the world is not something that should be done in isolation. Techniques in body psychotherapy should seek to actively explore a wider set of relational phenomena – what and how a person dynamically interacts and engages with. This is different to asking “why” in an attempt to establish causal relationships stemming from hidden mental phenomena that operate only ‘behind the scenes’ and ‘out of sight’.

The therapeutic interventions in body psychotherapy work on different levels, to a great extent directed towards affect-motor schemata (which need not be

understood ‘mentalistically’ but as active modes and styles of experiencing and acting). That is to say, such interventions aim to alter the patterns of experiencing and the corresponding regulation processes. Body psychotherapy in that sense seeks to treat dysfunctional embodied habits and tendencies by exploring and reconfiguring entrenched modes of experiencing and ways of interacting with the world and others. Even though the problem constellations are often out of reach of the psychotherapist, for change processes there is a need to explore and exemplify the settings in which such patterns or embodied responding unfolds: social groups, the workplace; the family home; the school; the university.

New, disorder-specific intervention strategies have been utilised for the development of group body psychotherapy manuals for severe and chronic mental disorders (schizophrenia, depression, somatoform disorder) and following successful evaluation of their efficacy in clinical trials they are now applied in clinical practice (e.g. overview Röhricht, 2009; Priebe et al., 2013; Röhricht & Priebe, 2006; Röhricht et al., 2011, 2013; Papadopoulos & Röhricht, 2013; Röhricht & Elanjithara, 2014). The manuals make particular reference towards working on the premise that intersubjectivity is deeply and inextricably embodied and embedded, whilst retaining a focus towards specific psychopathology. The two new models of embodied and enactive (action-oriented) psychotherapy described below (3.1 and 3.2) go beyond well-established body-psychotherapeutic attempts to help individuals identify, learn and implement new adaptive strategies in relation to patterns of regulation problems. They extend the perspective towards the embedded nature of these kinds of problems. These intervention models provide an appropriate point of engagement for the therapist who must venture into the everyday life of their patients and their interactions with significant others.

3.1. The Encounter (and “marathon”) Group model

Therapeutic interventions relevant to Encounter Groups (EG) resemble features of a model of therapy inspired by the embodied/enactive and environmentally situated framework. This is a model in which participants enact an environment of interpersonal constellations that is representative of their key social encounters in day-to-day life. The extended workshop (“marathon”) schedule over a period of 3-5 days allows for constant oscillation between the structured group therapy process and those procedures characteristic of family, friends, workplace, and inter-agency social scenarios. This is particularly relevant with respect to relatively common actions, such as caring for self and others, domestic procedures (cooking, cleaning), assignment of certain responsibilities prone to adapt

¹We note, in addition, the enactive approach acknowledges that social interactions, or more specifically, the interactions between therapist and patient, are not *wholly* and *solely* embodied interactions: they are also mediated and negotiated discursively by means of narratives. Both the therapist and the patient bring with them certain narratives that act as background for their expectations (Gallagher & Hutto, 2008; Hutto, 2008a&b). These narratives reflect both general social norms and specific patterns of expectations concerning clinical practice. All of these factors – the embodied immediacy of primary intersubjectivity, the contextualization involved in secondary intersubjectivity, and the narrative background – complicate, but also form crucial parts of therapeutic processes in the clinic.

hierarchical interdependencies and those triggering projective, inter-relational thoughts and feelings.

Encounter groups (EG) and the related model of marathon or extensive groups went out of fashion following fierce criticism regarding a perceived risk of harming participants due to the intensive exposure to strong emotions related to traumatic experiences. Elkins (2009, p. 271) refers to encounter groups as "the most visible manifestations of the humanistic movement of the 1960s" and Rogers (1970) called EGs the "most rapidly spreading social invention of the century" (p. 1). EGs emphasise the importance of both verbal and non-verbal interaction amongst participants and encourage open communication in respect of interpersonal issues, fostering open and emotionally charged dialogues, rather than the restricted inhibition of emotional expression that ordinarily govern social behaviour. The assumption in these groups is similar to that of person-centred therapy: the individual will grow in a positive way by challenging inadequate social restrictions and by interacting with others honestly and openly.

Elkins emphasises that the EG model was dropped because it was found "incompatible with the basic assumptions and values of contemporary mainstream psychology and with the conservative ideologies" (p. 267). This was at a time when a positivistic medical model was gradually applied in psychotherapy research and practice whilst Cognitive Behaviour Therapy became the dominant clinical model. A renewed interest in EG is currently emerging partially due to a general shift from individual to group therapy at times of austerity and limited health care funding; at the same time there is also a growing recognition of the importance of affective processes, empathic interaction and self-management. Rogers (1970) outlined the reasons for the EG movement: "It is a hunger for relationships, which are close and real; in which feelings and emotions can be expressed without first being carefully censored or bottled up" (pp. 10-11).

