

INTERNATIONAL BODY PSYCHOTHERAPY JOURNAL

THE ART AND SCIENCE OF SOMATIC PRAXIS
INCORPORATING US ASSOCIATION FOR BODY PSYCHOTHERAPY JOURNAL

volume seventeen | number one | spring 2018



EABP

EUROPEAN
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United States Association for
Body Psychotherapy
The Hub of Somatic Psychology

International Body Psychotherapy Journal*The Art and Science of Somatic Praxis**incorporating US Association for Body Psychotherapy Journal*

volume seventeen · number one · spring 2018

The International Body Psychotherapy Journal (IBPJ) is a peer-reviewed, online journal, published twice a year in spring and fall. It is a collaborative publication of the European Association for Body Psychotherapy (EABP) and the United States Association for Body Psychotherapy (USABP). It is a continuation of the USABP Journal, the first ten volumes of which can be found in the IBPJ archive.

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Print subscriptions: <http://www.ibpj.org/subscribe.php>

Printed single issue Members €17.50, Non-members €20

Yearly subscription: Members €30, Non-members €35

Two-year subscription: Members €55.00, Non-members €60.

Payment through bank transfer, American Express or PayPal.

Changes of address: secretariat@eabp.org

Advertising: jill.vanderaa@eabp.org

Translation The online Journal is published in the English language. Abstracts of articles are to be found on the IBPJ website in Albanian, French, German, Greek, Hebrew, Italian, Portuguese, Russian, Serbian and Spanish.
<http://www.ibpj.org/archive.php>

If an article originally written in another language has been accepted for publication in English, the full article may also be found in the original language.

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ISSN 2169-4745 Printing, ISSN 2168-1279 Online

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Publishers:

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TABLE OF CONTENTS**04 EDITORIAL**

Asaf Rolef Ben-Shahar, PhD

Nancy Eichhorn, PhD

Debbie Cotton, MA

Shamit Kadosh, MD

Yael Shahar, MA

06 A hero's journey

Ofra Sivilya

ARTICLES**07 Body of Lies: An exploration of Deceptive Strategies through Body Psychotherapy**

Nora Ahmed-Kamal

12 The Human Body and Psychological Trauma: Biological Explanatory Models. A review

Roncada, Gert, Vandeveld Benjamin, Calsius, Joeri

51 Developing Emotional Competence through Embodiment to Facilitate Learning: An Educator's Journey

Maria Stella

66 The impact of training and therapeutic practice on body awareness of Trainees and Body - Psychotherapists at the Greek Biosynthesis Centre - A pilot study

Maria - Olga Sakellariou and Ion Beratis

85 Walking through the Valley of the Shadow of Death**The Dying Patient in the Therapeutic Encounter: Relational Body Psychotherapy Perspective**

Shamit Kadosh

Spring Issue – Editorial

As our team culminates our second ‘Spring’ issue, we once again marvel at the potentiality we witness with its arrival. As humans, we symbolize and celebrate Spring’s presence as life in general awakens from a dormant state, as it unfolds, opens to receive the possibilities awaiting our energy and intention for transformation. Spring, it is said, offers new beginnings. Metaphorically, Spring represents the time and the space to move inward, to explore ourselves emotionally, physically, and perhaps spiritually to understand what transitions mean and how best we can use them to achieve our intentions. In terms of psychotherapy, change is on the horizon when we are able to be with our inner self honestly to: see what is there, not project illusions and fantasies; to sense what is held in our bodily being, not dissociate from possible pain, grief, overwhelm; to embrace our emotions as well as our cognitions to learn from our lives’ experiences; and to accept the transition once again from life to death as Spring eventually fades into Winter’s ultimate slumber.

The papers in this issue frame our psychological abilities to look within, sense within, be within, and accept what is to be. Our contributors share their research and their explorations into: body awareness; bodily lies and deceptions that impact the quality of our lives; emotional competence through embodiment to facilitate learning; and meeting death with compassion, grace, body-to- body, soul-to-soul. As well, we share a review of biological explanatory models dealing with trauma and the human body.

Maria - Olga Sakellariou, MSc. HRM and Ion Beratis, MSc, PhD share their pilot study looking at The Impact of Training and Therapeutic Practice on Body Awareness of Trainees and Body - Psychotherapists at the Greek Biosynthesis Centre. They applied a between subjects’ design to compare three different participant groups with varying psychotherapeutic experience regarding their personal experienced degree of body awareness. The authors’ intention was to capture a potential “developmental component in the cultivation of body awareness via learning of associated skills during Biosynthesis training”. Their overall results confirmed the developmental nature of body awareness and its central role in body psychotherapy as it “forms the cornerstone that is functionally connected to diagnosis, to therapeutic practice and to therapeutic embodied resonance”.

In her paper, entitled, Body of Lies: An exploration of Deceptive Strategies through Body Psychotherapy, Nora Ahmed-Kamal asks: What is the lived and embodied experience of deception? How does lying show up in the body? What is the impact of a body full of lies? She offers that to answer these questions “one must begin with the truth, and the truth is, ironically, that everyone lies”. As such, our daily acts of deception accompany us into the psychotherapeutic setting. If this premise is valid and true, then “how can somatic psychotherapists begin to bring more awareness and understanding to the process of lying in order to help clients work toward congruence, authenticity, and wholeness?” The purpose of Ahmed-Kamal’s phenomenological study sought to understand how lying manifested within the physical body and explore the ways deception may impact the body. “Deception,” she writes, “is at its base, rooted in survival”. Based on her study, five defense strategies were revealed in her findings—minimization, manipulation, regression, dissociation and falsification—noted as attempts to “remove us from certain emotional content and pain”.

Maria Stella shares an educator’s journey working with emotions in her paper, entitled, Developing Emotional Competence through Embodiment to Facilitate Learning. This personal anecdotal paper describes and interprets the author’s experiences, emotions, and encounters with self

and with others while teaching eight grief and loss courses. Through this process, she explores the role of emotions in teaching and learning. She concludes with recommendations on how to develop emotional competence and include it in various educational settings.

Our co-editor, Shamit Kadosh, writes about her clinical experience as a body psychotherapist and as a family physician working with a terminally ill patient. In her paper, entitled, Walking through the Valley of the Shadow Death: The Dying Patient in the Therapeutic Encounter: Relational Body Psychotherapy Perspective, Kadosh “introduces us to considerable human suffering and our ineluctable extinction” when we meet with “the dying patient in the therapeutic encounter”. She notes the scarcity of literature regarding dying in the field of body psychotherapy; thus, “from a relational body psychotherapy perspective and based on psychoanalytic, relational, and existential theories”, she discusses the intricacies involved when meeting terminally ill patients in the therapeutic encounter. She emphasizes the “significance of an embodied relationship and demonstrates how the psychotherapist’s body could potentially function both as a diagnostic tool and as an agent of healing”.

Roncada, Gert MSc, DO, Vandavelde Benjamin MSc, and Calsius, Joeri PhD offer their literature review on “biological explanatory models expounding somatic dysfunction or symptoms after psychological trauma”. Their co-authored paper, entitled, The Human Body and Psychological Trauma: Biological Explanatory Models, shares their research with the aim to add to our understanding of trauma on the human body on a clinical level and to contribute knowledge to substantiate to the daily practice of body psychotherapy.

Our contributors offer their clinical experiences and their research findings with the intention of starting conversations among their colleagues; healthy dialogue supports the space necessary for the advancement of our profession—feedback and interaction facilitate growth, transition, change. If you are inspired by a paper, if you feel a bodily sensation, notice a cognitive reaction/response when reading a paper, please let us and/or the author(s) know.

Our Fall issue is underway and just as Spring’s green leaves brown during summer in their preparation to transition from limb to ground in the Fall, so too, will our editorial team prepare for our departure. We have appreciated our time together, learning, writing, editing, with one another and with our contributors, all the while keeping our audience—you—in mind. To celebrate the change of our ‘editorial season’, we will offer papers written by our team as well as those from our colleagues—of course, all will have to pass peer review first.

For today, we wish you the space and time to reflect on your own transitions during this time of renewal.

IBPJ Editorial Team

Asaf Rolef Ben-Shahar
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Yael Shahar
Shamit Kadosh

A hero's journey Ofra Sivilya

She slumbers in the womb. He is suspended in the birthing canal. Some are pulled out suddenly. One brushstroke, between darkness and light. Some words are spoken on the way of colours. A rainbow of transitions, weeds and a mole and an earthwork. The wisdom of mushrooms coils in the belly of earth, butterflies.

When was it that I noticed this single sprout, a single green dot on wide horizons of black earth? A single ray of sun falls upon it, threatening to burn it, so it may forget the canopies, and from me, then...

How pleasant and secure to float on a cloud, knowing not what happens below.

To be closer to whom I used to be, perhaps. To recall who I was with, possibly.

The hot air balloon started to lose height. I prayed. Willing to lay my bare feet on a green field, or perhaps a clearing. Only don't let this moment pass.

Tightening shackles to an ankle, tying kites to both my wrists.

Keeping my pillar of fire, softly shining with flickering lights. Awakening the growls of the psyche, the yearning of spirit, keeping the she-wolf nearby. The wolves. I do not fully understand what is success; forests and oceans and mountains are reminders, as are wild flowers growing in my porch, enchanting me to close intimate conversations, whispering of depth and a great big hunger amidst infinite abundance, and wild things who learned not how to do things politely. Love too... When I return home, after many years of absence, and I shall realise how much more beautiful it is than I remembered, I shall once more walk down to the playground, willing to see where I came from, perhaps.

Body of Lies: An exploration of Deceptive Strategies through Body Psychotherapy Nora Ahmed-Kamal

Naropa University

Submitted May 2017; accepted September 2018

Submitted in partial satisfaction for the Somatic Counseling Psychology Program requirements of a master's degree in Body Psychotherapy

Abstract

The lived and embodied experience of lying has been largely under-researched in the field of Body Psychotherapy. Through a phenomenological approach to somatic inquiry, this study examines the subjective internal somatic awareness and experiences of deception and self-deception of three individuals. It explores the somatic defenses when coping with untruth and misrepresentation, and the somatic impact of deceptive behavior in the body. The narratives of the participants suggest three findings: 1) there exist five core somatic coping strategies when deceiving, 2) the body is an important source of knowledge of their deceptive behavior, and 3) honesty can support bodily release in the imprint of lying. The need for further research and more in-depth study of deception within therapeutic encounters is highlighted.

Keywords: deception, lying, defenses, strategies, body psychotherapy, incongruence

International Body Psychotherapy Journal *The Art and Science of Somatic Praxis*
Volume 17, Number 1, Spring 2018 pp 07 - 21. ISSN 2169-4745 Printing, ISSN 2168-1279 Online
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Introduction

What is the lived and embodied experience of deception? How does lying show up in the body? What is the impact of a body full of lies?

Before being able to answer these questions, one must begin with the truth, and the truth is, ironically, that everyone lies. Most of us are engaging in acts of deception to some degree on an everyday basis. The psychotherapeutic encounter is no exception to this truth. As such, how can somatic psychotherapists begin to bring more awareness and understanding to the process of lying in order to help clients work toward congruence, authenticity, and wholeness?

To begin with, we must start with an understanding of our biology. Human somatic responses to danger and threats are hard-wired into our autonomic nervous systems as a means of survival (van der Kolk, 1994), while social and emotional threats elicit the same physiological response as physical ones. Humans are continuously met with the fear of conflict, rejection, judgment, loss of control, or harm. Deception is a product of living in a fear-based society, and lying serves as a survival mechanism to protect oneself from these threats (Von Hippel & Trivers, 2011). Interestingly, the development of deception as a

survival mechanism indicates that the need for love and acceptance is stronger than the need to be honest. One will often choose deception, including self-deception, over one's own integrity. However, as Caldwell (1996) points out, "this sacrificing of genuineness in the service of getting love is very painful" (p. 45).

Kurtz (1990, p.1) claims that the body's "tone, color, posture, proportions, movements, tensions, and vitality express the person within. These signs are a clear language to those who have learned to read them". In being able to read and interpret this language, the body can become an individualized lie detector. As somatic psychotherapists in particular, we see the therapeutic relationship as a space to explore and become aware of bodily sensations and experiences, and the ways in which both truth and untruth live in the body. I believe that one of the therapist's roles is helping clients to familiarize themselves with the somatic experience of deception. Consequently, clients might be better able to discern between what is true for them and what is not, allowing for congruence to develop. This process requires, however, that the therapists also do their own work in moving toward a more honest and congruent way of being (Kottler, 2010; Kottler & Carlson, 2011).

As psychotherapists, it is crucial that we investigate the ways we either consciously or unconsciously deceive ourselves and/or our clients out of our desire to maintain rapport and to protect our clients from pain or discomfort (Curtis et al., 2015; Kottler & Carlson, 2011). By looking at how our lies impact our body (*somatic awareness*), we can further explore and uncover our own biases as a way to support our clients. The body, as a result, becomes a vehicle to our unconscious material. For the purpose of this study, I explore the somatic cues and responses individuals feel as they experience untruth and misrepresentation in their bodies. In addition to the narratives explored, I discuss the relevance of this information to the field of Body Psychotherapy.

Review of Literature

Much of the emphasis in somatic psychology has focused on the subjective internal experience of the body (Hartley, 2004; Johnson, 2009) with little reference to how that experience translates to deception, and its social implications. Numerous studies research the relevance of recognizing markers of deceptions, particularly within the context of law, politics and government (Arico & Fallis, 2013; Ekman, 2009; Mann et al., 2013; Von Hippel & Trivers, 2011). Yet, these studies fail to establish ways of measuring and understanding the subjective internal somatic experience of deception. Measuring the internal experience of what happens inside the body requires extensive research. Some of the attempts to investigate have included utilization of various forms of lie detecting technology, such as the polygraph, measuring physiological activity (Ekman, 2009), and electroencephalography, mapping the activation in the anterior insula (Baumgartner et al., 2013). Nevertheless, further research should examine the individual's lived experience with deception, which this qualitative study intends to explore.

Somatic awareness has been defined as a type of knowing that focuses on the internal awareness of the body, as well as an awareness of the body's physical appearance (Csordas, 1993; Dzokoto, 2010). Bucci (2003) describes this type of knowing of self and others' bodily states as subsymbolic processing. The extensive literature on lie detection focuses on external, observable somatic physical cues. Alternatively, this research aims to expand knowledge within the field of Body Psychotherapy as it relates to lying by learning from participants' non-observable, internal somatic awareness.

Lies & Deception

Lying is a universal, ethical phenomenon that follows us from birth to death, and is a part of everyday life (Arico & Fallis, 2013; Reinhard et al., 2013; Smith, 2004). The field of deception is an ancient study, discussed for centuries among philosophers, sociologists, psychologists and biologists (Ekman, 2009; Kotler, 2010; Martin, 2015; Smith, 2004). Lying can be traced back to the creation of language, and emerged out of the need to story-tell and gossip (Smith, 2015). In fact, even non-verbal living organisms are deceitful: plants, insects, and animals all take many dishonest forms through camouflage and colorations. However, what differentiates us from other primates and species is our ability to lie both verbally and non-verbally, and hereby to be the most dishonest (Kottler, 2010; Smith, 2015).

Lies occur in various ways, both consciously and unconsciously, spoken or unspoken (Smith, 2004; Von Hippel & Trivers, 2011). Variations of lying are enveloped in terms such as falsehood, untruth, incongruence, misrepresentation, control, manipulation, camouflage, white lies, and living truth (Ekman, 2009; Martin, 2015; Smith, 2004; Von Hippel & Trivers, 2011). Whatever the name may be, these various forms of lies can be summarized into two primary categories: *Concealing* refers to depriving or withholding information, and *falsifying* refers to presenting false information to others (Ekman, 2009; Smith, 2004). Consistent with these definitions, Carlo Collodi – author of *The Adventures of Pinocchio* – demonstrates the two types of lies in the story: "Lies, my dear boy, are found out immediately, because they are two sorts. There are lies that have short legs, and lies that have long noses. Your lie, as it happens is one of those that have a long nose" (as cited in Martin, 2015, p. 79). The long-nosed lies are evident and consist of false information, the type of lying in which someone could watch your nose slowly grow longer and longer with every mistruth. On the contrary, short-legged lies are less apparent, hiding true information. One would not know how short someone's legs are if they are kept hidden; perhaps they are standing on stilts (Martin, 2015). Concealing and falsifying as two distinct forms of lying help us to understand the sometimes nuanced ways in which people lie, and are also apparent in the findings of this study, in which the strategies I identify fall into either category, or use a blend of both.

Deception as Survival

Human connections keep us alive and provide meaning and healing to our lives (Brown, 2012; Caldwell, 1996; Esch & Stefano, 2007; Somé, 1998). Caldwell (1996) elaborates, "the need for love has more survival value than the need to be genuine" (p. 44). When the human nervous system is in threat, the body attempts to survive through defensive mechanisms: the flight, fight, freeze and collapse (Levine, 1997; Ogden et al., 2006). Caldwell (1996) further explains that when we feel unlovable, the body experiences a deep pain, and "the body will automatically take action to minimize it" (p. 44). To survive we need relationship before anything else (Brown, 2012; Wallin, 2007). Lying can essentially keep threatening things out and serve as protection to maintain these connections. Hence, deceit is a fundamental part of human experience; it is a survival mechanism, a primal way of communicating, as well as a manifestation of our growing intelligence (Smith, 2004; von Hippel & Trivers, 2011). Recognizing deception as a survival mechanism can increase our curiosity and understanding of our lying, allowing for a deeper exploration of the somatic experience.

Deception as Defense

Although deception does not explicitly appear in Freud's writing, the topics of repression, defense, and resistance relate to the mechanism of deception (Erwin, 2002). According to Freudian psychoanalytic theory, defense mechanisms are unconscious strategies that protect our core sense of self (the ego) from information that would hurt us (Berzoff et al., 2008). Kurtz (1990) describes defense mechanisms as character strategies that "are organized, habitual patterns of reaction," and therefore deception is oftentimes a repetitive and unconscious behavior (p. 42). In Hakomi therapy, there are eight major strategies, two of which center specifically on deception. The strategy *Deception I: Tough-Generous* manipulates as a means to obtain social acceptance, with the deception focusing primarily on "strength and power" (p. 45), whereas *Deceptive II: Charming-Manipulative* individuals lie about their "motives and their true feelings" (p. 45) and struggle with honesty and vulnerability. The degree of vulnerability influences the level of deception (Brown, 2012; Kottler & Carlson, 2011). In other words, the more vulnerable a person presents, the less defensive the person is, and the less prone they are to be deceptive.

Self-Deception

Research shows how deception and self-deception go hand in hand, entangled with ambiguity as to when a behavior is considered self-deceptive or another process is at work without knowing more about their situations (Shapiro, 1996; Von Hippel & Trivers, 2011). *Self-deception* is the process of convincing ourselves that a lie is true (Von Hippel & Trivers, 2011). It can be a gradual unconscious intrapersonal process (Ekman, 2009), but it may also evolve to facilitate interpersonal deception, meaning we deceive ourselves in order to deceive others (Kottler, 2010; Smith, 2004; Trivers, 2013).

Researchers agree that self-deception is an unconscious experience where the self is both the deceiver and the deceived (Shapiro, 1996; Trivers, 2013; Von Hippel & Trivers, 2011). Deception is a defensive mechanism that supports our self-worth and serves to deal with life's many stressors (Smith, 2004). Examples of self-deceptive defenses are denial and dissociation, which are often unreachable to the conscious mind (Cozolino, 2010). Self-deception creates an illusion of ourselves, and helps us convince others that we are better than we actually are (Von Hippel & Trivers, 2011). What is particular to self-deception is that the lie is invisible to the liar (Ekman, 2009; Von Hippel & Trivers, 2011). Neuroscience studies explain that "defenses are often invisible to their owners because they are organized by hidden layers of neural processing that are inaccessible to conscious awareness" (Cozolino, 2010, p. 34).

Similarly to lying, a form of self-deception is through the mechanism of concealment, a strategy which avoids information or withholds telling oneself the whole truth, through self-misrepresentation, rationalization, self-talk, or storytelling (Smith, 2004; Trivers, 2013). This strategy can occur both consciously and unconsciously.

Somatic Expression of Deception

Body Psychotherapists integrate the verbal as much as the non-verbal; the therapist pays equal attention to what the body is saying as to the spoken words (Goodrich-Dunn, 2004; Hartley, 2004; Johnson, 2009). Research on deception has correspondingly been studied through both the verbal and nonverbal lens, detecting and understanding the deeper layers of information behind dishonesty. Caldwell (1996) explains that the body communicates through inner bodily sensations. By paying attention to our physical sensations, the client is able to

access stored information and an inner wisdom. Body Psychotherapists namely work with the belief that the conscious mind cannot solve all problems, but rather healing and integration must also occur at a bodily level (Cornell, 1996).

Martha Graham poignantly says, "The body never lies" (as cited in Cozolino, 2010, p. 100). Our body interrupts our mind's effort to deceive (Sebanz & Shiffrar, 2009), and so we employ different techniques to try to hide that which might give us away. Findings demonstrate that we possess the ability to manipulate our bodies through voice, movements and gestures (Ekman, 2009; Sebanz & Shiffrar, 2009; Smith, 2004). When people are expressing lies, they will try to control their nonverbal communication (Von Hippel & Trivers, 2011). For instance, people tend to seek more eye contact to convince that they are telling the truth, and checking whether the deceived appears to believe them (Mann et al., 2013). It is more challenging to manipulate our bodies, particularly our facial expressions than it is to falsify our words (Duran et al., 2013; Ekman, 2009), as "the face is directly connected to those areas of the brain involved in emotion, and words are not" (Ekman, 2009, p.83). When deceiving, there is an incongruity between words and what the body reveals through voice, face and movements (Ekman, 2009). Further, the limbic system has developed to recognize and control the body's reactions to emotions (Cozolino, 2006; Cozolino, 2010). When emotion is aroused, muscles in the body begin to fire involuntarily (Ekman, 2009). The stronger the emotion the more likely the lie will leak through the body. For example, it is much more difficult to conceal one's rage than it is to conceal one's annoyance, as rage will often be revealed through jutting jaws, stiffness in the neck, and tense shoulders (Kurtz, 1976). Lying is inherently connected to our emotions, as our emotions tell the truth, even when we do not want to listen to them.

Scholars agree that there exist unconscious nonverbal cues in deception. Caldwell (1996) describes these somatic cues as movement tags; Ekman (2009) defines them as microexpressions, and Smith (2004) as micros that last less than a second. Self-deception can be detected through somatic cues such as "signs of nervousness, suppression, cognitive load, and idiosyncratic sources" (Von Hippel & Trivers, 2011). These represent the involuntary true expressions that the person deceiving tries to conceal. Smith (2004, p.18) further explains that "nonverbal deception is probably part of an infant's hard-wired psychological survival kit, but explicit verbal lying is a developmental acquisition that is dependent on a high level of cognitive sophistication.

To be authentic and honest with ourselves, we must begin by engaging presently and truthfully with our emotions (Cornell, 1996; Ekman, 2009). When we experience strong emotions, it becomes more challenging to control our body movements to hide that felt emotion. It requires careful awareness of words, sounds, voice, facial expressions, gestures and body moments to attempt to conceal (Ekman, 2009; Von Hippel & Trivers, 2011). The embodiment of deception is individual; there is no universal visible behavior suggestive of deceptive communication nor a single translation to the somatic signs of lying (Curtis et al., 2015; Ekman, 2009).

Methods

The purpose of this study is to understand how lying manifests within the physical body, as well as the ways in which deception impacts the body. For this study, I turned to the phenomenological method of inquiry and field theory. Participants were chosen for this study based on two criteria: 1) Participants expressed an interest and willingness to explore their somatic experience of untruth and misrepresentation both verbally and non-verbally, and 2) Participants expected that participation in the study would afford them increased personal

insight into their experience. Participants were recruited mainly from the student and staff bodies at Naropa University in Boulder, Colorado.

I engaged with each of the participants in a private, video-recorded, qualitative semi-structured interview, each lasting approximately 45 to 60 minutes. At the beginning of each interview, participants had the opportunity to access the felt sense in their body by checking in with the current experience in their body in order to elicit somatic awareness and information.