Elements of the EG approach applied within the therapy process include an emphasis on gestures of empathy/relatedness and an encouragement of expression of feelings (in posture, gestures, intonation, expressive motor action), sensitivity training and facilitated mirroring exercises. Depending upon the nature of the thematic focus, groups can be led by participants themselves with support from a therapist, who actively encourages dynamic movement-based enactments of thematic scenarios. The therapist provides structure and guidance as required, whilst giving room for spontaneous interacting of various responses to conflict and immediate support. Theme-based group therapy mostly starts with exploration of polarities such as "yes/no", "to follow/lead", "to give/take" etc., allowing each participant to relate to the theme based upon their individual biographical histories.

The overall focus in EG is on self-awareness, exploration and disclosure, sharing and mirroring in a non-judgemental, non-categorising manner. The approach is resource-oriented, solution focused, aiming to shift emphasis away from dysfunctional aspects of self-regulation to the possibility of personal growth.

3.2. A mixed reality clinic

One possible approach, which still remains experimental, involves constructing a clinic with the capacity to include virtual features of the sort that one finds in "Virtual Reality" (VR) and "mixed reality" (MR) environments. Hereby, the established therapeutic technique of working with and through embodied, interacted affective processes with imagined other persons (as in Gestalt therapy) are extended on the basis of new technological possibilities.

This technology-based, enriched intervention model resembles features of therapeutic techniques commonly employed in body psychotherapy, namely scenic enactments of past or present real life scenarios. The BPT manual for chronic schizophrenia (Röhricht & Priebe, 2006) for example includes creative inter-play such as group unison movement, creating body image sculptures, exploring spatial relationships in a safe contained space, engaging with others whilst handling objects such as buddy bands (e.g. holding one end each and lead or follow each other through room) or parachutes (e.g. holding it together in a circle with both hands, creating shapes or sounds manoeuvring it or pulling or letting loose). Common symptoms of boundary loss and somatic depersonalization are addressed with creation of virtual "homes" within the therapy room, using ropes, sticks and other objects to shape a place as open or closed as required; this place can then be approached ("visited") by other group members in order to explore intrapersonal closeness and distance features.

Preferably utilised in group BPT, these techniques can be used in an explorative manner, e.g. asking participants to play a particular part/role or function of their choice in a group sculpting activity such as actually creating an installation of a sculptured bicycle and make it work. In this task group members can embody the theme of "being an essential part of a function or process", representing anything from basic frame, pedals, wheels, lamps, a bell and the like. Whilst interacting according to a simple task such as moving forward patterns of intra- and interpersonal dynamics unfold in the experiential therapeutic environment; the therapist will relate to those emerging features as required, often leading to short pieces of individual therapy work in the midst of other participants, who often relate their own stories emotionally to the witnessed process. The other main purpose of such therapeutic enactments is to re-enact the virtual lived experience of a conflict or problem constellation. In this case other group members are often asked (based upon

perceived similarities) to play out a certain described role and corresponding characteristics of interacting, allowing the index patient to relate to the scene within the protected therapeutic environment. Initially this is done in a non-directive way so that the full range of cognitive, perceptual, affective and motor impulses can be enacted, followed by a more specific evaluation of consequences and alternative behaviours within the given interpersonal environment.

In the new, experimental model of a 'mixed reality clinic' spatial environments are created where participants interact with both physical (real) and digital (virtual) objects and environments in an integrated way (Milgram & Kishino, 1994). The construction of such virtual environments in a clinical setting, can introduce novel (more thoroughly embodied/enactive and environmentally situated) aspects to the therapeutic process (for reviews of efficacy and practicality, see Regenbrecht et al., 2006; Riva, 2005).

VR and MR have been used in medical and neurological therapeutic applications for a number of years. Cole et al. (2009), for example, used VR to provide a virtual arm for amputation patients with phantom limb pain. Use of the virtual arm to pick up virtual objects relieves pain that is otherwise chronic. Use of VR for hospitalized burn patients have also helped to address severe pain (Sharar et al., 2008). VR and MR have also been used in contexts of psychotherapy addressing phobias (for example, acrophobia [fear of heights -- Hodges et al., 1995; Rothbaum et al., 1995] and arachnophobia [fear of spiders -- Carlin et al., 1997]) and embodied disorders such as anorexia and eating disorders (Riva, 2005; Riva et al., 1998) and Post-Traumatic Stress Disorder (Difede et al., 2007). Carlin et al. (1997) used a mixed reality spider (a furry palm-sized replica of a Guyana bird-eating tarantula) in the treatment of a severe spider phobic. The patient used her virtual hand to explore the virtual spider at the same time that her real hand explored the physical replica spider. This provided tactile augmentation so that the virtual spider felt furry, and had weight. By using a position sensor, movement of the physical replica correlated with a similar movement of the virtual spider (Hoffman et al., 2003). The construction of MRs that replicate places familiar to the patient also finds application in therapy. Skills that are learned or re-learned within ME settings transfer to corresponding real-world situations better than those that are learned in VR settings. Following stroke, for example, the use of a MR kitchen that replicates the patient's real kitchen can facilitate both motor and memory recovery so that the patient can eventually take care of himself in his own home (e.g. Edmans et al., 2006; Pridmore et al., 2007).