Somatic awareness in this study includes physiological processes, inner body sensations, emotions, words, sounds, temperature, gestures, and movements that show up in and through the body. Participants were then asked to answer three questions, allowing ten to twenty minutes to fully answer each. The three questions were as follows:

1. Bring to mind a memory of a recent experience where you misrepresented yourself to a larger group or community. Notice what happens in your body as you share.
2. Share a recent experience where you withheld information or did not tell the whole truth to a relative, friend, partner or other individual. Notice what happens in your body as you share.
3. Reflect on a time where you denied the truth to yourself, or where your behavior didn't match what you felt/thought. Notice what happens in your body as you share.

The interview focuses on the participants' personal experiences of misrepresentation and untruth, and how these experiences show up in their body.

All interviews were recorded using a digital video recorder, and were transcribed. Three narratives were developed from the interviews, and although the length of the original narratives does not permit for their inclusion in this paper, highlights and direct citations from the narratives are interspersed throughout the elaboration on the research findings. Data was collected and analyzed by utilizing clinical notes taken from direct client observation, verbal and non-verbal transcripts of the interview. For confidentiality reasons, pseudonyms will be used in place of the participants' real names. The participants referenced in the findings include Magdalena (a biracial Latina cisgender woman in her late-twenties), Lauren (a White cisgender woman early-sixties), and Darius (a first-generation Asian-American cisgender man in his mid-forties). Other dimensions of difference were disclosed by participants and included in the data analysis, but to maintain confidentiality, those details will not be included. The interviews were transcribed and coded using in vivo and descriptive coding methods. Ethical approval was obtained from Naropa University prior to the commencement of the study. The consent form and the research process were reviewed at the beginning of each interview.

Findings

The analysis generated over 50 meaning units that were finally organized under five categories from an initial assessment, transcripts, and clinical notes taken during and after the interview. From the data analysis, the following information was organized and developed, and the table below illustrates the most common strategies when engaging with deceptive behavior, their function, and the somatic expression reported or observed.

Strategy	Function	Somatic Expression
Minimization	Allows individual to decrease the intensity of the undesired or painful emotions that arise when being deceptive.	Real constriction Tightness and tension in body parts (includes jaw, throat, shoulders, stomach, neck, chest area, face and more) Difficulty breathing. Forced breath "Tip-toeing." Carefulness.
Manipulation	Enables individual to modify the situation or truth for personal benefit, using control through power or charm towards others.	Humor (includes smile, laughter and sarcasm) "Strong" and attractive appearance, large body posture Gestures of being in control Absence of vulnerability
Regression	Allows individual to find protection by returning into earlier stage of development, with the aim of getting one's needs met by acting childlike.	Collapsed posture Small, Ball shape Inner child visuals. Sadness. Tears
Dissociation	Protects the individual from distressing, deceptive material by disconnecting from an overall sense of awareness.	Freeze responses. Frozen stare Bodily detachment Inability to feel all or part of the body Unaware of breath Numbness. Deafness. Shut-down. "I am not here now"
Falsification	Removes the individual from their internal bodily experience and emotional content by behaving with a separate expression and emotion.	Humor (includes laughter, sarcasm) Incongruence between inner and outer experience. Removal from the body. Masking through other emotion.

Minimization A natural physiological response to deep, unresolvable bodily and emotional pain is to keep ourselves away from it by making it smaller, less intense, less painful. This moving away from the full reality of our experience as a way of coping is the process of minimization (Caldwell, 1996). Lying through the use of minimization or exaggeration has long been recognized as a problem in the practice of medicine (Kottler, 2010), and this phenomenon is starting to become more visible in the field of psychotherapy (Curtis et al., 2015; Kottler & Carlson, 2011). Minimization is considered to be a milder version of denial since the experience or emotion remain present, but their magnitude and impact are rejected.

Several of the participants offered insight and understanding into how their bodies suppress or withhold emotions and experiences as deception happens. In particular, participants described experiences of minimization that focused on a) rejecting their emotions and self-expression, b) withholding information from others, and c) withdrawal from the body or resistance to bodily sensations. For example, as Darius recalled an experience of misrepresenting himself towards a larger group, he reported feeling deep constriction and discomfort in his body: forced breath, throat tightening, difficulty speaking, tension along the neck, and back pain. All evoked resistance towards his present internal body sensations and a need to reject or get rid of his emotions as a way to find release and feel better. For example, Darius forced a breath in order to “feel more like I usually feel,” wishing to do anything possible to be released from the constriction in his body.

This strategy was echoed in Lauren’s reaction to her deceptive behavior. When asking her about her somatic experience and emotional state around an experience she was sharing, she described the desire to put the emotions aside, and named the feeling of being “kind of upset” or “kind of hurt.” She further described the need for space to make meaning of her experience, and how time allowed her to realize how she was denying the full truth to herself as a means of protection. Both narratives describe psychological patterns to decrease the intensity of participants’ emotions either verbally or nonverbally, which had at its root the feeling that their full selves and/or experiences were not allowed to be present. Or as Lauren described, “It felt like it wasn’t appropriate to share all of whom I was.”

Manipulation The manipulative strategy refers to the ability to get the better of others by aiming to control or change behaviors or perceptions of others (Von Hippel & Trivers, 2011). This defense is rooted in the fear of losing control over the situation or of others. This pattern often gives the impression that a person is stronger or more important than they actually are (Kurtz, 1990). Participants in the study spoke about the need of being in control of their emotions to maintain a certain appearance, an appearance that they believed would somehow serve them socially. Maintaining a positive personal image is often at the root of this defense, which makes sense considering that humans are social beings who have historically relied on group membership and acceptance for survival.

In order to find love and acceptance, people often lie to make themselves more desirable to other people. Kurtz (1990) suggests that this manipulative strategy is presented in an attractive manner to others and will often feel “slick” or elusive. Darius delineated this seductive behavior and provided more information on the slickness:

I can be slick in a group that way. Like here we go. Let me use some of my verbal skills, or personality to gloss things over in a good way. So I am not like...let me rock the boat, and stir shit up right now and call people out - even though internally that’s present. So the slickness is like ok...let me get a little bit soft, let me make it sweet for people to maybe get some of what I want to say without it being like “fuck you” or “you!”.

As we unpacked the surface of the charming behavior, Darius described a concern for how others would receive what he had to say. What arose was a fear of rejection and not being accepted for being himself, and the scarcity of vulnerability: “To be truthful I have to be vulnerable.” Brown (2012) defines vulnerability as uncertainty, risk and emotional exposure, as well as the pathway to true belonging. At the cornerstone of manipulation is the need to hide how one feels and who one really is. Throughout the interviews participants spoke to the absence of showing up and being themselves, and thereby unable to be vulnerable. Behind the manipulative mask a felt sense of sadness emerged throughout all three interviews. Magdalena shared the transformative shift of emotions moving from anger, to self-protection, to a sense of sadness, which enabled her to be more in touch with herself. This experience of intimacy with oneself relies on moving past our own defenses and opening ourselves up to the possibility of being rejected or disliked.

Regression Throughout the data, all three participants brought in childhood memories or inner-child experiences when speaking about deception. Regression is a phenomenon of adulthood, and involves regaining childlike patterns of behavior shown at an earlier time in development to cope with emotional responses and stressful situations, rather than acting in what is considered more responsible and adult behavior (Mercer, 2011).

The childlike phenomenon was demonstrated in Magdalena’s narrative as she recalled a past memory that existed within her body and felt closely connected to the deceptive experience. She described the emotion as familiar, paired with the need to protect her heart. As Magdalena depicted her younger self, she talked about experiencing hurt and a sense of brokenness. Magdalena’s body posture was reflective to Kurtz’s (1990) *dependent-endearing* strategy where the feeling is one of collapse, revealed through a low-tension body: the chest is collapsed, the shoulders and head forward and crunched into lower-level shape forming a ball (Dell, 1977).

The recounting of Lauren’s recent experience provided another example of the impact of regression. Lauren shared how, upon feeling rejected by a friend, she concealed her emotions of how the perceived rejection had impacted her, using sarcasm as a way to deflect her true emotions. Later, when the friend came back to her to create repair, she stated, “I thought, ‘My little temper tantrum worked’”. Lauren contemplated whether she felt that the temper tantrum was ‘good,’ as it provided her with the connection she had been wanting. However, she realized that to actually feel satisfaction in the repair, she needed to be honest and vulnerable with the friend about how she had been feeling hurt in order to allow herself to reconnect to her body and open her heart. Although regressive strategies may provide us with what we think we want, they also create separation both within ourselves, and between ourselves and others.

Dissociation Dissociation is a natural phenomenon that serves to separate the self from a painful idea or experience by disrupting certain perceptions of the environment, and is often highly correlated with trauma (Berzoff et. al., 2008; Johnson, 2009). The dissociative mechanism aims to protect the individual from distressing material by disconnecting from an overall sense of awareness. Bromberg (2003) adds that dissociation is “a defense against trauma by disconnecting the mind from its capacity to perceive what is too much for selfhood and sometimes sanity to bear” (p.561). He argues that dissociation allows for an individual to switch between different self-states each associated with mental content that feels compatible with that particular self-state. However, content that is incompatible with the self-state will be experienced as being separate from the self. In the therapeutic setting, clients will have difficulty relating to content that is incompatible with their current self-state. Psychotherapy, then, can aim to restore connection and continuity between self-states, allowing the client to hold both experiences as being true.

In the interviews, the somatic expression of dissociation was illustrated in the absence of words and movement. As Magdalena recalled an intense traumatic experience, she sat for several minutes without speaking, staring into the floor, covering her eyes with her hands. Magdalena explicitly stated not having words or voice to speak about the experience.

Throughout the entire interview, Darius demonstrated a strong somatic awareness and tracking of inner sensations. Interestingly, at one point Darius struggled finding words, and characterized the situation he was describing as freeze, experiencing strong resistance to the content presented, and not knowing what to do with self; he reflected “Oh I totally spaced out for those 20 minutes. Where was I?” Both situations suggest an effective dissociative strategy through the process of deception, in which the participants switch between self-states according to the content of the interview.

Falsification Ekman (2008) writes, “The best mask is a false emotion” (p.33). His research shows that it is easier to falsify self by putting on a pose or character than it is to look unemotional. The mask conceals the strong emotions, and allows the individual to be removed from true self, using a camouflage that has its own set of expressions. This strategy supports individual in gaining distance from the situation, their emotions, or/and their entire body. Individuals use this defense strategy when it is essential to conceal their emotions. All three participants expressed putting on a mask or a performance, often in situations where they felt neither safe nor comfortable showing a certain degree of emotion to others. Darius described this strategy as a need to be portrayed in a different light in front of other people, separate from his internal experience, by either wearing another mask or putting on a performance.

Magdalena spoke of the necessity to mask her emotions when facing oppression, particularly racism. She shared not feeling safe to express her authentic experience with a group, feeling afraid of how it would be received by the others. Hence, she felt she had to pretend to feel differently. When exploring what was actually true for her, she described a feeling of release in her body, accessing her breath with more ease, and allowing more expansive sensations in her body.

Ekman (2009) says that “the smile is the mask most frequently employed” (p. 35), and is the easiest voluntary somatic expression to make. Variation of smiles and laughter appeared from participants on average every five to ten minutes throughout all three interviews. Although I cannot assume that the smile appeared to hide an emotion, in most cultures, social smiles are employed to please others (Ekman, 2009). In this defense, humor is often used to conceal unpleasant emotions; it allows a break from the discomfort and enhances overall functioning. In psychoanalysis, *humor* and *sublimation* are described as the most effective, mature defensive mechanisms used by “healthy” adults (Berzoff et. al., 2008). Lauren spoke to this experience, describing an episode using sarcasm as a means of protection in a situation in which she felt hurt by another person’s actions. In Lauren’s narrative, she named that it was not until later that she became conscious of her sarcastic comment and use of humor as a way to navigate the interaction. As she took time to translate and process her experience, she realized that she had not been in her body, and had used humor to separate herself from the painful experience.

Discussion

The themes that emerged from the narratives in this study help to illustrate how the body serves as a source of knowledge around deception, and how lies protect humans from both real and perceived threats. Deception is, at its base, rooted in survival (Von Hippel & Trivers, 2011). Five defense strategies came up in the findings (minimization, manipulation, regression,

dissociation and falsification), and these defenses attempt to remove us from certain emotional content and pain. The bodily experience of lying narrated by participants also reflect the more complex, nuanced understanding of the how body and mind interact, and thereby how that influences notions around what is true and what is a lie.

The findings from the qualitative study supports the research (Trivers, 2013; Von Hippel & Trivers, 2011) that all lies are fundamentally rooted in self-deception, that to deceive others, one must deceive or omit a part of self. The data suggests that it takes a lot of strength and courage to admit the truth, as participants described the difficulty in being truthful and dealing with the consequences that follow with truth. Throughout all three interviews this self-deceptive behavior surfaced as various strategies of coping with deception. All the research participants spoke about the ways they keep themselves protected when deceiving, and how their bodies naturally develop strategies to defend them from undesired or unpleasant emotions.

My hypothesis states that lying is essentially the holding back of emotions from the body. First, we experience a particular sensation or set of sensations within the body; it is a non-volitional, internal experience. Afterwards, we identify this in our mind as an emotion. However, if one is wishing to conceal that emotion because one is afraid of rejection in showing or expressing that emotion, then one deceives or conceals. This process of deception requires disengaging from the immediate and truthful somatic experience and either lying verbally, or manipulating one’s volitional body movements and facial expressions in order to present a different emotion. It is important to note that deception is often considered taboo and holds a pejorative connotation, as if the person deceiving is bad or weak. In reality, deception is a larger strategy that holds many forms of defense. These defenses “are always attempts to preserve psychic integrity and survival under the pressure of stress and fears” (Berzoff et. al., 2008, p. 80). Hence, the lies that occur in the body result from defenses that reflect the best choices available that the individual is capable of making, considering the circumstances.

Limitations

The scope of this research serves to present preliminary findings on the somatic experience of deception and its defenses, thus it is not meant to make any universal assumptions or claims about the somatic expression of lies, nor how a therapist should work with deception. Due to constraints pertaining to time and resources, I used convenience sampling. Three participants were included in the study, and the participants were all associated with Naropa University, which strongly focuses on contemplative education. Hence, they are all affiliated with a higher-education institution, and have a strong awareness of self and body which may influence the ways in which they think and speak about their experiences.

Implications for Practice

A number of questions emerged from the research with respect to implications for practice. How does the therapist confront clients with their own deception? How is the therapist creating an environment that fosters either lying or being honest? And how does the therapist’s own self-deception come into play? As therapists, we have to believe our clients and work with what they present to us. Otherwise, we would not be able to step into the therapeutic relationship and work together. Nonetheless, Kottler (2010) states that as therapists, we hold a responsibility to bring awareness to the ways clients deceive themselves. By giving the client the benefit of the doubt, the therapist becomes “coauthor of the lie” (p. 213). Kottler (2010) further discusses how timing and the ways one approaches the client’s lie is crucial to maintain rapport and trust

in the therapeutic relationship. One therapeutic intervention is to name observed discrepancies to the client, and then allowing space for the client to become aware of their own deception (Kottler, 2010). I believe that somatic work can further deepen this intervention when the therapist supports the client through subtle physical resonance, allowing the client to feel into the incongruity in their body. Here, the therapist's inner sensations can serve as indicators of the client's various forms of deceptive behavior. Physical countertransference (Appel-Opper, 2010) allows the client's embodied self-deception to create bodily resonances with the therapist. Then, by remaining receptive and present to their body, the therapist can monitor how their interventions impact the client's bodily experience (ibid).

Following the principle of veracity (ACA, 2005), it is important that there is congruence within the therapist's own examination around deception. This can be explored by looking into strong countertransference reactions with the client, and be a means to access some of the unconscious ways deception emerges in the therapeutic relationship. Further, the therapist can utilize the body in order to track countertransference reactions to the client by tracking their own direct somatic experience as it arises.

Further Research

Further research is needed on the somatic experience of lying and the deceptive strategies occurring in a therapeutic context to fully understand and implement techniques that can best support clients.

As psychotherapists, we need to collaborate with clients in an inclusive manner, particularly as this population can often be labeled as "liars" or "dishonest" when their behavior actually might not look very different from the "average citizen." Therapists must consider multicultural implications of lying, as lies can mean various things to individuals from different backgrounds and locations (Kottler, 2010). It is essential to recognize the significance of social equity issues embedded in the therapeutic process, which requires continuous exploration (Johnson, 2009). The data supports that there is a costly cognitive load typically associated with deceiving, and some participants expressed somatic release when sharing their authentic story. This appears to also apply to instances of oppression. The findings suggest that further research is required to articulate the specific somatic effects of deception and how it relates to oppression.

Moreover, further research is needed to reveal other types of defensive strategies that did not show up in the data. Considering Freud's work on *The Ego and the Mechanisms of Defense* (Erwin, 2002), I assume that other forms of deceptive strategies exist, such as denial, repression, projection, isolation, and rationalization. For example, Freudian analysis suggests that self-deception at its core is repression, dissociating from the ego, and withdrawing from consciousness (Erwin, 2002). I am also interested in understanding how the five strategies connect with one another, and what considerations and methods are developed for the self (body, mind, and ego) to choose from the defense mechanisms.

Conclusion

This qualitative study was designed to better understand the somatic experience of deception and to acknowledge the pervasiveness of deception in the therapeutic relationship. In particular, it explores five deceptive strategies that serve as a means of protection: minimization, manipulation, regression, dissociation, and falsification. Furthermore, this examination describes the lived experiences of individuals as they have discussed their personal experiences with deception, and draws from those experiences to identify the implications for

the counseling relationship and practice. This research provides evidence of the relationship between the somatic effects of perceived and real threats and the deceptive defenses.

Although this study offers only an entry point for considering the lived experience of deception and its strategies, I hope that it will serve as an intriguing point of reference for researchers who are interested in engaging in the body's ability to fight and release lies through a somatic therapeutic lens.

BIOGRAPHY

Nora Ahmed-Kamal is a multilingual somatic therapist, social justice facilitator, and member of the faculty at Naropa University. As a therapist and educator, she is passionate about supporting people in finding inner congruence within themselves and reclaiming their unapologetic truth through their bodies. Nora is committed to fiercely challenging systemic oppression. With this aim, she is dedicated to unmasking the many lies that we embody.

Email: nora@becongruent.org

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The Human Body and Psychological Trauma: Biological Explanatory Models. A review

Roncada, Gert, Vandeveld Benjamin, Calsius, Joeri

Submitted November 2017; accepted December 2017

Abstract

Background

This review focusses on biological explanatory models expounding somatic dysfunction or symptoms after psychological trauma.

Methods

A literature search was performed in PubMed with specific search terms. Limo and Web of Science were searched, using a funnel strategy. 1.115 articles were screened, of which 79 met the predisposed relevance criteria. 10 articles met all predefined criteria, and were assessed for quality. SWOT analysis was performed on the included studies.

Results

Eight explanatory models were found: Sympatho-adrenal theory, hypothalamic-pituitary-adrenocortical axis theory, Core Response Network theory, Preparatory Set theory, Toxic Mind theory, Brain Mechanism theory, Kindling theory, and Grounded Cognition theory.

Discussion and Conclusion

The average quality of the articles was moderate. Based on quality assessment The Core Response Network theory was currently evaluated as a comprehensive biological theory, explaining somatic symptoms after psychological trauma. However, implementing elements of other models should be considered to explain specific aspects of psychosomatic phenomena in trauma.

Keywords: trauma, psychological trauma, psychosomatic, somatic complaints, theory

International Body Psychotherapy Journal *The Art and Science of Somatic Praxis*
Volume 17, Number 1, Spring 2018 pp 22 - 50. ISSN 2169-4745 Printing, ISSN 2168-1279 Online
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Background

When Reich (1972) defined the muscular armor as the experience-dependent development of a protective shell of muscle tension grown over time in response to a history of threat, anxiety and trauma, he not only coined a fundamental entry point in what would become body psychotherapy, he also elaborated on Freud's early trauma theory (Freud & Breuer, 1893a). Here an affect-quantum is thought to move, expand, reduce or shift back and forth between the psychic and somatic realm (Verhaeghe, 2006). Since trauma is a widely-used term in scientific and popular writings, it is worthwhile to contemplate on this concept. Throughout psychiatric history, the Diagnostic and Statistical Manual of Mental Disorders (DSM) has had a substantial

influence on the different meanings of the concept 'trauma' and related disorders (Friedman, 2016). The concept of trauma in therapeutic context evolved from a well-defined, rather rare event to a more comprehensive concept with clear nuances. For a long period of time, trauma was categorised as an event that had to precede the development of a posttraumatic stress disorder (PTSD). In the DSM-IV, trauma was still defined as: "The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others. The person's response to the event involved intense fear, helplessness, or horror" (American Psychiatric Association, 1994). In this way trauma seems to concern an event that inflicts damage as a physical wound or the physical integrity of an individual. If a person is witness to such events, it is also considered as trauma. At least one of these three responses -intense fear, helplessness, and/or horror- must be present.

The DSM-V (American Psychiatric Association, 2013) recently renamed PTSD under 'Trauma and stressor-related disorders' whereby trauma is defined as a catastrophic event involving actual or threatened death, serious injury, or sexual violence in one of the following ways: (1) directly experiencing the traumatic event(s); (2) or witnessing, in person, the event(s) as it occurred to others; (3) or learning that the traumatic event(s) occurred to a close family member or close friend - in cases of actual or threatened death of a family or friend, the event(s) must have been violent or accidental; (4) or experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (American Psychiatric Association, 2013). Although this definition provides more room for differences between direct and indirect forms of trauma, it is criticized by Briere and Scott (2015). They point out that the limitation of damage to the physical integrity and life-threatening situations in the DSM-V means that events with primarily emotional impact (so not being life-threatening) cannot be considered trauma. This implies that bullying, verbal aggression, emotional neglect or humiliation are ruled out, which presumes a significant underestimation of the incidence of trauma and PTSD in the general population (Briere & Scott, 2015). To date, DSM-V does not take these factors into account making the following question highly topical: *Could psychological trauma also cause physical symptoms or complaints which are not directly linked to an injury of the physical integrity?* Intuitively and based on experience, therapists and medical doctors will answer this question affirmatively. Scientific research is convincing, indicating correlations between psychological trauma in childhood and the development of functional somatic syndromes in adulthood, such as fibromyalgia, chronic generalized pain syndrome, irritable bowel syndrome, chronic fatigue syndrome and temporomandibular syndrome (Afari et al., 2014; Ladd et al., 1996; Mohr & Fantuzzo, 2000; Plotsky & Meaney, 1993; Smith & Flannery-Schroeder, 2014). Further relations are shown between childhood abuse and low back-pain (Leisner et al., 2014), childhood maltreatment and migraine (Tietjen et al., 2010) and disturbed pain-processing (Tesarz et al., 2016; Tesarz et al., 2015). Moreover, Mohr and Fantuzzo (2000) point at a dysregulation of the parasympathetic nervous system after exposure to domestic violence. In addition, the mediating role of alexithymia in case of emotional maltreatment in childhood is well documented (Smith & Flannery-Schroeder, 2014). Animal studies on early traumatic experiences are also multiple and show amongst other effects, changes in hormonal response as well as lowered cortisol receptors in the hippocampus and elevated corticotrophin stimulating hormone in the hypothalamus (Ladd et al., 1996; Plotsky & Meaney, 1993). Both of these can contribute to a dysregulation of the hypothalamic-pituitary-adrenal axis (Ladd et al., 1996).

Strengthened by the latter and returning to the definition of trauma, Peter Levine (1977) describes trauma from a strong biological paradigm as an event that causes a long-term

dysregulation of the autonomous nervous system and the extrapyramidal nervous system, emphasising the effect on the body and not on the event itself. This definition clarifies the fact that traumatic experience for one individual does not have to be traumatic for another individual. From a totally different stance and drawing on sound reviews, Verhaeghe and Vanheule (2005) reach the same conclusion, namely trauma is a necessary but insufficient condition for the development of PTSD. Moreover, research points out that no connection can be found between the objective severity of the traumatic event and the development of psychopathology, which leads Verhaeghe & Vanheule to state that *“whether PTSD develops is not so much determined by the trauma in itself; rather, there must be mediating factors of vulnerability and resilience.”* (Verhaeghe & Vanheule, 2005). So where biological explanatory models focus on brain models, neuro-anatomic pathways and hormonal processes, psychological theories deepen on cognition, emotion, behaviour or unconscious processing (Roelofs & Spinhoven, 2007). Agreeing with the above critique on the reduction of trauma in DSM-V (Briere & Scott, 2015) and referring to the prevalence of traumatic experiences in patients with psychological complaints, the main question underlying this review is which biological explanatory models are available for understanding somatic dysfunctioning after psychological trauma? Regarding the above, as well as the complexity in human interactions, it is obvious that psychological trauma includes non-physical events inflicting the individual integrity or emotional impact in non-life-threatening situations. Motivated by Geuter (2015) who describes how in body psychotherapy patterns of experience and behaviour express themselves cognitively, affectively, imaginatively (which in fact is the psychological dimension) as well as sensorial, motoric or vegetative in therapy (the biological dimension), this article aims to add also on a more clinical level. But as in the end, the authors would like to contribute to substantiate to the daily practice of body psychotherapy, a more detailed theoretical stance will follow as necessary.

Method

Literature search

Initial search in Limo, PubMed, and Web of Science did not lead to sufficient relevant articles. Therefore, a funnel strategy was used. The term ‘psychosomatic AND trauma was used in the search engines Limo and Web of Science. Three relevant criteria were formulated: mentioning psychological trauma in the title or abstract; physical complaint or symptom caused by psychological trauma; and a description of a biological theorem, explaining this relation. In PubMed, following MeSH terms were used: (war-related injuries [MeSH Terms] OR adult survivors of child adverse events [MeSH Terms] OR battered child syndrome [MeSH Terms] OR compassion fatigue [MeSH Terms] OR trauma and stressor related disorders [MeSH Terms] OR psychological trauma [MeSH Terms] OR adult survivors of child abuse [MeSH Terms] OR spouse abuse [MeSH Terms] OR elder abuse [MeSH Terms] OR child abuse [MeSH Terms] OR sex offenses [MeSH Terms] OR intimate partner violence [MeSH Terms] OR trauma [Title/Abstract] AND (theory* [Title/Abstract] OR concept* [Title/Abstract] OR somatic). Articles published between 2000 and 2016, in English and Dutch were withheld.

Selection criteria

After the formation of the search strategy, inclusion and exclusion criteria were formulated. The articles were equally divided among the researchers and independently screened and disagreements about inclusion of studies were resolved by discussion. Inclusion criteria: psychological trauma, somatic complaint or symptom after psychological trauma, biological

theorems describing the relation between psychological trauma and somatic complaints or symptoms, articles in English or Dutch, Theorems about victims of psychological trauma, psychological trauma from birth. Exclusion criteria: animal studies; studies on a cellular level; the term trauma exclusively used as medical term (physical damage without psychological impact); exclusive description of somatic complaints or symptoms as a direct effect of physical trauma, with or without mentioning psychological impact; incompletely described theorems; psychological theorems; statistical models; panic attacks, dissociation symptoms, cognitive symptoms, conversion symptoms as result of psychological trauma.

Quality assessment

Since there was no questionnaire available for the evaluation of theoretical articles and narrative reviews, a self-developed questionnaire was used (Table 1). Articles were scored on twelve criteria, following a categorical format: adequate (score: plus 1), inadequate (score: plus 0), and not available (score: plus 0). On a scale of 12, scores from 0 and 4 were considered poor quality, scores from 5 to 8 moderate quality and scores from 9 to 12 high quality (Table 1). Two observational studies were assessed on quality by a standardized questionnaire, published by the Critical Appraisal Skills Programme (“Critical Appraisal Skills Programme,” 2017). The articles are scored on a scale from 0 to 10, scores from 0 to 4 were considered poor quality, scores from 5 to 7 moderate quality, and scores from 8 to 10 high quality (Table 2).

Data Extraction

The aim of the data extraction was to extract all described biological theorems, explaining somatic symptoms after psychological trauma, from the included studies.

Result

The funnel strategy resulted in 396 hits on Limo, and 213 hits on Web of Science. After applying the three relevant criteria on title/abstract, these numbers were reduced to respectively 20 and 13 relevant articles. The applied search terms on PubMed delivered 506 hits, which were reduced to 46 relevant articles. The 79 articles were screened in relation to the inclusion and exclusion criteria. 69 articles were excluded (Figure 1, excluded articles in appendix 1). 10 articles met all criteria (6 in PubMed, 2 in Web of Science, and 2 in Limo) and were assessed for quality. The included articles consisted of 5 theoretical articles, 2 observational studies, and 3 narrative reviews. Three articles were of high quality, four articles of moderate quality and three articles of poor quality. Strengths and weaknesses of each article were assessed via SWOT analysis (Table 3). Data extraction resulted in eight biological explanatory theories (Table 4).

Sympatho-adrenal theory

The sympatho-adrenal theory could be seen as the basis of the “fight-or-flight” theory and is also called the fast response to stress. This mechanism enables an individual to react to danger or threat but is also linked to the development of chronic complaints in patients with PTSD (Bedi & Arora, 2007; Saltzman et al., 2005). The underlying theory suggests a central role of the hypothalamus. In case of danger the hypothalamus signals the adrenal medulla, which produces (nor-) epinephrine. This results in an increase of sympathetic activity and a decrease in parasympathetic activity. Heart rate for example will increase and heart-rate-variability will decrease in patients with PTSD (Bedi & Arora, 2007; Saltzman et al., 2005). Patients also tend to get in a state of neuro-endocrine arousal much faster, which may result in panic (Perry,

1997). Traumatic experiences are shown to have a negative impact on the cardiovascular system and in turn, sympatho-adrenal hyperactivity contributes to the development of cardiovascular disease (Bedi & Arora, 2007; Rogosch et al., 2011; Saltzman et al., 2005). The elevated levels of catecholamines cause a change in function of platelets, resulting in a negative effect on vascularization and elevation in blood pressure (Goldstein, 1983).

Hypothalamic-pituitary-adrenocortical axis theory

The hypothalamic-pituitary-adrenocortical or HPA axis works slower in comparison to the sympatho-adrenal axis. The hypothalamus produces corticotropin-releasing hormone as a reaction to stress, which results in the release of adrenocorticotropic hormone in the anterior pituitary gland. In turn, this stimulates secretion of corticoid steroid cortisol from adrenal cortex cells (Bremner et al., 1999; Lamprecht & Sack, 2002). Elevated levels of cortisol aim to regulate other stress mechanisms of the hypothalamus and pituitary gland from chronic hyperactivity (Bremner et al., 1999). Saltzman (2005) acknowledges that there is a controversy on cortisol levels measured after stress. Carrion et al. (2002) found an elevated level of cortisol in patients with PTSD, while others measured a decrease in cortisol levels in young girls after sexual abuse (King et al., 2001). Resnick et al. (1995) found a decrease in cortisol level and a weakened HPA axis response on acute trauma in women with a history of previous sexual abuse and higher levels of cortisol in women who had never been assaulted before.

Core Response Network theory

Payne, Levine and Crane-Godreau (2015) describe a theory in which experiencing a trauma or chronic stress causes a dysregulation of what they call the Core Response Network (CRN). This CRN is a subcortical network of deep regulatory systems in the central nervous system and consists of four parts: *the autonomic nervous system, the reticular arousal system, the emotional motor system, and the limbic system.*

The autonomic nervous system can intensify or calm the activity of the viscera, alter blood circulation, trigger hormonal and endocrine activity, change muscle tone, increase or decrease cognitive arousal, and contribute to emotional experience (Norman et al., 2014). The autonomic nervous system is divided into an ergotropic (energy seeking) and a trophotropic (nutrition seeking) system, which can be seen as an extension of the more traditional approach of the (para-) sympathetic nervous system described in the previous models above. The limbic system includes the amygdala, hippocampus and septal nuclei, central to fear- and pleasure and to the recall of emotion (Heimer & Van Hoesen, 2006). The reticular arousal system involves multiple networks which trigger arousal and controls alertness and orientation in different contexts. It also interfaces strongly with the other components of the CRN (Krout et al., 2002). The emotional motor system consists of the striatum, red nucleus and periaqueductal gray and is primarily involved in extrapyramidal movements such as vomiting, coughing, sneezing and breathing (Holstege, 2014). The CRN provides a very quick and instinctive response to threatening stimuli, with little input from higher cortical structures (Porges, 2004) and enters various discrete functional and dysfunctional states (Payne et al., 2015). In general the stress response of the autonomic nervous system on stress or trauma is considered to be the trigger activating the CRN system as described by Levine (1977). Here, in mild stress reactions, the sympathetic increase and simultaneous decrease in parasympathetic activity, is followed by a parasympathetic rebound before returning to baseline. However, even in mild disturbance or chronic stress the sympathetic nervous system can keep functioning for longer periods of time on a higher level of activity,

without returning to baseline. However, in extreme stress or trauma like life-threatening events, something paradoxically occurs. The initial increase in sympathetic activity is now followed by an even stronger co-activation of the parasympathetic nervous system (Gellhorn, 1964; Paton et al., 2006). This phenomenon is described as tonic immobility and occurs in humans confronted with extreme stress (Bovin et al., 2008). The clinical implications of this tonic immobility have been described by Levine as unpleasant, interoceptive and proprioceptive sensations such as stomach tension, shaking, increased or decreased blood pressure, increased or decreased heart rate, hyperventilation, cold hands and excessive sweating. In PTSD, tonic immobility can provide an explanatory model for freezing and collapse symptoms (Halvorsen, 2014). However, a traumatic event in this theory is described in a strict biological manner as an event that causes a long-term dysregulation of the autonomic nervous system and the extrapyramidal nervous system.

Preparatory Set Theory

Payne and Crane-Godreau (2015) hypothesize that a response to a certain stimulus is always preceded by a preparatory phase or so called Preparatory Set. According to them, physical complaints after trauma are linked to processes in this preparatory phase. Generally, the reaction to a stimulus (both traumatic and non-traumatic) proceeds in three phases: *initial noticing and orienting* of the situation, *preparation* of response, and finally, *execution* of response. These three phases do not necessarily follow a chronological order. After an orienting phase, a new evaluation of the situation, can alter the initial noticing and orienting (Resulaj et al., 2009). The execution phase can take place immediately after the orienting phase, after a delay, or not at all. Proprioceptive and exteroceptive feedback will inform the organism about the successful completion of the action, following which a new preparatory set may form. (Gellhorn & Hyde, 1953; Payne & Crane-Godreau, 2015; Suetterlin & Sayer, 2014).

Payne and Crane-Godreau describe different kinds of Preparatory Sets, depending on the situation for which preparation is made, for example the digestion of food or sports. In normal circumstances, these are adequately adapted to handle a situation or stimulus. However, a Preparatory Set can also be maladaptive as a response to a stimulus if the preparation was not adapted, but exaggerated for the situation. This could lead to a Preparatory Set that keeps on going, even long after the actions have been taken and mostly when the situation has passed. Disorganization of the Preparatory Set occurs when trophotropic and ergotropic reactions keep competing. This status equals the earlier described tonic immobility, of which the primary signs are physical immobility and muscular rigidity (Bovin et al., 2008; Bovin et al., 2014). Under normal circumstances an adaptive Preparatory Set is followed by an adequate reaction, which solves the situation and the state of alertness can be interrupted by the individual. In a mild stress situation, a normal increase of ergotropic arousal and a simultaneous decrease in trophotropic activity occurs. This is followed by a trophotropic rebound, and the ergotropic activity returns to baseline (Gellhorn, 1956). If situations do not get resolved, despite an adequate action, the Preparatory Set stays active and possibly becomes overwhelming for the individual. If this situation keeps persisting and the Preparatory Set gets disorganized (meaning a co-activation of the ergotropic and trophotropic system), the individual has a high probability of developing a PTSD after the situation (Bovin et al., 2008).

Toxic Mind Theory

The Toxic Mind theory (Van Winkle, 2000) describes a process in which repetitive suppression of emotions during fight-or-flight reactions in traumatic experiences results in atrophy and endogenous toxicosis in noradrenergic neurons. This can occur in early childhood

trauma or experiencing trauma in later years. When thoughts and emotions are repetitively suppressed, nerve impulses through noradrenergic neurons are diminished. This leads to a decrease in the concentration of synaptic norepinephrine - associated with symptoms of depression -, and atrophy of the noradrenergic neurons. Atrophy leads to an accumulation of metabolic waste products (endogenous toxicosis) in the cytoplasm. The Toxic Mind Theory assumes that each neuron has the inherent ability to initiate a detoxification process. This process is initiated through high levels of intracellular toxins and is called a 'detoxification crisis'. The increase of synaptic norepinephrine leads to overexcitement of postsynaptic neurons, causing excitatory symptoms. Excitatory symptoms that are sympathetically controlled and are fight or flight reactions, range from mild anxiety to violent behaviour. Ending the detoxification process occurs with an adaptive response to the excess norepinephrine in the synapse. Finally, excess endogenous toxins (which diffuse together with norepinephrine into the synapse) cause a saturation of postsynaptic receptors for norepinephrine. Unless the detoxification crisis is completed, it is likely to be followed by, or relapse of, depression. Saturation of noradrenergic receptors by endogenous toxins cause a change in neural transmission, which might lead to disturbed and compulsive thoughts, hallucinations, psychoses, and unwanted behaviour. Rage can be transformed into aggression, and sorrow into suicidal acts (Van Winkle, 2000).

Detoxification is an autonomic starting, self-limiting process. If detoxification occurs adequately, the pre- and post-synaptic neuron can be restored and the symptoms disappear. However, in case of inadequate detoxification or persistent suppression of emotions, inhibitory complaints arise, followed by a new periodical detoxification. Toxins accumulating in brain regions with a specific function, will generate symptoms related to those functions.

This theory provides a possible explanation of the transition between inhibitory and excitatory symptoms, which are observed in psychological, neurological, and psychosomatic disorders, but just equally in individuals without clinical pathology. If symptoms do not derive from organic damage, according to this theory they derive from an attempt of the nervous system to detoxify and can only be cured by treating the real cause (the cause of the toxification). This theory could explain physical complaints after psychological trauma with (repetitive) suppression of emotions.

Brain Mechanisms Theory

Atarodi and Hosier (2011) describe the initial brain mechanisms that are activated in emotional traumatization and consolidation of its memory. These consist of two important components: firstly, *amygdalic nuclei* located in the medial temporal lobe and secondly, *catecholamine neurotransmitters*, epinephrine, and norepinephrine. The process starts with an arousal-based input from sensory organs, which is lead to the thalamus and locus ceruleus. The locus ceruleus releases norepinephrine that enables the lateral nucleus of amygdala to evaluate the emotional value of the input. This is the start of encoding the trauma for consolidation in the memory. The lateral nucleus forwards a message to basolateral nucleus of amygdala. This basolateral nucleus has connections with other areas of the brain and this enables it to encode memory pathways and organize emotions, somatosensory processes, and motor action caused by the trauma (Atarodi & Hosier, 2011). The basolateral nucleus of amygdala sends signals to the central nucleus of amygdala. The central nucleus of amygdala produces fear and evokes the sympathetic nervous system, the HPA axis, the nucleus accumbens, the hippocampus, and the prefrontal cortex. The nucleus accumbens creates motivation to action and the sympathetic nervous system initiates the fight or flight reaction (Ruden, 2005). Experiencing pain as a

physiologic response to actual or potential tissue damage is called nociception. The same brain structures are involved in experiencing psychogenic and organic pain, but psychogenic pain has no sensory input (Bob, 2008). The central nucleus of amygdala has a nociceptive area that has an important role in the experience of psychogenic pain (Meeus & Nijs, 2007). The modulators of the central nucleus amygdala are the prefrontal cortex and the anterior cingulate cortex (Scaer, 2001). In threatening situations, the prefrontal cortex inhibits emotional processing of the limbic system. As a result, the individual can act in the best manner and gives the best response. However, if an inadequate response occurs, the individual will be traumatized (Lewis, 2007) and the prefrontal cortex which has a controlling effect on nociceptive stimuli, causes the formation of psychogenic pain (Bob, 2008).

Kindling Theory

The Kindling theory is used to explain the formation of chronic psychogenic pain (Rome & Rome, 2000), but is also linked to general psychosomatic symptoms following trauma (Atarodi & Hosier, 2011). The theory states that repetitive, low-level electrical or subthreshold stimuli of the brain could lead to changes in neural response. After a while, repeated stimulation causes increased neuronal excitability of the brain, because repeated stimulation can alter the function of the neural membrane, the synaptic activity, and the intracellular communication via neuroplastic mechanisms. The Kindling theory consists of three phases. *The developmental phase* in which repetitive electrical stimuli of a brain area exceed the threshold, resulting in focal neuronal activity and discharge. *The completed phase* in which any stimulation (subthreshold or threshold) causes a discharge. Finally, *the spontaneous phase* in which discharge takes place without any external stimulus (Atarodi & Hosier, 2011). The limbic system (including the amygdala) is a part of the brain susceptible to kindling (Adamec, 1990). Chronic pain and psychosomatic disorders develop through plastic changes via kindling in the limbic system and other supraspinal parts of the central nervous system. The development of psychogenic pain is described as follows: following trauma, the traumatic facts are stored in the memory via the lateral nucleus amygdala and the basolateral nucleus amygdala. Via kindling, the neural threshold is lowered for the processes, like the amygdala, that cause psychogenic pain, causing stimuli that are related to the trauma that can lead to psychogenic pain (Scaer, 2001).

Grounded Cognition Theory

Weston (2014) proposes the Grounded Cognition Theory to explain how traumatic events lead to the development of complaints or symptoms in the hyperarousal type of PTSD. The Grounded Cognition theory suggests that brain areas precipitating motor, sensory or other stimuli, can also mediate enduring representations of those stimuli in higher-level brain areas. For example, the sensory system is active in the registration of sensory stimuli and the storage in sensory centres. The sensory system is later reactivated when the corresponding memory representation is retrieved. This results in the fact that in case of reliving traumatic stimuli, a state of arousal is reached faster (Barsalou et al., 2003; Meyer & Damasio, 2009). The amygdala plays a key role and is connected to the network that regulates sleep pattern and alertness and contains the midbrain, reticular formation, hypothalamus, solitary tract nucleus and the brainstem. Because of the amygdala's connection with these areas, the amygdala is anatomically positioned to influence sleep-wake regulation. The hypothesis is that this overactivity of the amygdala causes sleep disturbances in PTSD (Germain et al., 2008). Pain is also processed in the amygdala (Han & Neugebauer, 2004) and can cause pain syndromes in PTSD (Weston,

2014). The activity in the amygdala, inflicted by pain, causes a consolidation of nociceptive stimuli and representations of pain that contribute to a disturbed representation of pain in the brain, which leads to psychogenic pain in hyperarousal subtype of PTSD (Weston, 2014).

Discussion and conclusion

The quality of the articles discussed in this review were moderate to high for the HPA axis and sympatho-adrenal theory, moderate for the Core Response Network, Brain Mechanisms, Kindling, and Grounded Cognition theory, poor for the Preparatory Set theory and Toxic Mind theory, although differing on several levels, these theories can be regarded as corresponding or complementary. The HPA axis and the sympatho-adrenal theory, describe the acute reactions of the nervous system and hormonal system on a traumatic event. Increased sympathetic activity was linked to cardio-vascular disease, increased rest heart-rate, decrease in heart-rate variability, and faster reaching a state of arousal. The HPA axis also provides an explanatory model for post-traumatic physical complaints or symptoms. Both theories focus on the basal level of regulation, without involving higher brain structures. The complaints of a traumatic patient are strongly stress related and sympathetically tuned. In that way these theories can be regarded as a peripheral expression of higher-order central processes as discussed by Atarodi and Hosier (2011). In their Brain Mechanism theory, brain structures are described which are activated as a reaction to trauma and account for the activation of previously mentioned acute responses. The Grounded Cognition theory (Weston, 2014) states that traumatic experiences can exert an effect on specific areas of the brain. The nature of the symptoms depends on the areas of the brain in which the effect occurs. The disadvantage of this theory is the fact that it was only described for the hyperarousal type PTSD and therefore the findings cannot be generalized. This region specificity also returns in the Toxic Mind theory (Van Winkle, 2000). Both theories describe changes in the brain after traumatic events, although the Grounded Cognition focuses on cognition while the Toxic Mind zooms in on the underlying biological substrate, namely a structural change based on toxicosis of specific noradrenergic neurons. So, both Toxic Mind and Kindling theory describe processes that take place on inter- and intraneuronal level, but with a different physiological mechanism (toxification versus neuroplasticity). It is interesting that the Toxic Mind theory tries to explain the periodicity of complaints or symptoms by means of an autonomic starting and self-limiting process, initiated by a natural response of a neuron on toxification. Not the traumatic event itself causes the toxification, but the suppression of emotions during the traumatic event. In this, the Kindling theory differs. It states that the event and associated stimuli are the cause of kindling and cause a lower threshold for complaints or symptoms. In the Toxic Mind theory complaints and symptoms are described as part of an automated process, whereas in Kindling Theory, complaints and symptoms develop after experiencing trauma related stimuli (with exception of the spontaneous phase, where these can occur without external stimuli). It is the theory of Brain Mechanisms (Atarodi & Hosier, 2011) that highlights an important concept: consolidation and memory. Like the Grounded Cognition theory, traumatic stimuli are projected to specific brain areas. But in Atarodi and Hosier's theory, a mechanism is described how stimuli can cause long-lasting effects on psychogenic pain. The Grounded Cognition theory also describes this in the development of pain in the hyperarousal subtype of PTSD. Interesting is the description that the specific brain areas, responsible for memories of traumatic experiences, also contribute directly to the basal stress reaction mechanisms such as the HPA-axis and the sympatho-adrenal theory

and describes this as a physiological reaction to the experience. On the one hand, these brain structures cause consolidation of the trauma, leading to complaints in the long run, on the other hand, they provide a direct physiological response to a traumatic event. Structurally the limbic system, including the amygdala, delivers an important contribution to the different theories. Both in general trauma patients and in hyperarousal PTSD patients this neural circuit plays an important role. The limbic system also plays a role in the Core Response Network theory and Preparatory Set Theory, although the specific role of the amygdala is not specifically described in the development of complaints or symptoms. In these models, symptoms are understood from two angles. On the one hand they are considered as a direct effect from stagnation in a disorganized state of arousal (Payne & Crane-Godreau, 2015), on the other hand, they are seen as a dysregulation of the Core Response Network (Payne et al., 2015). Both angles converge in the mechanism of tonic immobility. This paradoxical increase in both sympathetic and parasympathetic activity occurs in extreme stress, trauma or life-threatening events. In both theories, clinical symptoms of tonic immobility such as unpleasant, interoceptive and proprioceptive sensations like stomach tension, shaking, increased or decreased blood pressure, increased or decreased heart rate, hyperventilation, cold hands and excessive sweating are described.

Based on the implemented quality assessment two contiguous theories - the Core Response Network and the Preparatory Set - provide a most comprehensive biological model, explaining somatic symptoms after psychological trauma. However, additional and more detailed neurophysiological insight in trauma mechanisms is offered by other of the discussed explanatory theories, such as the Toxic Mind Theory, Kindling Theory and Brain Mechanism Theory. Concerning a more clinical implication, this review provides further ground to work with trauma patients from an integrated perspective, such as body psychotherapy does. It weighs existing biological models making somatic dysfunction after psychological trauma more understandable. Therefore it appeals to a more profound and extended approach of trauma whereby *"trauma memory is as much in the sensory receptors, in the skin and in the muscles as it is in the brain."* (Fogel, 2009). Finally and similarly, this article tries to add on a more conceptual level, to the need of a trans-disciplinary view on trauma whereby trans-disciplinarity has been described as a practice that transgresses and transcends disciplinary boundaries and seems to have the most potential to respond to new demands and imperatives (Russell et al., 2008). Although further clinical research is indispensable, it seems that from the early days of Reich's body armor, body psychotherapy established itself as a genuine trans-disciplinary approach on trauma.