This last example indicates the principle behind this approach. It is usually characterized in terms of brain plasticity, but is better conceived in terms of the overall system plasticity, where system means the self-

adjusting system of brain-body-environment. Changes to any one of these integrated factors can lead to pathologies or to cures. Changes to environment or to embodied practices can lead to plastic changes in the brain; and *vice versa*. Plasticity depends upon practice, and this suggests that in-clinic practice should be extended to extra-clinic practice – something that is feasible in some cases where the VR setting is portable. In other cases this may call for more intensive in-clinic practice.

A number of practical and theoretical issues remain open to further investigation. Consider the idea of psychotherapy that incorporates MR design (using VR computer technology and physical modules) to replicate a particular environment (based perhaps on a patient's drawing or photographs), or to expose a patient to an object or set of objects. In addition, avatar technology is advancing quickly, so that one could also introduce an avatar that resembles a particular person normally encountered in the replicated environment. Imagine the therapist and patient together walking into a mixed reality environment where the patient can interact with a virtual version of a significant other.

Imagine the therapist and a patient co-constructing a MR environment that replicates the delusional reality (Gallagher, 2009b) of a patient showing positive signs of schizophrenia. Could the virtual construction and then deconstruction of that delusion have positive therapeutic effects for positive symptoms of schizophrenia? Could a combination of BPT in a MR environment produce an even stronger effect on negative symptoms than BPT alone?

A first systematic attempt of avatar-based therapy is currently being evaluated in a trial conducted by researchers at the University College London, aiming to enable patients with schizophrenia to control the voice of their hallucinations. Results from a pilot study are encouraging, according to the researchers, three of the patients stopped hearing voices completely after experiencing them for 3-16 years. "The first stage in the therapy is for the patient to create a computer-based avatar, by choosing the face and voice of the entity they believe is talking to them. The system then synchronises the avatar's lips with its speech, enabling a therapist to speak to the patient through the avatar in real time. The therapist encourages the patient to oppose the voice and gradually teaches them to take control of their voices" (Weston, 2013).

One could argue that the virtual interaction of these enacted scenarios goes against the notion of the importance of embodiment in therapeutic encounters and this requires careful consideration depending upon the specific problems therapy aims to address; working within the context of new technological developments and utilisation of social media platforms can however significantly enrich the portfolio and offer creative new ways for therapeutic engagement (e.g. Goss & Ferns, 2010; Hanif, 2012).

4. Conclusions

This paper aims to address the important "so what" question regarding whether embodied, enactive approaches to cognition can provide positive advice and inform innovative changes in psychotherapeutic practice. Body psychotherapy can benefit from updating its theoretical framework in line with new developments in the philosophy and sciences of the mind. In particular, there is good reason to think that it can gain from taking seriously the more radical variants of embodied and embedded cognition, with which BTP is naturally allied. This yields two main benefits. First, it provides BPT practitioners with a better and more secure understanding of the relation between mental activity, the body and the environment compared to older accounts that are underpinned by a fundamental mind/body split. Secondly, as described in the final section, fully embracing the main lessons of radically embodied and enactive ways of understanding minds can both inspire and inform the development of new intervention techniques, allowing new BPT innovations in practice.

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- emphasis on schizophrenia; Prodromal signs and basic symptoms in psychosis; Self harm and service provision and Service care pathway development in integrated health care. In 2000 I published the first textbook of body-oriented psychotherapy in psychiatry, in 2006 I co-edited a comprehensive handbook on body image research methodology. Subsequently, I developed and evaluated treatment manuals for novel psychotherapeutic intervention strategies in anorexia nervosa and somatoform disorders and for patients suffering from chronic schizophrenia with marked and dominating negative symptoms. This approach is now recognised by NICE/UK as treatment of choice for negative symptoms in schizophrenia amongst other nonverbal therapies (NICE schizophrenia update, March 2009/13). www.frankrohricht.com

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Research profile

My research activities have been focusing on a variety of related topics: Body image phenomenology and Embodiment; Evaluation of Body Psychotherapy for the treatment of severe mental illness (chronic schizophrenia, chronic depression, somatoform disorder / Medically Unexplained Symptom Disorders); Evaluation of other innovative treatments: e.g. Ego-Consolidation Module for psychosis; (Transcultural variety of) ego-psychopathology with particular