BIOGRAPHY

Gert Roncada, MSc, DO. He holds a degree in physical therapy and osteopathy. He is a lecturer in post graduate courses domestic and abroad. Gert has a special interest in the cardiac rehabilitation of patients after cardiac surgery, hereby investigating both the physical as the psychosocial aspects. He does so in a collaboration with the Jessa Hospital Hasselt and his private practice in Alken, Belgium.
E-mail: gert.roncada@telenet.be

Benjamin Vandavelde, MSc. He holds a degree in physical therapy and has a special interest in psychosomatic disorders.
E-mail: Benjamin.vandavelde@uhasselt.be

Joeri Calsius, PhD is a clinical psychologist and physical therapist. His dissertation was awarded the 'Van Helsdingen Prijs van de Nederlandse Stichting Psychiatrie en Filosofie'. He also holds a degree in cultural philosophy. He specialized in body-oriented, psychodynamic psychotherapy and osteopathy. He has a special interest in the integrated approach of the psychosomatic body. He is a lecturer at the University of Hasselt and guest lecturer in multiple post graduate courses domestic and abroad. He publishes about processes in body-oriented psychotherapy and experiential bodywork. Joeri is the current vice president of the Flemish Society of Clinical Psychologists.
E-mail: joeri.calsius@uhasselt.be

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Table 1: Quality assessment of included theoretical and narrative reviews (n=8)

Legend: AE = as expected, NAE = not as expected, NA = not available

	The preparatory set: a novel approach to understanding stress, trauma and the bodymind therapies	Chronic idiopathic urticaria and post-traumatic stress disorder (PTSD): An under-recognized comorbidity	The toxic mind: the biology of mental illness and violence	Posttraumatic Stress Disorder Revisited	Posttraumatic stress disorder: a theoretical model of the hyperarousal subtype as core elements of trauma therapy	Somatic experiencing: using interoception and proprioception as core elements of trauma therapy	Cardiovascular Manifestations of Posttraumatic Stress Disorder	Trauma in the Mind and Pain in the Body: Mind-Body Interactions in Psychogenic Pain
First author	Payne P	Gupta M	Van Winkle E	Lambrecht F	Weston E	Payne P	Bedi U	Atarodi S
Year of publication	2015	2012	2000	2002	2014	2015	2007	2011
Journal	Frontiers in human neuroscience	Clinics in dermatology	Medical hypothesis	Psycho-somatic Medicine	Frontiers in psychiatry	Frontiers in psychology	Journal of the national medical association	Journal of the sociology of self-knowledge
Article type	Theoretical article	Narrative review	Theoretical article	Narrative review	Theoretical article	Theoretical article	Narrative review	Narrative review
Triangulation								
1) data	NA	NA	NA	NA	AE	AE	AE	AE
2) theory	NAE	NAE	AE	NAE	NAE	NAE	AE	AE
3) researcher	NA	NA	NAE	NA	NAE	AE	AE	AE
Content article								
Did the study address a clearly focused issue?	AE	AE	AE	AE	AE	AE	AE	AE
Did the study formulate a clear research question?	AE	AE	AE	AE	AE	AE	AE	AE
Was psychological trauma clearly described as an event?	NAE	NAE	NAE	NAE	AE	AE	AE	AE
Was the search strategy well defined?	NAE	NAE	NAE	NAE	NA	NA	NA	NA
Was there a clear quality assessment described in the articles?	NAE	NAE	NAE	NAE	NA	NA	NA	NA
Was there mention of their own limitations?	NAE	NAE	NAE	NAE	AE	NA	NA	NA
Was the theory clearly described?	AE	AE	AE	NAE	AE	AE	AE	AE
Has the question been answered in a clear and concrete manor?	NAE	AE	NAE	NAE	AE	AE	AE	AE
Did the article formulate a summary conclusion?	NAE	AE	NA	NAE	AE	AE	AE	AE
Assessment of quality score 0-4= poor score 5-8 = moderate score 9-12= high	poor	moderate	poor	poor	moderate	moderate	high	moderate

Table 2: Quality assessment of included observational studies (n=2)

	Child Maltreatment and Allostatic Load: Consequences for Physical and Mental Health in Children from Low-Income Families Rogosch FA, Daekis MN & Cicchetti D (2011)	The Psychobiology of Children Exposed to Marital Violence Saltzman KM, Holden GW & Holahan CJ (2005)
Did the study address a clearly focused issue?	YES	YES
Did the authors use an appropriate method to answer their question?	YES	YES
Were the cases recruited in an acceptable way?	YES	YES
Were the controls selected in an acceptable way?	YES	YES
Was the exposure accurately measured to minimize bias?	YES	YES
What confounding factors have the authors accounted for?	Child age and gender	Demographic results were still different
Have the authors taken account of the potential confounding factors in the design and/or in their analysis?	YES	YES
What are the results of this study?	<ul style="list-style-type: none"> - Maltreatment and allostatic load predicting a lower score on the health assessment - Maltreatment and allostatic load predicting a lower score on internal, external and total score - Maltreatment and allostatic load predicting a lower score on attention - Higher allostatic load gave higher cognition problems in children who were maltreated 	<p>As expected, a high proportion (48%) of all mothers of children exposed to marital violence reported that their children had been the direct target of physical violence from a parent or parent figure.</p> <p>Trauma symptomatology: children exposed to marital violence had significantly higher trauma symptom checklist for children total scores than did control groups</p> <p>Heart rate: children exposed to marital violence had higher pre-interview heart rates than did those who were not exposed.</p> <p>Post-interview heart rates of those exposed to marital violence were</p>

		<p>higher than those who were not. Heart rate response to a physical challenge did not differ between the 2 groups when controlling for total child abuse score.</p> <p>Blood pressure: there was no main effect of exposure to marital violence on pre-interview systolic blood pressure, pre-interview diastolic blood pressure or post-interview systolic blood pressure. There was a main effect of exposure to marital violence on post interview diastolic blood pressure.</p> <p>Salivary cortisol: exposure to marital violence was associated with higher levels of pre-interview salivary cortisol.</p>
How precise are the results? How precise is the estimate of risk?	5% significant level No drop out = good	All means reported are unadjusted. There was a total population of 47 children. All the data were extracted by a standard protocol. = good
Do you believe the results?	YES	YES
Can the results be applied to the local population?	NO	YES
Do the results of this study fit with other available evidence?	YES	YES
Conclusion article = quality assessment Score 0-4 = poor Score 5-7 = moderate Score 8-10 = high	High	High

Table 3: SWOT analysis of included studies (n=10)

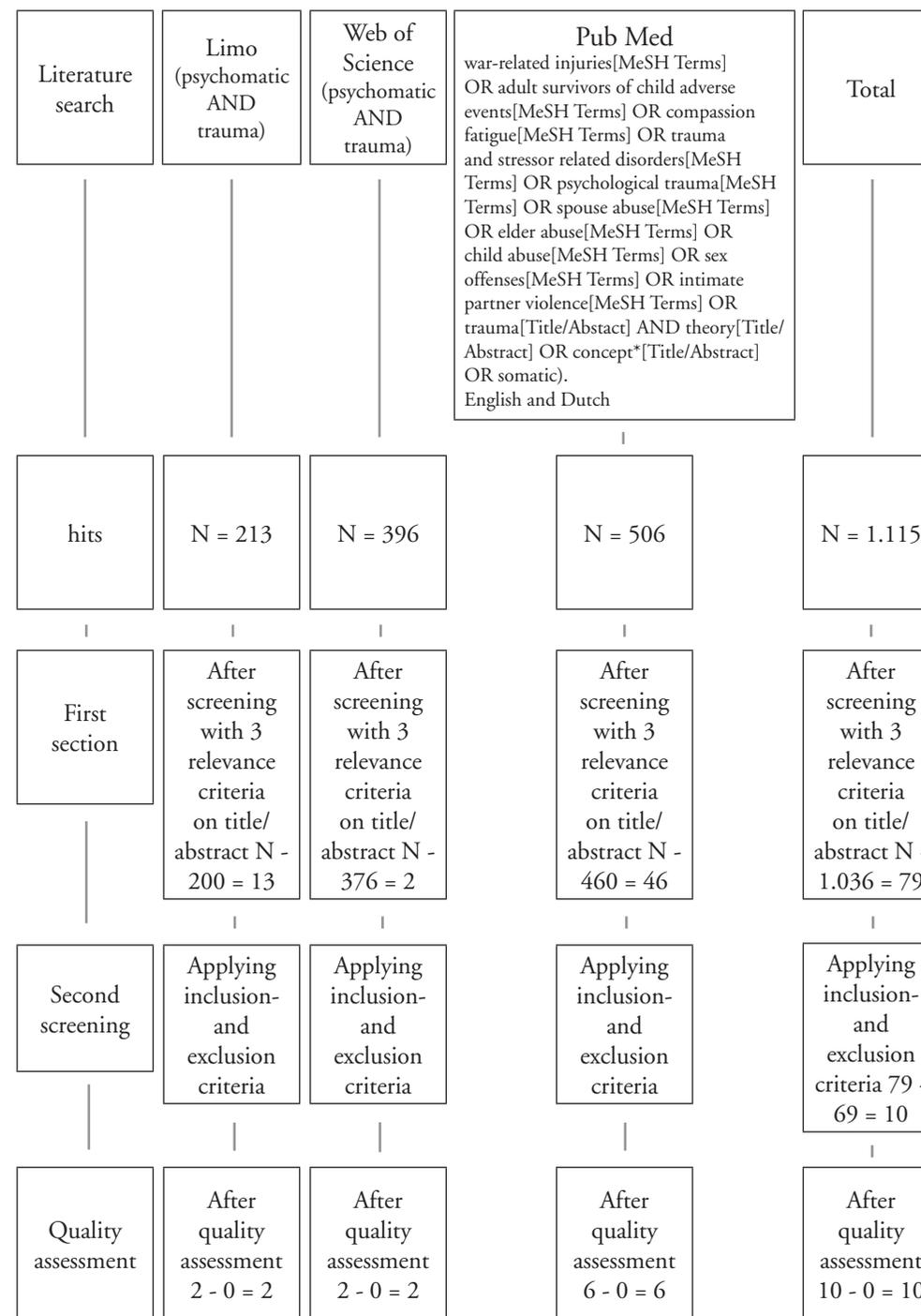
Author(s), year	Strengths	Weaknesses
Atarodi S & Hosier S (2011)	<ul style="list-style-type: none"> - very comprehensive for psychogenic pain after trauma - includes comprehensive definition and physiology of pain - comprehensive brain model in the emergence of psychogenic pain - comprehensive kindling theory, explaining psychosomatic disorders after trauma - relates theory with treatment - describes the initial phase of reaction to trauma for the sympatho-adrenal axis and HPA axis - describes brain model for psychogenic pain 	<ul style="list-style-type: none"> - describes the biological model of how kindling can cause psychogenic pain and states that this theory can also be used to explain general psychogenic complaints, without giving a detailed description
Bedi US & Arora R (2007)	<ul style="list-style-type: none"> - Good quality - clinical implication are described (cardiovascular disease, ...) - very comprehensive article in relation to PTSD 	<ul style="list-style-type: none"> - Results only applicable on PTSD patients
Gupta MA & Gupta AK (2012)	<ul style="list-style-type: none"> - comprehensive description of specific physical symptom (urticaria) - theory clarified with clinical examples 	<ul style="list-style-type: none"> - results only applicable on PTSD patients - no correlation to other physical complaints or symptoms
Lamprecht F & Sack M (2002)	<ul style="list-style-type: none"> - comprehensive history of emergence and evolution of PTSD included - refers to treatment, mainly psychosomatic therapy 	<ul style="list-style-type: none"> - poor quality - brief description of theories (HPA axis and sympatho-adrenal axis theory) - results only applicable on PTSD patients
Payne P & Crane-Godreau MA (2015)	<ul style="list-style-type: none"> - comprehensive theorem on tonic immobility - easy explicable theory to patients - refers to treatment, especially body-mind therapies 	<ul style="list-style-type: none"> - poor quality

Payne P, Levine PA & Crane-Godreau MA (2015)	<ul style="list-style-type: none"> - very comprehensive theory, with description of the biggest number of structures involved in somatic complaints after trauma - comprehensive theorem on tonic immobility - clinical implications are described - refers to treatment - theory is clarified with a clinical example 	<ul style="list-style-type: none"> - No clear description on how the 3 other parts of Core Response Network are influenced by the autonomic nervous system, only an interaction is described
Rogosch FA, Dackis MN & Cicchetti D (2011)	<ul style="list-style-type: none"> - observational study of high quality 	<ul style="list-style-type: none"> - brief description of theories (HPA axis and sympatho-adrenal theory) - results only applicable to child abuse
Saltzman KM, Holden GW & Holahan CJ (2005)	<ul style="list-style-type: none"> - observational study of high quality - comprehensive description of HPA axis and sympatho-adrenal theory - performed an observational study to test the hypotheses, derived from theories, which gave a clarification of the theories 	<ul style="list-style-type: none"> - no inventory of non-PTSD related complaints in children, possible influence of group differences through psychiatric comorbidities could not be determined
Van Winkle E (2000)	<ul style="list-style-type: none"> - describes a comprehensive neural theorem - refers to treatment 	<ul style="list-style-type: none"> - poor quality - theorems are strongly correlated with different pathologies (addiction, psychosomatic disorders, ...), but little empirical evidence is mentioned - unclear design and title follow-up
Weston CS (2014)	<ul style="list-style-type: none"> - very comprehensive theory - explains most complaints of the hyperarousal type PTSD, not only physical (not included) 	<ul style="list-style-type: none"> - only applicable on the hyperarousal subtype PTSD

Table 4: Data-extraction of included studies

Author(s) (year)	Title	Theorem
Atarodi S & Hosier S (2011)	Cardiovascular Manifestations of Posttraumatic Stress Disorder	Hypothalamic-pituitary-adrenocortical axis theory and sympatho-adrenal theory: start and course of the axis's is described
Gupta MA & Gupta AK (2012)	Chronic idiopathic urticaria and post-traumatic stress disorder (PTSD): An under-recognized comorbidity	Hypothalamic-pituitary-adrenocortical axis theory and sympatho-adrenal theory: explanation for the emergence of chronic idiopathic urticaria
Lamprecht F & Sack M (2002)	Posttraumatic Stress Disorder Revisited	Hypothalamic-pituitary-adrenocortical axis theory and sympatho-adrenal theory: start and course of axis's is described
Payne P & Crane-Godreau MA (2015)	The preparatory set: a novel approach to understanding stress, trauma and the bodymind therapies	The Preparatory Set theory: explains how a state of arousal can lead to somatic complaints
Payne P, Levine PA & Crane-Godreau MA (2015)	Somatic experiencing: using interoception and proprioception as core elements of trauma therapy	Core Response Network theory: description of the Core Response Network and inducement to somatic complaints
Rogosch FA, Dackis MN & Cicchetti D (2011)	Child Maltreatment and Allostatic Load: Consequences for Physical and Mental Health in Children from Low-Income Families	Hypothalamic-pituitary-adrenocortical axis theory and sympatho-adrenal theory: start and course of axis's is described
Saltzman KM, Holden GW & Holahan CJ (2005)	The Psychobiology of Children Exposed to Marital Violence	Hypothalamic-pituitary-adrenocortical axis theory and sympatho-adrenal theory: start and course of axis's is described. A few somatic effects are summarized
Van Winkle E (2000)	The toxic mind: the biology of mental illness and violence	Toxic Mind theory: clarification of toxification and detoxification and how this can lead to somatic complaints
Weston CS (2014)	Posttraumatic stress disorder: a theoretical model of the hyperarousal subtype	Grounded Cognition theory: clarification of consolidation and memory of trauma and its consequences

Figure 1: Flow Chart search strategy



Appendix 1: Overview of excluded studies and reason for exclusion*Excluded articles PubMed (n=40)*

Nr	First author	Title	year	Reason for exclusion
1	Alvarez J	The relationship between child abuse and adult obesity among California women	2007	No biological theorem described
2	Andelic N	Disability, physical health and mental health 1 year after traumatic brain injury.	2010	No psychological trauma described
3	Armour C	The underlying dimensionality of PTSD in the diagnostic and statistical manual of mental disorders: where are we going?	2015	No model for physical complaints described
4	Axmacher N	Natural memory beyond the storage model: repression, trauma, and the construction of a personal past	2010	No physical complaint, handles about memory
5	Ben-Ezra M	Psychosomatic symptoms among hospital physicians during the Gaza War: a repeated cross-sectional study	2011	No biological theorem described
6	Ben-Ezra M	Psychosomatic symptoms among hospital physicians during the Gaza War: a repeated cross-sectional study	2011	No biological theorem described
7	Bentley JA	The indirect effect of somatic complaints on report of posttraumatic psychological symptomatology among Somali refugees	2011	No biological theorem described
8	Bob P	Chaos, brain and divided consciousness	2007	No model for physical complaints described
9	Brand BL	Where are we going? An update on assessment, treatment, and neurobiological research in dissociative disorders as we move toward the DSM-5	2012	No physical complaints, but dissociative complaints described
10	Carr ER	PTSD, depressive symptoms, and suicidal ideation in African American women: a mediated model	2013	No biological theorem described
11	Chakhssi F	Early maladaptive cognitive schemas in child sexual offenders compared with sexual offenders against adults and nonsexual violent offenders: an exploratory study	2013	No physical complaints described
12	Chen Y	Concepts and strategies for clinical management of blast-induced traumatic brain injury and posttraumatic stress disorder	2013	Only traumatic brain injury as physical complaint
13	Chen Y	Non-impact, blast-induced mild TBI and PTSD: concepts and caveats	2011	Only traumatic brain injury as physical complaint

4	Cohen H	An association between stress-induced disruption of the hypothalamic-pituitary-adrenal axis and disordered glucose metabolism in an animal model of post-traumatic stress disorder	2009	Animal study
5	Cordero H	Evidence for biological roots in the transgenerational transmission of intimate partner violence	2012	Animal study
6	Diebel LN	Organ failure in the obese adipocytes prime polymorphonuclear cell inflammation under stress conditions	2013	Cell study
7	Dutton MA	Resilience and crime victimization	2010	No physical complaints described
8	Engel CC	Terrorism, trauma, and mass casualty triage: how might we solve the latest mind-body problem?	2007	No biological theorem: psychological theorem
9	Franzke I	Dissociation as a mediator of the relationship between childhood trauma and nonsuicidal self-injury in females: a path analytic approach	2015	Handles about self-mutilation behavior, no physical complaints described
10	Frewen P	Trauma-related altered states of consciousness in women with BPD with or without co-occurring PTSD	2014	No physical complaints, describes alterations in the state of consciousness
11	Frewen P	Trauma-related altered states of consciousness: exploring the 4-D model	2014	No physical complaints, describes alterations in the state of consciousness
12	Gao J	Glutamate and GABA imbalance promotes neuronal apoptosis in hippocampus after stress	2014	Animal study
13	George ME	Hypothermia is associated with improved outcomes in a porcine model of hemorrhagic shock	2010	No psychological trauma described
14	Hinton DE	Worry, worry attacks, and PTSD among Cambodian refugees: a path analysis investigation	2011	Physical complaints not obtained by trauma, but about how worrying influences physical complaints
15	Hinton DE	Khyâl attacks: a key idiom of distress among traumatized Cambodia refugees	2010	Physical complaints: panic attacks, exclusion because of the significant psychological aspect

16	Hinton DE	The 'multiplex model' of somatic symptoms: application to tinnitus among traumatized Cambodian refugees	2008	No full text available
17	Holleman M	The relationships of working conditions, recent stressors and childhood trauma with salivary cortisol levels	2012	
18	Ilin Y	Enriched environment experience overcomes learning deficits and depressive-like behavior induced by juvenile stress	2009	Animal study
19	Jia M	Corticosterone mitigates the stress response in an animal model of PTSD	2015	Animal study
20	Jia M	Biomarkers in an animal model for revealing neural, hematologic, and behavioral correlates of PTSD	2012	Animal study
21	Karatzias T	Cognitive appraisals and physical health in people with posttraumatic stress disorder (PTSD)	2009	Only a reference, no complete description of a theorem formulated
22	Lanius RA	Trauma-related dissociation and altered states of consciousness: a call for clinical, treatment, and neuroscience research	2015	No biological, but psychological theorem: how cognitive judgements can lead to physical complaints
23	McCall-Hosenfeld JS	The association of interpersonal trauma with somatic symptom severity in a primary care population with chronic pain: exploring the role of gender and the mental health sequelae of trauma	2014	No biological theorem described, only a statistical model described
24	Pietrzak RH	Support for a novel five-factor model of posttraumatic stress symptoms in three independent samples of Iraq/Afghanistan veterans: a confirmatory factor analytic study	2012	No biological theorem described, describes a new classification of PTSD and the compatibility in Afghanistan and Iraq veterans
25	Price CJ	Changes in posttraumatic stress symptoms among women in substance use disorder treatment: the mediating role of bodily dissociation and emotion regulation	2013	Only psychological symptoms described
26	Rorabaugh BR	Sex-dependent effects of chronic psychosocial stress on myocardial sensitivity to ischemic injury	2015	Animal study
27	Roth MK	Effects of chronic plus acute prolonged stress on measures of coping style, anxiety, and evoked HPA-axis reactivity	2012	Animal study

28	Tsai J	Examining the dimensionality of combat-related posttraumatic stress and depressive symptoms in treatment-seeking OEF/OIF/OND veterans	2011	Only description of a statistical model
29	Wörtwein G	Effects of maternal separation on neuropeptide Y and calcitonin gene-related peptide in "depressed" Flinders Sensitive Line rats: a study of gene-environment interactions	2006	Animal study
30	Zoellner T	Posttraumatic growth in clinical psychology - a critical review and introduction of a two-component model	2006	No physical symptoms described. Describes the psychological growth after traumatic experience

Excluded articles Web of Science (n=11)

Nr	First author	Title	year	Reason for exclusion
1	Axmacher N	Effects of maternal separation on neuropeptide Y and calcitonin gene-related peptide in "depressed" Flinders Sensitive Line rats: a study of gene-environment interactions	2010	No physical complaints, describes memory
2	Ben-Ezra M	Posttraumatic growth in clinical psychology - a critical review and introduction of a two-component model	2011	No biological theorem described
3	Charles E	Links between life events, traumatism and dementia; an open study including 565 patients with dementia	2006	No physical complaints described, discusses dementia after trauma
4	De Graaf T	A Personal Sensitization Factor (PSF) mediating between life events and post-traumatic psychiatric or psychosomatic disease in adult life	1996	No biological theorem described
5	Ferri P	The analyst's body as relational space in the treatment of seriously ill children	2013	No biological theorem described, only psychodynamic theorems described
6	Hirsch M	Body dissociation because of trauma	2010	No physical complaint, discusses dissociation
7	Jasiukeviciene L	Chronic fatigue syndrome in cardiology neurohumoral changes	2006	No psychological trauma described

8	Katz A	Healing the Split Between Body and Mind: Structural and Developmental Aspects of Psychosomatic Illness	2010	No biological theorem, only psychodynamic theorems described
9	Tosevski DL	Stressful life events and physical health	2006	No full text available
10	Zimmermann P	Psychogenic disorders in German soldiers during World War I and II. A comparison from a psychotraumatologic perspective	2005	Article in German
11	Zwickl S	The association between childhood sexual abuse and adult female sexual difficulties	2014	No biological theorem, only theorems described regarding incidence of complaints based on the study

Excluded articles Limo (n=18)

Nr	First author	Title	year	Reason for exclusion
1	Anand KJS	Gastric suction at birth associated with long-term risk for functional intestinal disorders in later life	2004	No biological theorem described
2	De Masi F	The psychodynamic of panic attacks: A useful integration of psychoanalysis and neuroscience	2004	Physical complaints: panic attacks, exclusion because of the significant psychological aspect
3	Farina B	Does a dissociative psychopathological dimension exist? A review on dissociative processes and symptoms in developmental trauma spectrum disorders	2013	No biological theorem, Psychodynamic theorems described
4	Hallberg RM	Health consequences of workplace bullying: experiences from the perspective of employees in the public service sector	2006	No causal theorem, only theorems described regarding incidence of complaints based on the study
5	Hopper JW	Preliminary evidence of parasympathetic influence on basal heart rate in posttraumatic stress disorder	2006	No biological theorem described

6	Katz A	Healing the Split Between Body and Mind: Structural and Developmental Aspects of Psychosomatic Illness	2010	No biological theorem described, only psychodynamic theorems
7	Kozłowska K	Intergenerational Processes, Attachment and Unexplained Medical Symptoms	2013	No biological theorem described, discusses a psychological theory
8	Lind AB	Struggling in an emotional avoidance culture: A qualitative study of stress as a predisposing factor for somatoform disorders	2013	No complete description of a biological theorem, only a brief hypothesis on results in conclusion
9	Manolopoulos S	Early traumas in psychosomatic patients: Splitting and integration	2006	Psychodynamic theorem, no biological theorem described
10	Martin P	Grief that has no vent in tears, makes other organs weep.' Seeking refuge from trauma in the medical setting	2012	Psychodynamic theorem, no biological theorem described
11	McCall-Hosenfeld S	The association of interpersonal trauma with somatic symptom severity in a primary care population with chronic pain: Exploring the role of gender and the mental health sequelae of trauma	2014	No biological theorem described
12	Oliner M	The Minefield of Emotions	2010	Psychodynamic theorem, no biological theorem described
13	Smith A	Childhood Emotional Maltreatment and Somatic Complaints: The Mediating Role of Alexithymia	2014	No biological theorem described
14	Spitzer C	Gender-specific association between childhood trauma and rheumatoid arthritis: A case-control study	2013	No biological theorem described
15	Stone J	The role of physical injury in motor and sensory conversion symptoms: A systematic and narrative review	2009	Discusses conversion, is an exclusion criterion
16	Von Kanel R	Momentary stress moderates procoagulant reactivity to a trauma-specific interview in patients with posttraumatic stress disorder caused by myocardial infarction (Report)	2010	No biological theorem described

17	Von Kanel R	Posttraumatic stress disorder and soluble cellular adhesion molecules at rest and in response to a trauma-specific interview in patients after myocardial infarction (Report)	2010	No biological theorem described
18	Zwinkl S	The association between childhood sexual abuse and adult female sexual difficulties	2014	No causal theorem, only theorems described regarding incidence of complaints based on the study

Developing Emotional Competence through Embodiment to Facilitate Learning: An Educator's Journey

Maria Stella

Abstract

Developing social-emotional competencies is a complex process and neuroscientists are beginning to understand how emotions impact teacher-student learning and well-being. In the study discussed in this article, I used an autoethnographical approach to explore an educator's journey—mine—through working with emotions. I describe and interpret my experiences, emotions, and encounters with self and with others while teaching eight grief and loss courses. Through this process, I explore the role of emotions in teaching and learning. This article concludes with recommendations on how to develop emotional competence and include it in various educational settings.

Keywords: emotional competence, embodiment, mindfulness, learning and the brain, autoethnography

International Body Psychotherapy Journal *The Art and Science of Somatic Praxis*
Volume 17, Number 1, Spring 2018 pp 51 - 65. ISSN 2169-4745 Printing, ISSN 2168-1279 Online
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Introduction

Social emotional learning (SEL) includes the processes of acquiring and applying knowledge, attitudes, and skills in regards to emotions, relationships, and decision making. SEL competencies involves skills that support individuals well-being (Schonert-Reichl, Kitil & Hanson-Peterson, 2017). In the 2015 British Columbia redesigned school curriculum, there is an emphasis on social emotional skills (Dockendorf, 2016) and teachers are expected to engage these skills in the classroom. In order to do so, educators need to be aware of their own social emotional competencies (SEC). Teachers' SEC has an impact on teacher-student relationships, classroom management, and effective SEC implementation (Jennings et al., 2013).

Developing SEC is complex and neuroscientists are beginning to understand how emotions impact students' learning and well-being (Cozolino, 2013; Immordino-Yang, 2016). Promoting caring and supportive relationships between teacher and student is key to reducing students' behavioral problems and teachers' emotional exhaustion (Olson, 2014). The neuroscience of education looks at which social, emotional, and environmental circumstances are essential for this learning to occur (Cozolino, 2013). Understanding these learning circumstances can enhance educational strategies (Immordino-Yang, 2016; Lieberman, 2013).

Teaching includes personal interactions and contextual consideration—and how can teachers improve their quality of teaching? What teaching strategies support students' learning? While keeping these questions in mind and by focusing on my personal and professional development, I decided to investigate my own experience in the classroom. By looking at the potential to extend beyond my own accounts of teaching to transforming school culture in relationships I utilize action research (Creswell, 2012) as a self-reflective process. Action research is a form of professional inquiry in which practitioners themselves investigate their practices as

they find ways to incorporate their educational values (McNiff & Whitehead, 2010).

The purpose of this study was to explore my experience of working with my own emotions as an educator. My objectives were to understand the role of emotion in teaching, identify strategies to cultivate emotional competence, and propose interventions to help educators. The overall aim was to provide an account of how I incorporate teaching practices and social emotional neuroscience findings. Implications for understanding what it takes to create supporting learning environments for both students and teachers are considered.

I begin by presenting an overview of current research on learning, neuroscience, emotions, and relationships, describing the research method and then delineating key findings. I conclude by providing suggestions to enhance educators' social emotional competencies.

Learning, Neuroscience, and Emotion

Neuroscience explains the mechanisms underlying the learning process. What we know about brains is that they change, adapt, and learn over time. Research has revealed that social relationships stimulate the neural plasticity required for learning (Cozolino, 2013; Neumann, 2008; Siegel, 2012;). This plasticity assists in gathering information, building expertise, and propagating knowledge to students. Knowledge about learning and the brain has direct implications for teaching.

A supportive learning environment is created through caring for students (Meyers, 2009), the use of immediacy, and congruent non-verbal behaviour that assist in rapport building (Malott et al., 2014), along with organized and clear goals, intentions, and instructions (Pepe & Wang, 2012). Building student-teacher relationships rather than lecturing seems crucial for SEC—this process resembles the establishment of a client-therapist relationship in counselling settings (Geller & Porges, 2014; Stella, 2014).

Relational body psychotherapy, “an alive, pulsing, and breathing interplay of moment-to-moment presence and mutual emergence active on somatic, cognitive, and relational levels” (LaPierre, 2015, p. 99) sheds light on this complex process. The relational matrix of the client-therapist connection includes many features, such as resonance and mutual affect regulation (Rolef Ben-Shahar, 2014; LaPierre, 2015). Resonance, defined as “a conversation taking place between bodies and the unconscious processes, where the other moves and lives through us and is deeply felt through our bodies” (Rolef Ben-Shahar, 2012, p. 14), is the underlying mechanism beneath attuned communication in the client-therapist and/or teacher-students relationship. Mutual affect regulation, a byproduct of resonance, involves how emotions are expressed both inter and intrapersonally (Rolef Ben-Shahar, 2014; Siegel, 2007). When a therapist and/or a teacher is sufficiently regulated, they can tolerate being affected by their clients/students and still maintain balance or return to balance (Rolef Ben-Shahar, 2014).

In a caring and supportive environment, the instructor's interpersonal attunement creates a biological state in the student's brain, which supports the incorporation of new information (Cozolino, 2013; Olson, 2014). On the other hand, a perceived dangerous environment and chronic stress turn a brain off from learning (Cozolino, 2013). Child, adolescent, and adult learners alike may experience high level of stress due to school-related memories of failure and shame. Others may struggle because their world-view is questioned or they feel anxious about being evaluated (Olson, 2014). Through acknowledging and including these situations in learning activities—such as discussions or reflections—while encouraging struggling students, teachers can rebuild trust and support changes in students' brains. Integrating critical thinking or intellectual challenges with emotional experiences helps reduce stress responses (Cozolino

& Sprokay, 2006) as both cognitive and emotional brain centers are interrelated and regulate one another.

Neural connections of the frontal cortex play an essential role in forming judgments and making decisions, and in regulating emotions, whereas the limbic area regulates basic drives and emotions, playing an important role in survival and safety (Mischel, 2014). As these areas of the brain interact they may expand (Cozolino & Sprokay, 2006), resulting in students calming down and feeling more at ease. Further, as organised teachers provide clear goals and intentions, they assist in reducing the stress students may experience—students may relax if they know what is expected of them. Looking at brains as social organs that learn best in the context of trusting relationships, creating an environment that includes both safety and emotional attunement optimises learning (Cozolino, 2013; Immordino-Yang 2016; Olson, 2014).

Emotion plays a critical role in learning (Immordino-Yang, 2016). Neural wiring between the cognitive and emotional regions of the brain suggests that emotions can either strengthen or suppress the brain's ability to learn. Heightened emotional states create anxiety whereas low affect does not engage the learner (Cozolino, 2013). Maintaining a certain level of emotional arousal that supports learning while considering potential emotional triggers is important. There is also a need for instructors to monitor their moods as these also affect the learning environment (Hendel-Giller et al., 2011).

Utilising emotion, eliciting connections to existing knowledge, including novelty and using storytelling are all ways to focus and take advantage of attention. Attention is necessary for learning; yet, finding ways to gain and hold the student's attention is not a simple task (Hendel-Giller et al., 2011). The brain is designed to focus on what is relevant and ignore what is not. In designing learning experiences, teachers must discover ways to quickly, effectively, and powerfully grab the students' attention. Attention management requires that instructors be aware of the limitations of working memory and avoid cognitive overload in their students (ibid). Applying this knowledge to teaching practices not only enhances learning but also creates stronger interpersonal relationships.

Interpersonal Relationships, Attunement, and Presence

The quality of interpersonal relationships between teacher and students affects the learning process. These relationships can be likened to the healthy caregiver-child attunement that supports emotional regulation by providing a safe haven—a core requirement for learning to occur (Cozolino, 2013). Attunement refers to the sharing of vitality affects, or affective emotional expressions, in the caregiver-child dyad through facial expressions, emotional tones of voice, gestures and touch (Schore, 2012, Schore & Schore, 2014). This experience creates neurobiological changes in both parties, as physical proximity shapes the electrical activity in both brains (Siegel, 2012). In the classroom, when a teacher is warm and inspired, the students know this by observing the facial expressions, gestures, and hearing the prosody in the teacher's voice (Hughes, 2013). The students begin to match the teacher's affective expressions, and the entire classroom eventually is more likely to be in a state of attunement.

This attuned communication is based on exchange: the teacher responds to the students' signals in a way that is rhythmically and affectively attuned to the student's last cues. This way the teacher and students affect each other, contributing to the regulation of neurology. When the teacher is regulated, the students, regardless of their states, begin to co-regulate their emotional states and relax (Olson, 2014; Siegel et al., 2016). Allowing students to develop a sense of safety over time through providing consistent presence, the teacher relationally regulates the students'

nervous system stress responses. This process, in turn, facilitates learning in the classroom.

The quality of teacher presence is an essential component to support this learning. Siegel (2007) refers to presence as:

The quality of our availability to receive whatever the other brings to us, to sense our own participation in the interaction, and to be aware of our awareness. We are open to bear witness, to connect, to attune to our students' internal states. (p. 263)

This presence establishes strong social bonds through emotional attunement and in the moment engagement, allowing the students to feel safe. Further, the students' brains develop new neural connections, leading to calmer and healthier emotional states. I believe that a teacher's presence invites students to feel seen and understood and safe to be present within their own experience.

In summary, social emotional interactions affect the receptivity of the brain to learn. Teachers' SEC is a necessary ingredient to support learning. By incorporating neuroscience of emotions and knowledge in pedagogical practices, educators can sharpen their SEC, reduce emotional exhaustion, and create caring and supporting learning environments.

Methodology

I selected a qualitative research method to include "personal, emotional, and embodied narratives" (Bochner, 2012, p. 157), which are important in education where complex personal data can be explored and made relevant to others. Reflection provides opportunities to review the application of learning theories and instructional strategies (Kalantzis & Cope, 2008) while engaging in professional development. This type of research is focused on building teachers' personal and professional effectiveness while expanding pedagogical knowledge.

In particular, autoethnography—a combination of autobiography and ethnography (Adams & Ellis, 2012)—allows educators to reflect on practical demands of teaching and examine how these experiences shape who they are and what they do (Starr, 2010). Autoethnography is referred to as "action research for the individual" (Ellis & Bochner, 2000, p. 754) through a process of reflection and action. Reflection allows the educator to uncover strengths and weaknesses not only her or his teaching strategies, but also in relational contexts. Action follows in informing future teaching decisions.

The study involved data collection through written self-reflection and observation while teaching eight grief and loss courses (Master's in Counselling Psychology Programme) to capture my thoughts, attitudes, perceptions, habits, and emotions. As Buckley (2015) suggests, autoethnography helps analyse emotions. This process allowed me to focus on my teaching quality and the emotional dynamics at play. I recorded my interactions with students during class to uncover relationship patterns, thus used myself as subject to collect data. Further, Duncan (2004) reiterates that in autoethnographic studies traditional criteria for judging validity cannot be applied, but this method is useful in explicating tacit knowledge and improving practice.

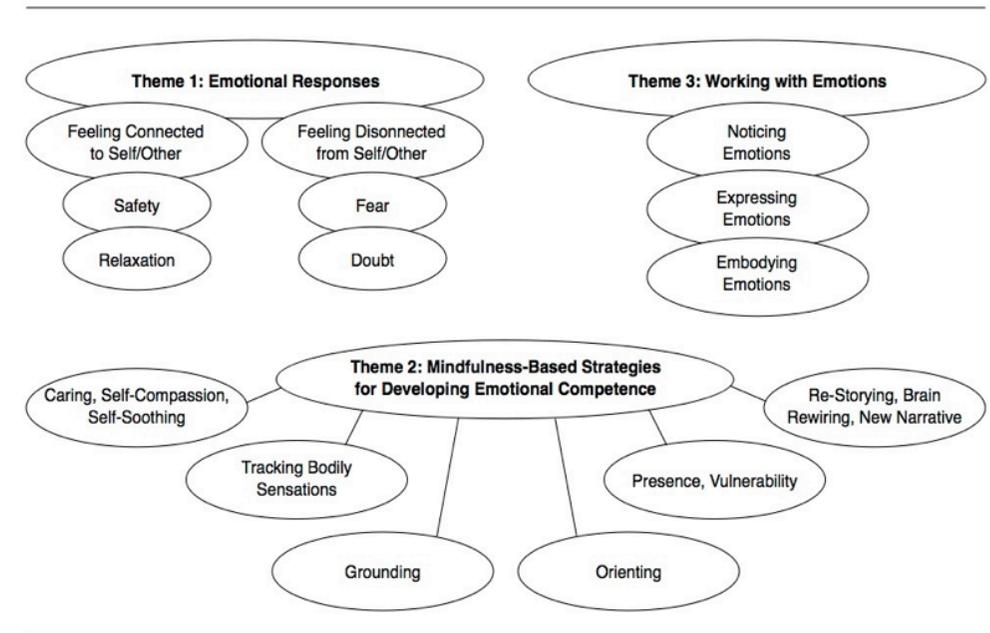
I was the primary source of data and I ensured other individuals' confidentiality (Chang, 2008) adhering to research ethical guidelines. I have not included data related to any conversations with or written material from students. I maintained students' anonymity by omitting any identifying information. This study received ethical clearance from the university ethics committee.

Findings and Data Analysis

I used a thematic analysis approach (Braun & Clark, 2006) to identify themes and an analytical-interpretative writing style to describe, analyze, and interpret the data (Chang, 2008).

As a result of reading and re-reading the data I identified particular features and then themes and patterns from the data shown in Fig. 1 below.

Figure 1
Thematic Map: Understanding Emotions



Theme 1: Emotional Responses

Throughout my reflective journal two main responses surfaced: connection and safety/openness: *I feel a bit more relaxed; my body is more at ease in the openness created. I feel connected to the students sharing as I listen and acknowledge their experiences, surprises, explanations, and meaning making.*

As I leave class my heart is full, the group safety provided the space for many to go deeper into difficult emotions. What was most surprising was the depth of grief that everyone together opened up to and began processing in the group.

The difficult intense feelings of loss that came up during the movie for everyone are being acknowledged, accepted, and allowed to be during the entire day. I sense that in myself and others. There is a sense of deep sharing and opening for the majority of the students.

These responses demonstrate the importance of emotional connection with self and students. The depth of positive feeling appears to influence the learning experience. As Cozolino (2013) mentioned:

building secure attachments is the gateway to emotional regulation, self-esteem, and learning. Because the same factors that make a healthy home are present in a tribal classroom, teachers

have the opportunity to reparent their students [regardless of their age] and shape new attachment circuitry (p. 245).

Building a supportive environment in the classroom creates the possibility for emotional connection and insight to occur where emotions, even if difficult, can be acknowledged and processed, while everyone's brain is re-wired for healthy emotional expression.

And the opposite it also observed, feeling of fear and irritation are present when there is a sense of disconnection with self and students:

I sense some students are not doing as well. I feel my chest area is tightening as I tune into their experience. My sense of steadiness begins to wane a bit as my feet lose the strong contact to the earth and my head is somewhat spacey...By the time we are back from lunch I am supposed to lecture on working with intense emotions. I feel partly numb/dissociated, my brain doesn't work, I am unable to clearly articulate my PowerPoint presentation. I decide to use a YouTube video to help me.

My belly is swirling. I run for the bus and begin to notice I feel so much grief, my heart is heavy and would love to just sob but I don't have access to tears, I just want to so deeply. It's a very hot summer day, unusual for [name of city], the bus is filled with sweaty and somewhat edgy people, is that an expression of what is going on inside?

Presentations day, I expect to be an easier day but that didn't turn out that way. I feel flabbergasted: What was that all about? I am unable to facilitate this group of students. I feel hot, my heart is slightly racing I'm worried that if I say something and call on students' behavior it would come across as a threat. My mind is full of negative judgments. I witness one older student at the back of the class, staring at the wall instead of listening to a group's presentation. This follows by one student verbally attacking another who just shared something very revealing about herself, one student is mortified and the other completely oblivious. And to top it all off, another student is playing with her hair, constantly looking at her cell phone and putting on make up. So much disrespect for one another, it makes me angry and ineffective. I doubt my ability as an educator today and call out these behaviors. These students will eventually have to deal with these nonconscious reactions when they begin to see their own clients—ah, another judgment.

These excerpts give voice to reactions based on threats against self. We tend to react to these threats as if our bodies were in danger. Feeling uncomfortable with body reactions may bring about past feelings of shame and humiliation shutting down learning and social interactions and there is no space for new learning to occur (Cozolino, 2013). There is a necessity to protect personal and students' fears and insecurities to create the conditions for emotional processing. As we care about our difficult feelings we set up the conditions for change.

Theme 2: Mindfulness-based Strategies for Developing Emotional Competence

The second extracted data from my journals are mindfulness-based strategies, which have been part of my theoretical orientation and practice for over 15 years. Hanson (2009) explains, "mindfulness involves the skillful use of attention to both inner and outer worlds. Since your brain learns mainly from what you attend to, mindfulness is the doorway to taking in good experiences and making them a part of yourself" (p. 13). These strategies do not consist of formal practice, but of meditation-in-action techniques that allow me to notice habitual repetitive thoughts, emotions, and bodily postures, gestures, and sensations. These habitual patterns arise as ways of covering up fear and sadness. In my experience being willing to feel these emotions is a necessary step to learn to work with emotions and shift painful emotional memories to positive learning experiences. In the following journal entry, I describe a number

of mindfulness-based strategies:

Day one of my summer semester begins with smoke filled skies and a red sun. I feel a level of anxiety for the destruction the fire might cause. I begin class with a meditative check-in, and invite students to bring their awareness to their body, feel their feet on the ground, their thoughts, their feelings, sensations, the totality of their experience [grounding]. This check-in helps me establish a sense of presence within the class and a greater sense of safety prior to the individual sharing of grief experiences [presence]. As I listen to students sharing their stories I feel fully engaged with a sense of compassion and honor the tears that fill my eyes at various points [caring]. I am surprised by the number and variety of grief experiences the students have encountered, sinking deeper and deeper into the feeling of grief, my body feels heavy and slightly shaky [tracking bodily sensations]. I smell the smoke, I feel pretty uncomfortable and a little numb now [tracking bodily sensations]. As the sharing ends I ask everyone to stand up, feel their feet on the ground, orient to the room, slowly taking in the details from left to right, back and forth, to each other, move, stretch and gently shake their body [orienting]. The heaviness begins to lift as my body is relaxing and opening up, my mind is now clear. I am struck by the students' willingness to share and by my own emotional reaction to the sharing. I sense the sharing circle has created a much greater sense of safety and reflect on the gift of presence, this initial exercise has been about giving each other the gift of presence while I simply hold the space for that to occur. The intense emotions, grief, anger, sadness move through, as they are experienced in the body, the mind, and the environment—the space within self and other [re-storying].

This excerpt is an example of resonance and mutual regulation between teacher and students. I was aware of my somatic reality, my students' experience, the interaction with the surroundings through a re-enactment of unconscious structures (Carroll, 2009). There are elements in this entry that demonstrate the importance of emotional connection with the material presented and the potential for powerful positive influences on the learning experience. The elements presented are as follows: grounding, orienting, tracking bodily sensations, caring; self-compassion/self-soothing, presence/vulnerability, and re-storying. I use these elements to work with emotions and they are present throughout my journal entries.

Grounding is an ancient mindfulness technique (Mipham, 2004) that brings awareness to the present moment (and the breath) experience, allowing me to notice what is occurring in my body, mind, and environment. Grounding is "used to support and increase capacity for somatic mindfulness, connection and nervous system regulation" (Heller & LaPierre, 2012, p. 228) thus it brings awareness back into the body supporting inter and intraconnection.

Another example for grounding and tracking bodily sensations:

Following small group discussions on traumatic deaths, I felt queasy and decided I needed some grounding so I invited everyone to notice their feet on the ground, raising the front of their feet while leaving the heels on the floor, then dropping it, and alternating both feet; gently tapping the top of their heads, faces around the eyes, chins, chests, stomach and belly area. They were then asked to notice the sensations in their body. I notice the feeling of queasiness moving through my stomach area, changing and shifting, then releasing into my belly, and down my legs.

Orienting is another mindfulness technique that helps me relax, and I often guide students through this practice when I sense the need to check in and re-focus. Here is an example:

Bring your awareness to the room, slowly moving your face from right to left, take in your environment, places of shade/light, corner/angles, textures, colors. Where do you like to place most of your attention to?

Caring is about loving-kindness practice, or encountering and embracing negative situations

with kindness and concern. Caring includes being able to experience difficult emotions and “bringing warmth to unwanted feelings” (Chodron, 2009, p. 90). Another example for caring:

During the initial check-in students express being very stressed as they have many assignments due this week. I sense the tightness in my body, my shoulders, my belly, my calves. I need to change this state and hopefully it will help students as well, so I invite them to take a moment to connect to how they feel now. Close their eyes if that feels comfortable, nothing needs to change, simply allowing themselves to feel how they feel. We spend no longer than a minute feeling together, in silence. There is a sense of gathering and accepting that fills the room, I begin to relax, a sense of warmth is permeating my body and the room.

Presence is the fundamental underlying quality of the therapeutic relationship, involving “therapists being fully in the moment on several concurrently occurring dimensions, including physical, emotional, cognitive, and relational” (Geller & Porges, 2014, p. 179). This experience can also be cultivated between students and teacher. Here is another example of what can occur when attuning deeply to one another:

Following the students’ work on their “loss line” exercise everyone discusses their experiences with losses, how they were affected and how they coped with them. Students and myself are surprised how powerful it is to simply be with another. Many acknowledge the healing power of truly joining in actively listening to their stories. Presence seems to have the power to calm, normalize and validate transmitting a space of trust and openness.

Re-storying, as employed in Narrative Therapy (White & Epston, 1990), is focused on the ways in which our personal narratives are told. Our narrative sense of self is ever evolving, internalising individuals’ perceived past, present, and imagined future. This sense of self is linked to our sense of body through the language we internally speak to ourselves (Borghi & Cimatti, 2010). By re-storying our personal narrative, feeling the intensity of our emotional life, we can embody our emotions; acquire new knowledge of who we are and how we operate in the world. I practice re-storying every time I reflect, either in internal dialogue, or in writing, about the experience of teaching.

Theme 3: Working with Emotions

The theme of processing emotions is evident in my journals and these extracts are taken from reflections that highlight the following subthemes: noticing, expressing, and embodying emotions:

Following the death contemplation exercise I notice a number of students’ bodies tightening, some of their breathing is shallow and they looked white, oh no, sign of shock [noticing]. As my body is fully present I sense the chilling shock. I continue to pay attention to my feet and the ground beneath. As one of the students begins to sob I invite her to sit on the floor with me and invite all those who are comfortable to do the same. I work with her asking her to touch the ground with her hands, asking her to tell me about the weekend at the folk festival, she remembers the feeling of cool water so we use that image to bring her into feeling of safety, cool sensations in her body, the feeling of water running through as she begins to let go coming back into her body, the rhythm of her breath is back to normal despite the sobbing and the letting go [expressing and embodying]. I continue to look around me so see who needs my help. Another student has a hard time breathing, I move closer and ask her to bring her attention to the moving of the breath in her body, we found a memory to work with and bring her back to the present moment. She is slowly making her way into the room while talking about her current experience [expressing]. Another student is still sobbing deeply I know the pain in

her body is moving as, resonating with her, I sense the movement within my own body [expressing and embodying]. Another student’s memory of pain is coming up for healing. I say can you feel us with you? She acknowledges that. I ask her to take her time, as she explains this is a familiar feeling for her [expressing]. She begins to sob deeply as we simply stay with her and let the emotions move through. A feeling of quiet and peace begin to come about. I feel we are going through the healing now; the frozen parts have come up and moved on [embodying]. One last student is saying it’s hard to be in the room. I move closer and ask her to call in her ancestors for help and to go back to where she comes from. She brings into mind a canyon with a sacred river. I ask her if she can put her feet into the river. She says that’s sacred and is upset [expressing]. So I simply tell her to do what she needs to do for us [embodying]. More feeling of peace come about. Grace is with us. We spend some time basking in the grace then we break for lunch. Great, lunch time now I’m walking in the sun, I feel waves of sadness and grief moving through my body [noticing], as I find a quiet corner to let it out [expressing] it’s taking a long time, the mountains and the water are soothing to look at. Then it’s done, my body is unwinding, my shoulders are relaxed, my belly is alive, I feel safe and connected now [embodying]... Emotions want to communicate, emotions need to come up, be felt and move through. As an educator, I need to learn how to be comfortable with these emotions so that we move them within in the community of relationship. When I am able to access body memories through the felt-sense I can begin to discharge pent up energy stored in the body from previous hurts.

To summarise the three steps process: firstly, “emotions rely on subjective, cognitive interpretations of situations and their accompanying embodied reactions...and are essential to managing life” (Immordino-Yang, 2016, p. 19). Noticing begins with sensing the bodily aspects of emotions, or visceral sensations that alert one on the power of what is occurring in the moment. Physical sensations associated with emotions are connected to the somatosensory systems of the brain that sense the body states (Damasio et al., 2000; Immordino-Yang, 2016;). Noticing will bring about emotional thoughts linked to memory, past histories, and reactions. At this point we may feel safe enough to express emotions staying socially engaged, or overwhelmed, our basic survival neural system will fight-flight-freeze our states.

Secondly, “expressing an emotion is an early step toward coming to know what that emotion is...setting the stage for a number of important emotion-related processes, including emotion awareness, emotion understanding, and of course, emotion socialization” (Southam-Gerow, 2013, p. 23). Expressing emotions is the first step to healthy emotional regulation. Emotion naturally seeks expression, it is how the brain moves us, but we must feel it first. However, negative difficult emotions may be suppressed as they are uncomfortable, and these emotions may hide beneath our conscious awareness. These inhibited emotions may cause behavioural problems. An understanding of emotional expression helps explain why emotional movement alone can lead to emotional balance—for example the best way to get rid of grumpiness is to encourage its expression (Neufeld, 2016) through facial expressions, voice, gestures, and body movements to transmit this emotion. Emotions provide important information about our reactions to situations, whereas inhibiting the expression of emotion can lead to impaired immune system function and poor health (Danese & Baldwin, 2017; Frija, 1986; Goleman, 2005;). Additionally, there is increasing understanding of the importance of emotional knowledge and emotional understanding in enhancing social competence and development (Neufeld, 2016). When I am triggered and ask myself to stop, calm down, and to keep things under control I teach my body to suppress emotions, and this internal suppression leads to uncomfortable visceral sensations. In the past, I have come to learn to fear and distrust bodily

sensations and this, in turn, led to me becoming numb or dissociated. The way back to feeling is slowing down my emotional thoughts enough to re-connect with emotional messages.

Thirdly, “perceiving and thinking about emotion involve perceptual, somatovisceral, and motoric re-experiencing, or embodiment, of the relevant emotion in one’s self. The embodiment of emotion...causally affects how emotional information is processed” (Niedenthal, 2007, p. 1002). This last step is most important: learning to trust the body’s messages and openness created by moving through intense emotions. The movement of emotions experienced as tightness in my jaws and shoulders with difficult emotions and expansion in my chest and belly with positive emotions. I reconnect with the rhythm of the body and the breath to reestablish a sense of safety when I feel overwhelmed or numb (Stanley, 2016). This sense of embodied presence, a quiet aliveness, clarity and strength is guiding the process of emotional movement. Levine (2008) eloquently explains: “once you learn to pendulate successfully, you’ll discover that your seemingly infinite emotional pain begins to feel manageable and finite. This shift allows your attention to move from dread and helplessness to curiosity and exploration” (p. 57). This pendulation, or oscillation, occurs when past negative emotional associations are re-experienced in the present and held in either a pleasant memory, or a caring presence with relationship with another, for example teacher-student. It is a mindful-based technique of shifting awareness like a pendulum between one felt sense and another, between positive and negative physical/emotional states (Ogden et al., 2006; Stanley, 2016). Emotions and memories are experienced and expressed in and through our bodies. As I sooth the intensity of grief, I trust the movement of bodily sensations, which might include dizziness, nausea, trembling, knottiness, heaviness, and fear reactions will shift within the felt sense—a caring feeling of presence—into relaxation reactions. This process supports and relieves anxiety, as the emotions continue to move emotional thoughts and feelings change to positive and new ways of being with the intensity of the grief now becoming feelings of peace and grace. Now the body and the brain have opened up a new pathway supporting emotional processing. In short, this theme is an example of mutual affect regulation (Rolef Ben-Shahar, 2014) as previously described.

Discussion

Emotions and cognitions are interdependent neural processes. Immordino-Yang (2016) explains, “it is literally impossible to build memories, engage in complex thoughts, or make meaningful decisions without emotion...we only think deeply about things we care about” (p. 18). Thus, learning has to include emotional connections to personal narratives. Instead of fearing the power of emotions it can be included in the classroom. As I notice my own uncomfortable bodily sensations (tensing or relaxing muscles, shallow breathing) contributing either consciously or nonconsciously to emotions, they will in turn influence cognitive processes such as attention and memory (Immordino-Yang, 2016). As I notice these bodily sensations, acknowledge their presence, care for and sooth their intensity by giving them attention, my body will begin to relax, safety is created, the fear subsides, and these emotions can be expressed (internally or externally), move through, embodied with a novel narrative (Stanley, 2016). This is how the brain is re-wired with new ways of being in the world.

What I am proposing is the inclusion of emotions in everything we do in the classroom. As Immordino-Yang (2016) mentions, “people learn through experience how to interpret situations, as well as how to make sense of their emotional reactions...experiencing or feeling emotional reactions and how these feelings steer thoughts and behavior, consciously or not” (p. 21). If emotions are not acknowledged, or worked with, fear and doubt may run behind

the scene, making it challenging for new learning to occur. If emotions are acknowledged, through noticing the automatic mental and bodily reactions to situations, students can learn to tend to the magnitude of bodily reactions, healthy emotional expressiveness, and the subjective embodied quality of individual feelings can be consciously dealt with.

Understanding emotions is about making meaning and making new meanings. Emotions as main subject should be at the forefront of every school and every curriculum—as we educate students and teachers about their emotional lives, we raise kinder and healthier individuals who learn to harness the power of emotions for building a better world. Suppressed emotion on the other hand may cause havoc and alienation toward the self and other. Since we evolved to pay attention to unpleasant experiences, our negativity bias overlooks positive experiences and highlights negative experiences creating stress and anxiety (Fogel, 2009; Hanson, 2009).

Negative emotions are often felt in the body. These physical reactions involve the autonomic nervous system (ANS) and the hypothalamic-pituitary-adrenal axis, creating numerous negative consequences for physical and mental health. These negative experiences correlate with the amygdala releasing of threat-signals and the reactions are as follows: the thalamus sends signals to pay attention to the brain stem, which in turn releases stimulating norepinephrine in the brain; the sympathetic nervous system (SNS) sends signals to organs and muscle in the body to fight-flight-freeze; and the hypothalamus, regulating the endocrine system, prompts the pituitary glands to release stress hormones: adrenaline and cortisol (Hanson, 2009). Learning is impaired when individuals are in constant high-stress states.

After living on constant high alert—at times unrecognized—there may be a need to learn how our body works and ways to engage the parasympathetic nervous system (PNS) to produce feelings of relaxation and contentment, essential for healthy emotional regulation. Optimal learning requires a sense of safety. Social engagement—a system connecting the social muscles of the face (eyes, mouth and middle ear) with the heart, regulated through a myelinated branch of the vagus nerve—provides a way to counter the overstimulated nervous system creating the conditions for feelings of safety (Porges, 2011, 2017). The neural circuits that support social engagement and emotional regulation are available when the ANS deems the environment safe. It is therefore possible to learn to observe facial expressions, body posture, and nonverbal communications of self and others to understand and shift internal states from stress-based responses to relaxation-based responses. This process engages the right brain, which is considered dominant for the implicit, nonverbal, holistic processing of emotional information and social interactions (Schore, 2014).

The table below summarises the process of working with emotions, including strategies that I find helpful in my own work as an educator

Table 1
Developing Emotional Competence

Process	Strategies
1. Noticing emotions: Emotional thoughts Physical sensations Feelings	<ul style="list-style-type: none"> • Caring • Self-compassion • Self-soothing • Presence

2. Expressing emotions:	<ul style="list-style-type: none"> • Psychoeducation (ANS) • Grounding • Orienting
a). Fear, repress/overreact (fixated frozen)	<ul style="list-style-type: none"> • Tracking bodily sensations • Caring • Presence
b). Safety, express (move/flowing)	
3. Embodying emotions:	<ul style="list-style-type: none"> • Slow down (internal/external narrative) • Bring awareness to bodily sensations and pendulate/oscillate between comfortable and uncomfortable sensations, thoughts, images, gestures • Caring • Presence • Re-storying emotional thoughts, bodily sensations, emotional reactions, emotional expressions
New narrative around emotions (self other)	
Brain Rewiring	
New behavior/action	

This process and these strategies may be utilised as a framework to teach about emotions in classrooms, beginning with kindergarten up to K–12, and beyond, in teacher education programs and teachers' development at the district level to develop social emotional competencies. This training is also applicable to facilitate clinician development for masters in counselling programs, clinical supervision settings, and body-oriented psychotherapists.

Limitations and Recommendations

Chang (2008) pointed to the risk to validity and accuracy of data in what the researcher places their focus on while leaving out other reflective material deemed not important. I chose to concentrate my research on emotions as a teaching tool in the hope that my narrative and analysis provide the reader a degree of resonance and credibility. The autoethnographic approach can be revealing and I was willing to confront myself both emotionally and professionally in order to find ways to improve my practice.

This study was limited to myself as the researcher and based on my background, education, and experience. It would be compelling to include a number of educators in various settings (higher education, undergraduate, primary, and secondary teachers) in a more diverse ethnographical study. This study could be performed following a specific training to work with emotions enhancing educators' emotional life.

As recent research reveals, the ways in which individuals learn is based on life-regulating goals implemented by emotions (Immordino-Yang, 2016). In order to acquire new knowledge, educators need to understand the relationship between emotion and cognition to create supportive learning environments (Immordino-Yang, 2016). A specific training program on the neuroscience of emotions, including practical tools to work with emotions may include the followings:

1. Learn to identify conscious or nonconscious body sensations or thoughts triggering emotions both in social and non-social contexts.
2. Autonomic nervous system (ANS) education to understand both body sensations, or signals, racing emotional thoughts and numbing behaviors.
3. Strategies to support emotional expression and healthy emotional regulation.

4. Embodied reflections to assist in re-wiring the brain and learning to harness the power of emotions.

This program would enhance educators' social emotional competencies, which in turn could help teachers implement the redesigned British Columbia school curriculum. Furthermore, children, adolescents and adult learners could benefit from such training facilitating self-recognition, self-awareness, and a healthy emotional life.

BIOGRAPHIES

Maria Stella is a Professor and Associate Director, Master of Education School Counselling program and Clinical Internship Supervisor for Master of Counselling program at City University in Vancouver B.C. She received her doctorate in East-West Psychology from the California Institute of Integral Studies in San Francisco.
Email: mariastella@cityu.edu

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The impact of training and therapeutic practice on body awareness of Trainees and Body Psychotherapists at the Greek Biosynthesis Centre - A pilot study

Maria - Olga Sakellariou, and Ion Beratis

Submitted October 2017; accepted November 2017

Abstract

Body awareness is of central value in body psychotherapeutic approaches. In the framework of Biosynthesis practice and training, Interoceptive Body Awareness (IBA) is one of the most valuable personal competencies for the therapist. It becomes a means of guidance in the therapeutic encounter, forms the therapeutic intention and shapes the therapeutic intervention. The current pilot study aims to objectively portray the Body Awareness profile of Greek Biosynthesis trainees and therapists. In a between subjects design the extent of the developmental impact Biosynthesis training / therapeutic practice has on the degree of Interoceptive Body Awareness (IBA) was measured by the Multidimensional Assessment of Interoceptive Awareness (MAIA) instrument in three different groups of trainees and experienced therapists (N = 55). Data analysis comprised of MAIA reliability analysis in actual Biosynthesis data, the one-way analysis of variance (ANOVA) to determine variations in IBA construct and sub concepts between the different groups of Biosynthesis trainees / therapists and Post Hoc Comparisons with Bonferroni Correction for the clarification of differences. Results support a significant developmental impact of Biosynthesis training / therapeutic practice in regard to Interoceptive Body Awareness (IBA) and to three of its sub concepts, Attention Regulation, Self - Regulation and Body Listening. A challenge for future research is the extension of the research design to a larger sample of body psychotherapists in Greece, by focusing on the relationship between Body awareness and embodied countertransference, while adding to the quantitative a qualitative component as well.

Keywords: Biosynthesis Body psychotherapy, Interoceptive Body Awareness, Body-Psychotherapy training, Quantitative analysis

International Body Psychotherapy Journal *The Art and Science of Somatic Praxis*
Volume 17, Number 1, Spring 2018 pp 66 - 84. ISSN 2169-4745 Printing, ISSN 2168-1279 Online
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Introduction

Body awareness has become, in recent years, a subject of scientific research in the field of health sciences and psychotherapeutic practice. Despite its profound importance it may carry a controversial connotation. On the one hand, in studies of chronic pain, anxiety and panic disorders, heightened body awareness refers to a patient's maladaptive cognitive attitude that exaggerates the experience of physical symptoms and is accompanied by rumination and negative beliefs, anticipating a coming catastrophe (Baaset al.,2004; Mehling et al., 2009). On the other hand, the cultivation and enhancement of body awareness in the framework of body psychotherapeutic

approaches is considered to be a key element in the management of negative painful conditions. It is the path leading from the disruption of body and oneself to integration (Lackner, & Fresco, 2016, Mehling et al., 2011).

The concept of body awareness refers to a person's ability to consciously focus attention onto the body (Mehling et al., 2009, Mehling et al. 2012, Price, & Thompson., 2007). It is connected to both proprioceptive and interoceptive body awareness. Proprioceptive awareness addresses the conscious perception of the skeletal and muscular system, movement, posture and balance. Interoceptive awareness implies the capacity of subjective recognition and awareness of afferent signals originating from the inner organs and processes of the body, such as heart beat, respiration, gastro intestinal system and the autonomous nervous system (Mehling et al. 2012).

Body awareness as an ability is not only an ideological and theoretical premise but is also of central value in body psychotherapeutic approaches (Totton, 2003). Body awareness also describes a set of skills on a continuum of verbal to non-verbal modalities in body psychotherapy (Leijssen, 2006) that makes use of the client's and the therapist's physical presence. Body awareness offers the therapist, via embodied countertransference, an important source of information about the actual process a client is undergoing and a tool for therapeutic intervention (Totton, 2014). For the client, body awareness acts as a central means of self-regulation and transformation (Carroll, 2014).

The importance of body awareness is also supported by evidence, based on neuro psychological findings (Ceunener et al., 2016, Craig, 2003, 2009). According to these findings interoceptive body awareness is linked to regional brain activities taking place in the anterior insular cortex, where a Meta - representation of the state of the whole body is constellated in regard to the emotional and pain-related experience. Some consider interoceptive capacity to be important for affect regulation, decision making and for the sense of self (Damasio, 2003, Dunn et al., 2010.). Damasio (2003) declared these body mapping dedicated brain areas as the potential neural basis "of the mind's representation of the self" and the biological place for the "grounding of the mental self" (p.227). Neuroplasticity research as well as mindfulness research suggest that Interoceptive Body Awareness can be cultivated through meditation and IBA training and practice (Critchley et al, 2004; Hölzel et al., 2011). Moreover, body awareness is correlated with positive affect and body responsiveness (BR), an important concept of embodiment, which describes a person's ability to integrate and consciously react to body sensations using them to lead behaviour and decision-making in a meaningful manner (Tihanyi et al., 2017). Body responsiveness furthermore acts as a significant mediator between body awareness and affect. Research findings support the fact that having a higher degree of body responsiveness is connected to higher awareness of body sensations and to more positive than negative emotional states and vice versa (Tihanyi, et al., 2017).

In recent years, addressing the issue of body awareness in an objective and quantifiable manner has become one of the greatest challenges. In an extensive review of existing self-report instruments, measuring body awareness in the fields of body perception, body consciousness, embodiment and mindfulness, underlying concepts were analysed and psychometric properties assessed (Mehling et al., 2009). The authors concluded that the majority of measures a) do not reflect a unified multifaceted understanding of body awareness; mostly focusing on one single dimension b) they rather reflect the maladaptive than the adaptive non-judgmental apprehension of heightened body awareness c) the majority of them lack strong psychometric properties and / or usage in a wide range of studies, d) none of these instruments were validated against objective measures, such as heart rate detection, respiratory resistance load detection and gastrointestinal distension.

In order to overcome these obstacles the operationalisation from an initial “physiological approach” of body awareness was extended to a multidimensional construct of body awareness, defining the complex BA as: “...the sensory awareness that originates from the body’s physiological states, processes (including pain and emotion), actions (including movement) and functions as an interactive process that includes a person’s appraisal and is shaped by attitudes, beliefs and experience in their social and cultural context” (Mehling et al. 2012, p.2).

Based on this perspective the authors implemented a systematic mixed – method process aiming at the construction of a multi-dimensional body awareness measure, “The Multidimensional Assessment of Interoceptive Awareness (MAIA)”.

MAIA is a 32 item, multidimensional, change sensible self-report measure, developed in the English language on a 6-points Likert scale. It assesses eight distinct, but related concepts of Interoceptive Awareness, grouped into five dimensions. The eight sub concepts are Noticing (N), Not Distracting (ND), Not Worrying (NW), Attention Regulation (AR), Emotional Awareness (EA), Self-regulation (SR), Body listening (BL) and Trusting (TR) (Mehling et al., 2012).

Body psychotherapy (BP) aspires, in recent years to become an established form of psychotherapy, overarching different schools of thought and practice. In most of them, BP refers to a psychotherapeutic framework following the central principals of scientific psychotherapeutic practice, currently undergoing a shifting process, where the necessity of a more scientific, evidence based profile emerges (Koemeda-Lutz et al., 2006, Loew; et al., 2006, Röhricht, 2009).

In the tradition of Reich’s conception of “functional identity between body and mind” (Rolef Ben-Shahar, 2014, p. 159) the fundamental common targets in the theoretical body psychotherapeutic discourse focus on overcoming the traditional body and mind split as expressed in the Cartesian dualism and serving in a holistic view the personal potential of the emotional, cognitive, physical, social and sometimes spiritual processual integration (Röhricht et al., 2014; Totton, 2003). In Body psychotherapeutic practice the body takes a central place, following the fundamental assumption that constitutes the lived scene of emotions, cognitions, beliefs, perceptions and bodily expressions, thus providing the medium of our existence (Geuter, 2015).

Under this perspective, body awareness becomes an important facet in the interplay of the therapeutic relationship, the sense of the therapists’ embodied identity and the clients’ intended embodiment. It supports both the dynamics of transference and embodied countertransference as well as the outcomes of body psychotherapeutic interventions (White, 2014).

Biosynthesis is Body Psychotherapy in the Neo – Reichen tradition, founded by David Boadella in the early 70’s, emphasizing processes of integrative self-formation that guide organic, psychological and spiritual growth. David Boadella (1997) stated the importance of the relational aspect in an embodied therapeutic encounter: “The embodied therapist and the embodied client enter the room. Two breathing systems interact, two motoric systems come into awareness of each other: a relationship begins in which non-verbal communication plays a very large part (p.35)... Breath is relational, touch is communicative, movement is interactive, emotionality is contact-oriented, object relations become body subject relatedness” (p.37). By introducing a holistic and integrative approach he outlined the prospects of a psychotherapy of the future “that is more able to integrate the dimensions of the human being (p.37)... by putting more emphasis on the capacities of the client to resynthesize his experiences based on a transformative re-embodiment in which somatic, psychic and spiritual levels of being are brought into co-evolution with each other” (p.37).

The Biosynthesis concept of body awareness is closely related to the three main therapeutic modalities: “Centering”, “Grounding” and “Facing” (Boadella & Boadella-Specht, 2006; Boadella, personal communication, February 2017). Boadella (1987) related these three therapeutic modalities to the three embryological layers on which the human body is built up: the endoderm that formed the inner organs, the mesoderm that formed the muscular and skeletal system and the ectoderm that formed the skin, brain and nervous system (Totton, 2003).

“Centering” is regarded in the Biosynthesis approach as an interceptive contact to breathing and to inner bodily and emotional states. It aims at rebalancing the polarities of acting out and emotional apathy towards a more centred emotional position. “Grounding” refers to proprioceptive contact to movements and muscle tone. It aims at rebalancing the polarities of hypotonous muscular body state, connected to feelings of resignation and of hypertonus muscular body state, connected to feelings of pain and stress, towards a more plastic body state, flexible movement and emotional expression. “Facing” is considered as exteroceptive contact to the expressions and postures of another person. It aims at rebalancing the polarities of over focusing and under focusing, towards a more realistic perception of the outer world (Boadella, 1987). In the framework of the European Association for Body Psychotherapy (EABP), Body Awareness constitutes an important required skill, defined as “Felt sense and somatic awareness” (Boeninget al, 2012). In Biosynthesis training, Interoceptive Body Awareness, one of the most valuable personal competencies, determines to a great extent the therapist’s sense of self as an embodied, as well as a spiritual agent. At the same time, it becomes the means for guiding the therapeutic encounter, a source of information in the dynamics of embodied countertransference and a tool that forms the therapeutic intention and shapes the therapeutic intervention (Boadella, 2015).

The above mentioned theoretical considerations and evidence based research findings form important facts for the therapeutic practice as they underline the close connection between body processes, mind and self-formation. They emphasise the developmental potential that interoceptive body awareness has for trainees and therapists via training and practice and underscore its capacity to offer the therapeutic encounter the “Ground” for a person’s contact to core qualities (Boadella, 1998).

Under these premises the need to capture and portray in an objective manner a picture of the Greek Biosynthesis Therapists’ Body Awareness profile has emerged. The current pilot study aims to estimate the extent of the developmental impact Biosynthesis training/therapeutic practice might exert on Interoceptive Body Awareness of trainees and experienced therapists. To the best of our knowledge, this is the first research study to explore the specific association within the area that covers the field of Biosynthesis Body Psychotherapy.

Methods Design

The research was conducted with the approval and support of the Greek Biosynthesis Centre. A between subjects’ design was applied that compared three different groups of participants with varying psychotherapeutic experience in regard to their experienced degree of body awareness (experienced therapists, middle experienced Trainees, newly appointed trainees). This approach was guided by the intention of capturing a developmental component in the cultivation of body awareness via learning of associated skills during Biosynthesis training. Hypotheses testing referred to the impact that the length of Biosynthesis training / therapeutic practice had on body awareness by comparing the three different groups.

It was hypothesised that participants in the three different groups would differ significantly in their IBA index, and in their IBA sub concepts indices, respectively revealing higher to lower scores according to their level of training / therapeutic experience.

Participants

The Biosynthesis pilot study consisted of a sample of 55 Greek participants, all trainees and therapists affiliated with the Greek Biosynthesis Centre. Participants were contacted in person during a training course (middle experienced trainees and newly appointed trainees) or during a supervision course (experienced therapists). Inclusion criteria for participation were being a) an experienced therapist with completed training and at least 8 years of therapeutic practice (Group 1) or b) a middle experienced trainee currently undergoing training (Biosynthesis Training course T8, Biosynthesis Training course T9) in the third or fifth year of training respectively (Group2) or c) a newly appointed trainee, just starting training (Biosynthesis Training course T10) with Biosynthesis.

Data collection

Data collection was conducted in the period from 3/2/2017 to 5/3/2017 through a two-part questionnaire administered in pencil paper-version during the respective training / supervision courses. Table 1 presents the research design in regard to group affinity of participants, sample size, date of data collection and modus of instrument implementation:

Table 1: *The Research design in the Biosynthesis pilot study*

Group affinity	Sample size (N =55)	Date of data collection	Questionnaire implementation
Experienced therapists (completed training & > 8 years therapeutic experience in Biosynthesis body psychotherapy)	n = 17	3-5/2/2017	During supervision course (E2) or via personal contact in the case of non-participation in E2
Middle experienced Trainees (2 to 4 years training experience in Biosynthesis body psychotherapy)	n = 22	10-12/2/2017	During an obligatory theoretical training course on “counselling in body psychotherapy”, where T8 & T9 trainees participated
Newly appointed trainees (no training experience in Biosynthesis body psychotherapy)	n = 16	3-5/3/2017	At the beginning of the first module of the new Biosynthesis training (T10)

Materials

For Hypotheses testing the Interoceptive Body Awareness (IBA) concept was measured by the Multidimensional Assessment of Interoceptive Awareness (MAIA). As mentioned above, the original MAIA instrument (Mehling et al. 2012), consists of 32 items, evaluating the IBA construct and the eight sub-concepts of body awareness, rated at a 6-point Likert scale, ranging from 0 (never) to 5 (always). By answering the MAIA questionnaire participants have to rate each of the 32 items in regard to “how often each statement applies to you generally in daily life” (Mehling. et al, 2012) with ordinal responses coded from 0 (“never”) to 5 (“always”). Scales are scored in a manner that a higher score signifies heightened body awareness. Extensive psychometric properties testing of MAIA had good results supporting its reliability, dimensionality and good construct validity.

Table 2 presents the distinct concepts and dimensions of the original MAIA instrument (Mehling et al. 2012), offering the respective definitions with reference to the connected items.

Table 2: *MAIA Interoceptive Body Awareness (IBA) construct & concepts*

Concepts	Items	Definition	Dimension
Noticing (N)	Four items 1 - 4	Awareness of uncomfortable, comfortable, and neutral body sensations	A. Awareness of body sensations
Not Distracting (ND)	Three items 5R*,6R*,7R*	Tendency not to ignore or distract oneself from sensations of pain or discomfort	B. Emotional reaction and attentional response to sensations
Not Worrying (NW)	Three items 8R*,9R*,10R*	Tendency not to experience emotional distress or worry with sensations of pain or discomfort	
Attention Regulation (AR)	Seven items 11 - 17	Ability to sustain and control attention to body sensations	C. Capacity to regulate attention/ ability to sustain & control attention to body sensations
Emotional Awareness (EA)	Five items 18 - 22	Awareness of the connection between body sensations and emotional states	D. Awareness of mind/body integration: access to more developed levels of body awareness

Self - Regulation (SR)	Four items 23 - 26	Ability to regulate distress by attention to body sensations	
Body Listening (BL)	Three items 27 - 29	Tendency to active listening to the body for insight	
Trusting (TR)	Three items 30 - 32	Experience of one's body as safe and trustworthy	E. Trusting body sensations

R* = reversed

In the Biosynthesis study the administered questionnaire consisted of two parts. The first one addressing demographic variables, including age, gender, educational background and previous experience in psychotherapy as a client or therapist, and the second one contained the preliminary Greek translation of the original self-report MAIA instrument, measuring the dependent variable of interest: Interoceptive Body Awareness (IBA). The MAIA questionnaire was forward translated from English into Greek by the main investigator and crosschecked by two experienced English speaking Biosynthesis Body psychotherapists. In a second run the Greek questionnaire was backward translated by one of the experienced Biosynthesis Therapists and crosschecked by the other experienced Biosynthesis therapist and the main investigator. Necessary homogenization was conducted in a group process.

In the second part of the questionnaire participants had to respond to the question "how often does each statement apply to you generally in daily life?" using the 6-point Likert scale. The sub scale scores were calculated by averaging the items on each scale, varying from 0 to 5. The Interoceptive Body Awareness index was calculated by averaging results on the sub scales, varying in a 0 to 5 range, with higher scores signifying heightened body awareness.

Procedure

The study was designed and approved by the Institutional Review Board of the American College of Greece. Biosynthesis trainees and therapists participated voluntarily in the study. The theoretical framework as well as the purpose, methodological approach and procedure of the study were fully explained by the investigator. Participants were given an informed consent form that they had to sign together with the two part questionnaire. After completing the questionnaire, they were provided with a debriefing statement and the contact details of the researcher, should any questions arise or problems occur. Protection of anonymity and confidentiality were assured and data collected were stored in a password protected computer.

Results

In regard to the demographic profile of participants (see Table 3) females were overrepresented (78, 2%), while males (21,8%) were underrepresented in the sample. The female disproportion in the participants' gender is typical for the gender distribution in the psychotherapeutic profession in Greece from which the three samples were recruited. According to data of the European Association for Psychotherapy for Greece (EAP, 2017) from 326 holders of the European Certificate of Psychotherapy (ECP) females are overrepresented with 76%, while males are underrepresented with 24%.

Among participants ages ranged from 24 to 62 years of age, with a mean age of 45.15 (SD = 9. 25). In regard to their educational background participants (N = 55) were mostly well educated with 45. 4 % having a graduate degree, 38.2 % having university degree and only 16. 4% having completed secondary education (see Table 3). The great majority (96.4 %) of participants (N = 55) had psychotherapeutic experience as a client with a mean duration of 8 years attending psychotherapy (SD = 5.93), mostly in Body psychotherapy or Gestalt. In regards to the actual practice of psychotherapy, 49,1% are currently actively involved, with the experienced therapists' group (n = 17) having a 100% engagement. As the two trainee groups are concerned, 31.8% of middle experienced Biosynthesis trainees (n = 22) practised as psychotherapists as compared to 18.8% of new Biosynthesis trainees (n = 16) (see Table 3). All trainee practitioners were psychotherapists of other directions, acquiring an additional psychotherapeutic qualification.

Table 3: *Sociodemographic data of Biosynthesis pilot study participants*

Sociodemographic variables	Categories		
Gender (100%, N = 55)	Females 78,2% (n = 43)	Males 21,8% (n = 12)	
Age (100%, N = 55)	Min 24 years	Max 62 years	Mean Age 45,15 years (SD = 9,25)
Educational Background (100%, N = 55)	Graduate degree 45,4% (n = 25)	University degree 38,2% (n = 21)	Secondary Education 16,4% (n = 9)
Psychotherapy experience as client (100%, N = 55)	Yes 96,4% (n = 53)		No 3,6% (n = 2)
Actual practice in Psychotherapy (49,1% , N = 27)	Experienced Therapist Group (N = 17) 100% (n = 17)	Middle experienced Group (N = 22) 31,8% (n = 7)	New Trainees' Group (N = 16) 18,8% (n = 3)

In order to gain a clear picture of the psychometric properties of the Greek MAIA implementation and to assure the quality of results, the first step was aimed at an exploratory analysis. Missing cases (n = 4) were excluded from any further analysis.

Reliability was assessed by Cronbach alpha. Cronbach alpha for the IBA concept in the Biosynthesis pilot study data scored at .95. Cronbach alpha (see Table 4) for the MAIA sub concepts in the original MAIA study ranged from .66 (ND) to .82 (BL, EA) while in the Biosynthesis study from .77 (NW) to .90 (BL), with the exception of the Not Distracting

sub concept (ND) which revealed a remarkable low alpha coefficient of .37. The comparison of mean scores revealed that mean scores tended to be higher in the original MAIA study ranging from a low of 3.20 (N D) to a high of 4.16 (E A) as compared to the Biosynthesis study that ranged from a low of 2.88 (N D) to a high of 4.10 (E A).

Table 4: A Comparison of Reliability (Cronbach's alpha) and descriptive statistics (Mean / SD) for BA Sub concepts in MAIA original study and Biosynthesis pilot study

MAIA Interoceptive Body Awareness Concepts & Construct IBA	MAIA Original study Alpha	MAIA Original study Mean (SD)	MAIA Biosynthesis study alpha	MAIA Biosynthesis study Mean (SD)
Noticing (N)	0.69	3.94 (.59)	0.87	3.85 (.88)
Not Distracting (ND)	0.66	3.20 (.87)	0.37	2.88 (.83)
Not Worrying (NW)	0.67	3.27 (.84)	0.77	3.10 (.97)
Attention Regulation (AR)	0.87	3.79 (.64)	0.89	3.40 (.85)
Emotional Awareness (AW)	0.82	4.16 (.64)	0.85	4.10 (.82)
Self - Regulation (SR)	0.83	3.86 (.74)	0.88	3.35 (1.03)
Body Listening (BL)	0.82	3.50 (.87)	0.90	3.35 (1.03)
Trusting (TR)	0.79	4.13 (.74)	0.87	3.66 (1.04)

In order to check on the internal consistency for the sub concept "Not Distracting" (ND) Pearson's Correlation analysis was conducted (see Table 5). The analysis revealed a significant correlation between ND item 6 and ND item7, but not in the case of the ND item 5. On the basis of these results and as the ND sub concept contained a small number of items (3 items) the decision was made to exclude it from further analysis and proceed with a modified Interoceptive Body Awareness index based on 29 out of 32 items (IBA 29).

Table 5: Pearson's Correlation analysis for the sub concept "Not distracting" in the Biosynthesis pilot study

MAIA Biosynthesis Not distracting (ND) - 3		Not distracting (ND) Item 5	Not distracting (ND) Item 6	Not distracting (ND) Item 7
Not Distracting (ND) Item 5	Pearson Correlation Sig. (1-tailed) N	1 55		
Not Distracting (ND) Item 6	Pearson Correlation Sig. (1-tailed) N	.011 .468 55	1 55	
Not Worrying (NW) Item 7	Pearson Correlation Sig. (1-tailed) N	.050 .359 54	.530** .000 54	1 54

**Correlation is significant at the 0.01 level (two – tailed)

In order to conduct ONE WAY ANOVA, the assumption of homogeneity was checked. Levene test results for the Body awareness construct (IBA29) as well as for all tested sub-concepts were non-significant ($p > .05$), so that the assumption of homogeneity was assured (Table 6).

Table 6: Test of Homogeneity of Variances of the IBA (29) and its sub concepts

MAIA Interoceptive Body Awareness Concepts & Construct IBA (29)	Levene Statistic	df1	df2	Sig.*
Noticing (N)	.976	2	51	.384
Not Worrying (NW)	2.155	2	52	.126
Attention Regulation (AR)	.558	2	51	.576
Emotional Awareness (AW)	1.772	2	52	.180
Self-Regulation (SR)	.103	2	52	.902
Body listening (BL)	1.217	2	51	.305

Trusting (TR)	.362	2	52	.698
Interoceptive Body Awareness Index IBA (29)	.459	2	49	.635

*Levene test sign at the 0.05 level

ONE WAY ANOVA analysis was based on a model where level of training / therapeutic experience was the predictor variable, aiming to explain variations in the performance of participants in Interoceptive Body Awareness (IBA) and in IBA sub concepts, the dependent variables. Descriptive statistics (Mean, SD) (Tables 7, 8) revealed an initial picture of differentiation between the three groups of interest that had to be further analysed by mean comparisons.

A ONE WAY ANOVA analysis revealed the absence of a significant effect of the level of training/therapeutic experience on the sub concepts of Noticing ($p = .079$), Not worrying ($p = .115$), Emotional Awareness ($p = .143$) and Trusting ($p = .055$), (see Table 7):

Table 7: ONE WAY ANOVA analysis with non-significant results in the Biosynthesis pilot study

MAIA IBA Concepts		Descriptives	F value	p value*	η^2
Noticing (N)	experienced therapists	M = 4.27, SD = .57	F (2,51) = 2.66	.079	.094
	middle experienced trainees	M = 3.67, SD = .94			
	new trainees	M = 3.67, SD = .96			
Not Worrying (NW)	experienced therapists	M = 3.45, SD = .78	F (2, 52) = 2.25	.115	.080
	middle experienced trainees	M = 3.10, SD = .84			
	new trainees	M = 2.75, SD = 1.23			
Emotional Awareness (EA)	experienced therapists	M = 4.42, SD = .45	F (2,52) = 2.02	.143	.072
	middle experienced trainees	M = 3.95, SD = .88			
	new trainees	M = 3.95, SD = .98			

Trusting (TR)	experienced therapists	M = 4.15, SD = .80	F (2,52) = 3.07	.055	.105
	middle experienced trainees	M = 3.47, SD = 1.02			
	new trainees	M = 3.40, SD = 1.14			

*p value sign at the 0.05 level

On the contrary, level of training/therapeutic experience had a significant effect on Interoceptive Body Awareness IBA (29) ($p = .007$) and on three out of seven analysed sub concepts: Attention Regulation ($p = .002$), Self - Regulation ($p = .021$) and Body Listening ($p = .015$), (see Table 8):

Table 8: ONE WAY ANOVA analysis with significant results in the Biosynthesis pilot study

MAIA IBA Concepts		Descriptives	F value	p value*	η^2
IBA (29)	experienced therapists	M = 4.04, SD = .50	F (2, 49) = 5.43	.007 Sign.	.181
	middle experienced trainees	M = 3.37, SD = .75			
	new trainees	M = 3.32, SD = .76			
Attention Regulation (AR)	experienced therapists	M = 4.00, SD = .64	F(2,51) = 7.27	.002 Sign.	.222
	middle experienced trainees	M = 3.22, SD = .82			
	new trainees	M = 3.04, SD = .78			
Self-Regulation (SR)	experienced therapists	M = 3.85, SD = .73	F(2,52) = 4.19	.021 Sign.	.138
	middle experienced trainees	M = 3.03, SD = 1.0			
	new trainees	M = 3.28, SD = .86			
Body Listening (BL)	experienced therapists	M = 3.92, SD = .58	F(2,51) = 4.60	.015 Sign.	.152
	middle experienced trainees	M = 3.16, SD = 1.01			
	new trainees	M = 2.98, SD = 1.12			

*p value sign at the 0.05 level

In order to clarify the respective differences between groups Post Hoc Comparisons with Bonferroni Correction were conducted for IBA (29) and the three sub concepts Attention Regulation, Self-Regulation and Body Listening (see Table 9).

Table 9: Post Hoc Comparisons between groups with Bonferroni Correction for significant MAIA Interoceptive Body Awareness Sub Concepts and Construct in the Biosynthesis pilot study

MAIA Interoceptive Body Awareness Construct & Concepts	(I) Level of training/ experience	(J) Level of training/ Experience	Sig.*
Attention Refulation (AR)	experienced therapists	middle experienced trainees	.010
		new trainees	.003
	middle experienced trainees	experienced therapists	.010
		new trainees	1.00
	new trainees	experienced therapists	.003
		middle experienced trainees	1.00
Self - Regulation (SR)	experienced therapists	middle experienced trainees	.018
		new trainees	.208
	middle experienced trainees	experienced therapists	.018
		new trainees	1.00
	new trainees	experienced therapists	.208
		middle experienced trainees	1.00
Body Listening (BL)	experienced therapists	middle experienced trainees	.056
		new trainees	.021
	middle experienced trainees	experienced therapists	.056
		new trainees	1.00
	new trainees	experienced therapists	.021
		middle experienced trainees	1.00
Interoceptive Body Awareness Index (IBA 29)	experienced therapists	middle experienced trainees	.017
		new trainees	.016
	middle experienced trainees	experienced therapists	.017
		new trainees	1.00
	new trainees	experienced therapists	.016
		middle experienced trainees	1.00

The mean difference is significant at the 0.05 level

In specifically the application of Post Hoc Comparisons with Bonferroni Correction showed that:

- Experienced therapists have a significantly higher level of Body awareness IBA (29) than middle experienced trainees ($p = .017$) and new trainees ($p = .016$). Nevertheless, middle experienced trainees and new trainees do not differ significantly in their level of IBA (29) ($p = 1.0$).
- Experienced therapists have a significantly higher level of Attention Regulation than middle experienced trainees ($p = .010$) and new trainees ($p = .003$). Nevertheless, middle experienced trainees and new trainees do not differ significantly in their level of Attention Regulation ($p = 1.0$).
- Experienced therapists have a significantly higher level of Self-Regulation than middle experienced trainees ($p = .018$) but not than new trainees ($p = .208$). At the same time middle experienced trainees and new trainees do not differ significantly in their level of Self-Regulation ($p = 1.0$).

At the same time, the application of Post Hoc Comparisons with Bonferroni Correction further showed that experienced therapists do not have a significantly higher level of Body Listening than middle experienced trainees ($p = .056$). On the contrary, experienced therapists do have a significantly higher level of Body Listening from new trainees ($p = .021$). At the same time middle experienced trainees and new trainees do not differ significantly in their level of Body Listening ($p = 1.0$).

Discussion

In the present study we investigated the developmental impact Biosynthesis training / therapeutic practice exerts on the degree of Interoceptive Body Awareness (IBA) of three different groups of trainees and experienced therapists ($N = 55$), as measured by the Multidimensional Assessment of Body awareness (MAIA) instrument. To our knowledge this is the first attempt to measure body awareness in a controlled manner in trainees and body psychotherapists in Greece.

Analysis of reliability of MAIA in Biosynthesis data revealed for the BA concept a Cronbach's alpha of .95 and for the BA sub concepts Cronbach's alpha values ranging from .85 to .90 with one exception however of the Not Distracting sub concept (ND). All other values were consistently higher than the original MAIA, ranging from .66 to .82. MAIA appeared to be a relatively reliable instrument in this newly studied population, with the exception of the Not Distracting sub concept, with an alpha Coefficient of .37, that was excluded from further analysis due to item inconsistency. This finding is aligned to previous results (Bornemann et al. 2015; Cali et al. 2015; Valenzuela et al, 2015) where the internal reliability of the subscale of Not Distracting was also found as questionable with a Cronbach alpha of .56 for the German study, a Cronbach's alpha of .53 for the Italian study and a Cronbach's alpha of .40 for the Chilean study respectively. Nonetheless, it has to be further explored if the specific pattern that was observed in the Greek pilot study is a by-product of the translation process or has its roots in a conceptual aetiology, suggesting the necessity of a more diligent definition of the underlying concept of Not Distracting and subsequently of the reconstruction of the corresponding items.

Our analysis detected an impact of the predictor variable, namely of Biosynthesis training / therapeutic practice on the construct of interest, namely on Interoceptive Body awareness (IBA). Length of Biosynthesis training / therapeutic practice did have a significant impact

in regard to Interoceptive Body Awareness (IBA) and on three out of seven analysed sub concepts: Attention Regulation, Self - Regulation and Body Listening, fully verifying our Hypothesis 1 and partially verifying Hypothesis 2 (H2.4, H2.6 and H2.7). These results may suggest a strong link between Attention Regulation, Self-Regulation and Body Listening which makes sense as these three concepts are strongly connected to a high capacity for mindful observation and non-reactivity (AR and SR), valuing the importance of Body Listening as a precious skill to actively listen to the body for insight (Mehling et al. 2012). A similar pattern was revealed for these three sub concepts in the German study in regard to the moderating impact that contemplative practice has on the “regulatory aspects of Interoceptive Awareness” (Bornemann et al. 2015, p.9). These results supported the qualitative reports of participants of contemplative practices with quantitative arguments. In Biosynthesis theory and practice “centering” is the core therapeutic modality grounded on but also enhancing the ability of Interroceptive body awareness (Boadella, 1987). Within the framework of the therapeutic modality of centering the three significant sub concepts of Attention Regulation, Self-Regulation and Body Listening are considered to be strongly interrelated. Attention Regulation and Self-Regulation act in a tandem function with Body Listening, the third significant sub concept, playing the role of the mediator in the process of becoming aware of and rebalancing emotions.

Our results in regard to the non-significant impact of training / therapeutic practice on the sub concepts Noticing, Not Worrying, Emotional Awareness and Trusting are in contrast to the original MAIA study, where trainees and experienced therapists do signify heightened levels both in the IBA construct and in all eight sub concepts of BA. We found the non-significance of the Emotional Awareness sub concept particularly unexpected, as in Biosynthesis theory and practice awareness of the connection between body sensations and emotional states is considered to be at the core of the “centering” modality. Probably, as recent research findings reveal, emotional awareness which uses the body as a portal to consciousness, is an ability and a state that requires time to be developed and cultivated (Shohamet al, 2017). Nevertheless, an alternative possible explanation for this not expectable landscape in Biosynthesis data is rather presumed in the limitations of our pilot study and has to be further investigated.

Biosynthesis pilot study findings confirm the approach of the original MAIA study, during the design phase of the self-report measure, to compare and testify a significant difference in Body Awareness between two and not three distinct groups of Body therapists. Biosynthesis experienced body psychotherapists have a significantly higher degree of body awareness than trainees, where the stage of training (newly appointed or senior trainee) seems not to have an impact, but the fact of actual professional experience does. A possible explanation for this outcome might be found in the extensive experience of all Biosynthesis trainees as clients of body psychotherapy (96.4%) and in the enhancing role that body psychotherapeutic practice seems to play in the constellation and development of an embodied identity in experienced Biosynthesis therapists.

The Biosynthesis pilot study has three major limitations to be addressed by future research: the rather small sample size (N = 55) of the current work, the preliminary character of the MAIA questionnaire’s translation into Greek and the need for in-depth exploration of the validity properties of the MAIA questionnaire in the Greek population.

Conclusion

The main results of the study confirm the prevailing perception of the developmental nature of Body awareness and the centrality it takes in the clinical work of body psychotherapy. As both an inner attitude and a skill to be acquired and cultivated, Body awareness has equal importance to both the therapist and the client. By introducing the perception of “anchoring in the body” (Hartley in Weiss, 2015) body awareness opens up new dimensions of relating to the self, others and the environment. In the Biosynthesis approach, body awareness forms the cornerstone that is functionally connected to diagnosis, to therapeutic practice and to therapeutic embodied resonance (Boadella, 2015). In the framework of a dynamic diagnostic process it offers the means for deepening the therapist’s understanding through sensory perception and collaborative exploration. In regard to the therapeutic practice it shapes and carries the continuous relational dialogue between therapist and client, while building bridges across verbal and non-verbal communication. Therapeutic embodied resonance intermediates, challenges and supports in both cases the therapeutic alliance.

The findings of our pilot study, the first study conducted on this subject in the field of body psychotherapy in Greece, underline the necessity for an extension of the initial pilot character of the study to a full research project addressing the above mentioned limitations. A statistically adequate sample of participants from the field of Body psychotherapy in Greece, the use of a back - forward translated MAIA Questionnaire and the further exploration of the validity properties of the Greek instrument are prerequisites for a meaningful investigation of the model of impact.

We find three major challenges to be further accomplished. The first one is the conduct of further quantitative research according to a similar design to the pilot study but in a larger sample of body psychotherapists using the back - forward translated MAIA questionnaire, containing participants from all relevant body psychotherapy schools currently practicing in Greece (Neo Reichan, Biosynthesis, Bodydynamic, Bioenergetics etc.). The second one is the comparison of trainees / therapists data with a group representing a nonprofessional population and, and the third one is a qualitative analysis of the role of IBA in the lived embodied psychotherapeutic practice and its connection to embodied countertransference, as experienced by professional body psychotherapists.

BIOGRAPHIES

Maria – Olga (Mariella) Sakellariou, studied Sociology and Educational Sciences (Dipl. Soz.), Human Resource Management & Development (MSc. HRM), currently attending the MSc. in Counselling Psychology and Psychotherapy program at the American College of Greece. She is a Biosynthesis Body Psychotherapist and Jr Trainer, trained by L. Anagnostopoulou at the Greek Biosynthesis Centre (GBC), by David & Sylvia Boadella at the International Institute of Biosynthesis in Heiden/Switzerland and by Alberto Torre at the Greek Wilhelm Reich Centre. She pursues a 28 year long dual professional pathway, integrating structure and flow, as a Human Resources Specialist and HR Director and as a Body psychotherapist. She offers private psychotherapy sessions and workshops focusing on issues of embodied psychotherapeutic identity, trauma, mindful embodied leadership, female embodied identity in the life cycle, & life - death transition. She is member of the International Foundation for Biosynthesis (IFB) and of the Management Board and the Scientific Committee of the Greek Association (PESOPS) of the EABP.
Email: mosakellariou@gmail.com

Ion Beratis, MSc, PhD, serves as faculty member of the Psychology Department of the American College of Greece since 2011. Currently, he holds the position of the Assistant Professor in Psychology. His studies in the field of psychology include an undergraduate degree in Psychology from the Department of Psychology of the National and Kapodistrian University of Athens, an MSc degree in Neuropsychology from the University of Edinburgh, and a PhD degree from the 1st Department of Psychiatry of the Medical School of the National and Kapodistrian University of Athens. His research work has been published on a broad range of international peer reviewed journals and has been presented in Greek and International Scientific Congresses. In addition, he is a Cognitive Behavioural Psychotherapist trained at the Greek Society of Cognitive Psychotherapy. He offers private psychotherapy sessions focusing on the areas of anxiety-related disorders, depression, obsessive-compulsive symptomatology, and the psychological symptoms related to Parkinson Disease. Also, he is actively working as a neuropsychologist by conducting neuropsychological evaluations in patients with neurodegenerative disorders, especially in patients with Alzheimer Disease and Parkinson Disease. He is a founding member of the Greek Neuropsychological Society. Email: iberatis@acg.edu

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Walking through the Valley of the Shadow of Death The Dying Patient in the Therapeutic Encounter: A Relational Body Psychotherapy Perspective Shamit Kadosh

Submitted February 2018; accepted March 2018

Abstract

Meeting with the dying patient in the therapeutic encounter introduces us to considerable human suffering and our ineluctable extinction. Literature regarding dying in the field of body psychotherapy is scarce.

In this paper, I present my clinical work with a terminally ill patient, interweaving my experience as body psychotherapist as well as a family physician. From a relational body psychotherapy perspective and based on psychoanalytic, relational, and existential theories, I discuss the intricacy residing in meeting the terminally ill patient in the therapeutic encounter, emphasize the significance of an embodied relationship, and demonstrate how the psychotherapist's body could potentially function both as a diagnostic tool and as an agent of healing.

Keywords: terminal illness, dying, body psychotherapy, resonance, relationality

International Body Psychotherapy Journal *The Art and Science of Somatic Praxis*
Volume 17, Number 1, Spring 2018 pp 85 - 92. ISSN 2169-4745 Printing, ISSN 2168-1279 Online
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“Even though I walk through the valley of the shadow of death, I will fear no evil, for you are with me” (Ps.23:4, ESV)

Introduction

Over years of practice firstly as a family physician and then as a body psychotherapist, I have been confronted time and again with death and dying. Facing death has evoked in me a myriad of feelings, attitudes, conscious and unconscious behaviors. I have found myself oscillating between fear and dissociation, vulnerability and denial, and savior fantasies and surrender.

While the topic of the dying patient has received significant space in psychiatric and existential literature (Kübler-Ross, 1973; Yalom, 2008), very little has been written on this subject from the perspective of a body psychotherapist (Endrizzi et al., 2016). In this paper I will discuss the intricacies residing in meeting the terminally ill patient in the therapeutic encounter. I shall emphasize the significance of an embodied relationship with the terminally ill patient, and demonstrate how the psychotherapist's body could function both as a diagnostic tool and as an agent of potentiating moments of human interconnectedness and liveliness in the shadow of impending death. I will illustrate those issues by sharing my experience as a body psychotherapist with a terminally ill patient of mine interweaving my own history as a family physician and my personal perspectives.

Every Breath You Take

The Fear of Death

He breathes heavily, every muscle makes a tremendous effort to keep breathing. "Everything will be OK," he keeps smiling as usual.

Shaul, a former high-tech vice president, 65 years old, has been coping with heart failure the past few years. His medical condition keeps deteriorating and helpless in the face of the known ominous statistics he keeps fighting back. He struggles for remnants of dignity and vestiges of functionality while pretending he is fine, refusing to expose his fears, weakness, and suffering.

We have been meeting for a few months; he presents a peaceful and pleasant affect, keeps telling me about moments of success and highlights along his career, and keeps moving away every time I try to capture moments of vulnerability. Unable to reach him and make contact with his suffering, while observing his body screaming with every breath he takes, I am filled with frustration. Nevertheless, from time to time, I am relieved with our small talks, turning both of us away from dealing with death.

I am listening to one of his stories, when all of a sudden my chest tightens, my breath becomes heavier, and I feel the struggle in every breath I take. Panic spreads in me; I can feel the impending death knocking at our door with every breath. I look at him with my own torn eyes; his smile is gradually dissolving when he is staring at me and asks, "What's wrong?"

"It's your breath," I whisper. "You are fighting for each one without knowing that the next one will come."

Inescapable silence in the room; the sound of his strenuous breathing fills the space, his muscles are tightened, he can hardly look at me when he hesitantly says, "I am afraid to die."

Shaul's struggle to breathe confronts me with the fragility of life—our inevitable demise evokes in me the fear of death.

There has been a broad discussion regarding the fear of death in the psychoanalytic, relational, and existential literature (Frommer, 2016; Freud, 1926; Kohut, 1977; Razinsky, 2013; Yalom, 2008). Despite controversy and profound changes in psychoanalytic literature and practice over the years, fear of death has been attributed to annihilation anxiety and our inability to imagine and apprehend our own demise (Freud, 1926; Frommer 2016; Kohut, 1977). From an existential vantage point, fear of death plays a major role in our internal experience; the tension between our awareness of the inevitability of death and our wish to continue to be, presents a core existential conflict that is both terrifying and essential for living meaningful life (Van Duerzen-Smoth, 1997; Yalom, 1980, 2008).

While writing this paper, I was surprised to discover how scarce the literature is regarding dying in the field of body psychotherapy. When I experience Shaul's strenuous breath and struggling in my body, I also let the dread of dying invade me. The body-to-body communication through body resonance (Pinkas, 2016; Rolef Ben-Shahar, 2014) between us makes the verbally unspoken fear of death emerge into our encounter. Bucci (2008) relates 'the unspoken dimension' to her multiple code theory, suggesting that an experience seeks to use language that connects intuitive and somatic levels in addition to traditional, rational ways of using verbal language. According to Bion (1967), when mentalization of a feeling is absent, communication finds a somatic channel to go through. Embodied with Shaul's fear of death and mine, a viable connection is possible making space for the terror to be confronted.

Defenses against Death Anxiety

We have been talking about his impending death for a few months. He has been sharing with me his anxieties generated by thoughts of how he might die, the pain and the suffering that might be involved. He expresses his concerns for the well-being of his wife and children he would leave behind. From time to time we discuss existential anxieties (Yalom, 1980) induced by the realization that death will bring finality to his life and he would cease to be. While his fears are present in our meetings, so is life. While his inextricably death reminds him to live fully, to enjoy the view out of the window, the smile of his grandchild and the beauty of a flower, it is also pushing him to fight death. He never gives up physiotherapy sessions, meditation, and good nutrition. He is a real fighter, filled with determination, passion and hope to stay alive despite his ongoing deterioration.

We are sitting together, his body is scraggy, his eyes are sunken, his voice is getting weaker and weaker, his hands are quivering, and his ability to breathe seems as a miracle to me when he is talking.

"I haven't done my physiotherapy exercises for two days," he says, criticizing himself. "You're tired," I say.

"Yes," he whispers calmly. "I am so tired."

"You look exhausted, Shaul." He looks at me with a defeatist gaze. After a few moments of silent shared sadness, tightness in my chest strikes me. I look at him, his eyes are wide open, and he is fighting to straighten up. "I'll do the exercises today, I'll get better, I can't be so weak", his voice is louder.

Anxiety deluges me, my heart is racing when I hear his words.

"What do you think will happen, Shaul?" He looks into my eyes, his body starts shivering. "I have to fight back, I cannot stop, not now," he mutters, "but I'm so tired, what am I going to do?"

I hold his hand; his warm touch floods me with my love for this precious man. Sorrow fills every cell in my body when I realize again that he is dying. How easily I forget. It seems that no matter how many times we have been talking about his imminent death I keep burying these feelings and unconsciously choose not to see. I am stunned by our shared denial of his death. His helpless eyes are penetrating mine waiting for deliverance. I breathe deeply, centering and grounding myself, and decide to embody his death in the room. "Shaul," I say, "your body is weak and deteriorating. You are a real fighter, but there are things that won't happen. Your heart's function won't get better; you won't be able to take a walk outside anymore, and your breathing won't get easier."

Silence. His eyes are torn with anxiety, screaming his terror. I can hardly breathe; I struggle for being fully present with him.

"So, what for?" he utters. "What for?"

These intense moments with Shaul, confront me with our desperate grasping of sparks of life in the abyss of death so we can both elude this fate. When faced with death most individuals develop denial-based strategies such as suppression and repression (Yalom, 1980). We resort to defenses of omnipotence and dissociation of the vulnerability of our embodied human condition in order to maintain our emotional stability, to bolster ourselves, and cope with our ineluctable fate (Frommer, 2016; Shabad, 2016).

While fear of death and the consequent defense mechanisms constitute a collective human experience, each of us has his unique way of relating to death (Razinsky, 2013; Shabad, 2016). This diversity influences our clinical perspectives and interacts with our character structures and sensibilities (Frommer, 2016).

For decades, as a young daughter to a very ill father, and afterwards as a practicing family physician, I have unsuccessfully tried to defeat death by fighting it with medical interventions

and taming it by apprehending it intellectually. After years of engaging with my omnipotent defense and savior fantasies, I began to acknowledge the destructive effects of denial of death on me and my patients.

When Shaul keeps fighting for getting better, exhausting himself, I recognize the price he pays for his denial, with which I find myself cooperating to some extent. As a body psychotherapist, I try my best to be fully present and hold together with Shaul his impending death and serve as a self-object for him. However, unconsciously I am trapped in the tempting web of denial. Akhtar (2011) encourages therapists to speak about death and attempt to counter defensive and dissociative processes that protect both patient and analyst from experiencing the loss of omnipotence and the inevitable vulnerability from acknowledging that this story would not end happily. Encountering Shaul's denial despite our open conversations regarding his death elucidated for me how potent the temptation to dissociate and deny is, and how elusive and fallacious this process can be.

Submerged in the tempting swamp of denial, the tightness in my chest and deep sadness pulled me out to face the impending death. Retrospectively, the decision to confront Shaul with reality, derived from a wish to help him let go. Watching him fighting with all his resources invested in getting better, I felt that redirecting his efforts towards being present with his family would be for his own good. Shabad (2016) poses the following question to himself as a psychoanalyst when a patient walks into the office, "How can I best offer my personhood to this individual so that he can fulfill himself before he dies?" (p. 395).

Was that a legitimate decision? Who am I to pull him out of his denial? Would facing his ephemeral existence help him fulfill himself better?

"What for?" he keeps murmuring to himself. Terror stabs my chest. What have I done? Surges of fear and pain are pulling me apart. His eyes torn with dread feel like a sword penetrating my heart. Holding his hands, I am breathing deeply and trying to ground myself. The terror we both feel fades away, making space for despair. My breath becomes slower; my body is heavy and calm. I can feel dying inside my body. No effort, no fighting, deep silence, I surrender. His body is relaxed, his eyes closed, he is resting.

"You've been through so much," I whisper. "You have been fighting like a lion; I feel that you are resting now. There's a part in you that lets go."

"Yes... I am left with nothing," he says sadly.

"You have lost so much," I tell him. "So many things will not be possible any more. But what are the things that you have? Is there anything that worth living?"

He is silent, his head up, and his brown eyes looking at me helplessly. Hands together we are enjoying the view of the sea through the window; we are looking at his family album and cherishing our own precious relationship. Despair is gradually dissolving into open heartedness and interconnectedness interweaved with sadness and gratitude.

To be or not to be

Embodied presence with the dying patient

Working with terminally ill patients exposes us to considerable human suffering and our ineluctable extinction. Frommer (2016) emphasizes the magnitude of sustaining intersubjective engagement with a therapist who is capable of exploring and experiencing together with his patient the realm of death. He argues that "mortality seeks relationality" (p.373). I would like to extend Frommer's argument and say that the dying patient craves for bodily relationality.

Orbach (2003) paraphrased Winnicott's famous saying—there is no such thing as a baby—by saying there is no such thing as a body, only a body in relationship with another body. I believe that the dying body asks for our bodies to be in relationship with them.

Resonance is a central skill in body psychotherapy, which accentuates the capability of body-to-body communication, and the formation of the shared body (Pinkas, 2016; Rolef Ben-Shahar, 2014). Pinkas (2016) introduces the concept of bodily reverie in which the body serves as a sensory receiver and amplifier allowing us to resonate with the other and the other to resonate with us. The body constitutes subjectivity, transformation, and process, which incorporate myriad of aspects of live communication (Carroll, 2011). The body is not only a place of physical symptoms and pain, but also of creativity, containment, relationship, and healing potential (Endrizzi et al., 2016).

Shaul and I communicate and share his death mostly bodily. I think that feeling Shaul's death inside my body, allowing myself to be there, and the possibility of mutual holding of mortality made space for experiencing the inextricable demise in a less terrifying way. Without undervaluing the importance of contemplating and speaking of death, I think that an analytic stance might deepen the body-mind split. Dying is a bodily process that craves to be met in its wholeness.

My hands are touching his fragile chest. Touch is the only thing that calms him in the last weeks. He struggles to breathe, his voice gets weaker every day, and he can hardly talk. We communicate mostly through touch and the soft look in his sunken eyes. He closes his eyes, his tightened forehead is more relaxed, and serenity wraps him. His breathing gets slower and slower. I can feel his surrender to his death in my body. My heart is open, filled with love and compassion. Sadness spreads in my body intertwined with a sense of alleviation. Is he going to die in my hands? After a long stay in the dying experience he suddenly opens his eyes squeezing my hands. "I don't want to die," he whispers. "I am afraid." We are looking at each other, my eyes start shedding tears, sitting next to him while he is on his way to the other side of the shore. Precious moments of sharing death and agony, granting life, and treasuring humanity and love.

For many long years I have been present with dying patients. Time and again I have been dissociating, denying, and trying to hold back the inevitable demise. As a young girl at first and later as a grown up, I could not face my father's illness and impending death. As a family physician I have found the ubiquitous presence of death challenging. I have found myself relating to death in a variety of ways, from fighting it, through dissociating and denying to being present empathically and compassionately. Even though I learned to talk to my patients about death openly as a doctor, it was not until practicing as a body psychotherapist that I realized how I split from myself in front of death. Being present in my body allows me to recognize that addressing death verbally might be the semblance of bearing death mutually.

To be or not to be? Am I willing to let death take place in my body? To what extent can I ground the dying experience in my body?

First and foremost, I believe it is about my intention and choice. By acknowledging the importance of the body's presence in the therapeutic encounter generally, and with the dying patient especially, I repeatedly insist, in spite of the drive to split, to be fully present and let the other be felt in my body.

From a relational stance, Frommer (2016) asks, "What do other minds need from other minds in contemplating the loss of self through death?" (p. 374). He believes that the intersubjective interplay makes looking directly into abyss the answer. From a relational body psychotherapy point of view, I would like to further ask, "What do bodies need from other bodies?"

I will argue that the dying body needs to be met by another body. I believe that meeting Shaul's body created the potential for a novel relational experience. Touch and bodily reverie (as described in the previous section) were the main ways in which Shaul's body and mine met.

Meeting of Bodies

(1) Touch

Much has been written about the healing potential of touch in the therapeutic encounter (Asheri, 2009; Orbach, 2004; Rolef Ben-Shahar, 2014; Totton, 2006). Endrizzi et al. (2016) describe their work as movement psychotherapists in hospice. They emphasize the value of touch in terminally ill patients. They believe that dread and anxiety can be understood as the lack of psychic skin (Anzieu, 1989). They highlight the importance of holding and touch in cultivating the secondary skin with intention of strengthening the psycho-somatic unit. They claim that touch recalls the environmental function of holding (Winnicott, 1965) alleviating the unthinkable anxiety of terminally ill patients. Warnecke (2011) sees touch in psychotherapy as particularly potent and formative "when fragmented aspects of a client's psyche and soma are bridged by the therapist's embodiment" (p.242).

Touch was one of the main channels of communication with Shaul in his last weeks. I used comforting touch (Rolef Ben-Shahar, 2014) providing a safe space in moments of pain and terror. Touch as comfort is described as highly valuable with fearful and regressive patients (Rolef Ben-Shahar, 2014; Totton, 2006). Dying patients are forced into regressive states and fearful moments. I believe their bodies crave touch and holding.

(2) Resonance and the shared body

When my hands touch Shaul's chest, his dying process resonating within me, we are both imbued within each other. Sharing the experience, grounded in our bodies, we are not alone. Our bodies belong to a wider body, regulating each other, and acting as healing agents cultivating transformation (Rolef Ben-Shahar, 2013).

Pinkas (2016) expounds the traditional analyst as a witness and interpreter who is not immersed inside his patients. Therefore, the natural process that one body can make with itself and another body is averted. She further delineates how some of our experiences (especially dissociative ones) are bodily, and underscores the magnitude of grounding our experience in our body. She claims that when an emotional aspect is missing we should work directly with the body in order to provide an easier access to the relevant material. She also suggests that the therapist's body might function as a diagnostic tool, as a self-object, and as an active healing agent. Working directly with the body enabled Shaul and I to touch unspoken emotional aspects of his fears and the experience of dying in a way, I believe, could not happen by merely talking. This shared experience procreated a healing space of transformation. My body was not only experiencing death but also served as a healing agent.

Nevertheless, while sharing this experience mutually, I am aware of the painful asymmetry between us. When I allow myself to bring my body into the therapeutic space, I represent the vital and living body whereas my patient represents the dying body. In addition to the asymmetry already present between therapists and patients (Aron, 1996), I feel that as a body psychotherapist I create a wider and painful gap of asymmetry between us. While being fully present in my body with Shaul, compassionate and open-hearted, I am also aware how grateful I am for being on the other side of the shore. How can I hold this tension between mutuality and asymmetry? Between life and death?

End of story

Shaul died a week later, peacefully surrounded by his family. While ending therapy with patients usually symbolizes death, with dying patients death is real. No happy endings are expected. I have to open my heart knowing death is coming. Shabad (2016) referring to dying, and asks in the title of his paper, "Will you miss me when I am gone?" (p. 391).

I am left with a painful void inside me, grieving silently. While missing Shaul and hurting from his loss, I feel rewarded by our special relationship, and I am aware of the gifts he has left me. He taught me great lessons regarding the precious moments of each passing moment in life and the power of open hearts. Writing this paper is an attempt to make my experience with Shaul a placeholder for his living spirit in his absence as well as sharing my insights with you. I believe that as body psychotherapists we are privileged with myriad ways in which we can forge pathways for engaging with dying patients while they are walking through the valley of the shadow of death.

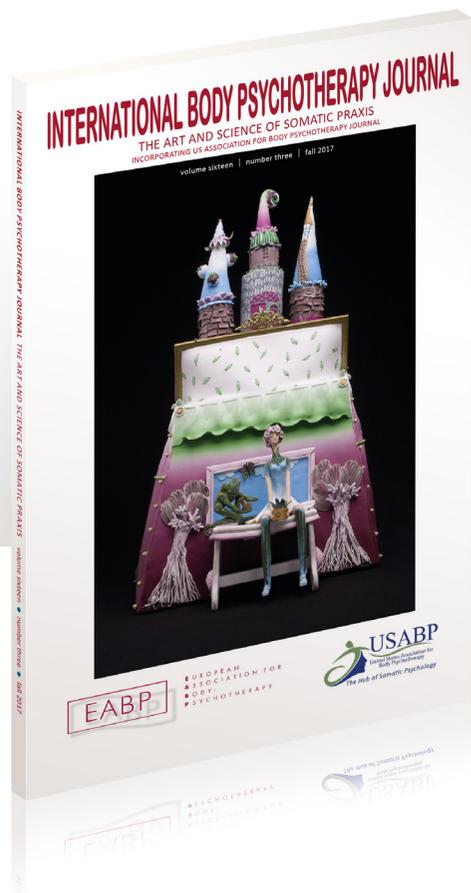
BIOGRAPHY

Shamit Kadosh, MD is a family physician and a practicing body-mind psychotherapist in Israel. She has been teaching family practice residents and medical students for the past ten years in the Faculty of Health Sciences at Ben Gurion University and in the Faculty of Medicine at Bar Ilan University. She headed a training program for residents in family medicine in the Department of Family Medicine in North Israel. Additionally, she is a lecturer in the body-mind psychotherapy program in Shiluv Institute, Haifa University. She is experienced in integrating scientific and clinical writing. Email: igalkd@bezequint.net

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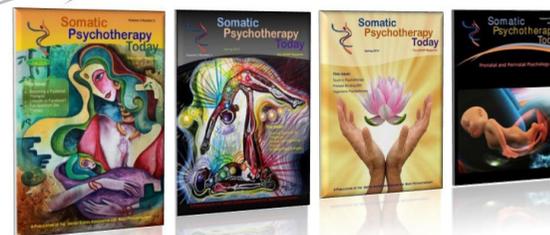
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The Journal's mission is to support, promote and stimulate the exchange of ideas, scholarship and research within the field of body psychotherapy as well as to encourage an interdisciplinary exchange with related fields of clinical theory and practice.

If you are interested and would like to see the role description, please contact: IBPJ Managing Editor, Antigone Oreopoulou, ManagingEditor@ibpj.org

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The editors are eager to receive letters, particularly communications commenting on and debating works already published in the journal, but also suggestions and requests for additional features. A selection of those received will be published in the next volume of the Journal.

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Criteria for Acceptance

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First consideration will be given to articles of original theory, qualitative and quantitative research, experiential data, case studies, as well as comparative and secondary analyses and literature reviews.

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- If it is a description of what we already know, is there some unique nugget or gem the reader can store away or hold onto?
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INTERNATIONAL BODY PSYCHOTHERAPY JOURNAL

THE ART AND SCIENCE OF SOMATIC PRAXIS
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volume seventeen | number one | spring 2018

TABLE OF CONTENTS

04 EDITORIAL

Asaf Rolef Ben-Shahar, PhD
Nancy Eichhorn, PhD
Debbie Cotton, MA
Shamit Kadosh, MD
Yael Shahar, MA

06 A hero's journey

Ofra Sivilya

ARTICLES

07 Body of Lies: An exploration of Deceptive Strategies through Body Psychotherapy

Nora Ahmed-Kamal

12 The Human Body and Psychological Trauma: Biological Explanatory Models. A review

Roncada, Gert, Vandeveldel Benjamin, Calsius, Joeri

51 Developing Emotional Competence through Embodiment to Facilitate Learning: An Educator's Journey

Maria Stella

66 The impact of training and therapeutic practice on body awareness of Trainees and Body - Psychotherapists at the Greek Biosynthesis Centre - A pilot study

Maria - Olga Sakellariou and Ion Beratis

85 Walking through the Valley of the Shadow of Death The Dying Patient in the Therapeutic Encounter: Relational Body Psychotherapy Perspective

Shamit Kadosh



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