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Dance/Movement Therapy as a Transdisciplinary Approach to Treating Trauma

Literature Review

Capstone Thesis

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Dance/Movement Therapy

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Abstract

This thesis considers dance/movement therapy as a transdisciplinary approach to treating trauma in the body. It explains what the functions of the brain are, how trauma negatively affects it, and how posttraumatic stress disorder is expressed in both the body and the brain. It discusses multidisciplinary approaches, it shows how these approaches leverage the body in treating trauma. Moreover, it demonstrates the benefits and advantages of a dance/movement therapist in supporting individuals who have experienced traumatic events. To achieve these goals, this thesis discusses research by neuroscientists, such as Damasio (1999), who maintain that the body and mind directly affect each other. This thesis reviews the work of Gray (2017), with polyvagal theory. It discusses sixteen studies on occupational therapists' treatment of trauma (Edgelow et al, 2020). These studies emphasize occupational therapists need someone with a mental health background to assist with traumatized individuals' treatments. Through a review of the literature, this thesis will discuss dance/movement therapy as a transdisciplinary approach to treating trauma.

Keywords: dance/movement therapy, transdisciplinary approach, polyvagal theory, body and mind connection, trauma

Author identity statement: The author identifies as a caucasian female from Texas.

Dance/Movement Therapy as a Transdisciplinary Approach to Treating Trauma

Trauma is felt in the body and the mind. It is psychologically and physically experienced. Treatment for trauma should involve the body and the mind and make use of a transdisciplinary approach. A transdisciplinary approach uses different methods to treat the client holistically through working with the mind and the body. According to Aboelela et al. (2007), “Transdisciplinary Research is defined as research efforts conducted by investigators from different disciplines working jointly to create new conceptual, theoretical, methodological, and translational innovations that integrate and move beyond discipline-specific approaches to address a common problem” (p. 1). Transdisciplinary, for the purposes of this thesis, is similar to the use of a multidisciplinary team to treat trauma, but instead of having multiple members, one individual draws from multiple disciplines. On this note, I have observed that the use of dance/movement therapy (DMT) to treat trauma is more effective than working with cognitive behavioral therapy alone. At my site, I work with many who have experienced trauma. I have personally noticed changes in clients when I work with them using DMT. I believe individuals who have experienced trauma do not feel comfortable being seen or observed. They do not trust their own judgments in their personal relationships. DMT allows the individual to feel comfortable being viewed directly by the therapist, and thus, will impact their daily behaviors. They will then be able to successfully function in their relationships. My thesis will address these ideas.

For someone who has experienced a traumatic event in their life, the chosen treatment is usually cognitive behavioral therapy. However, DMT is also an effective way to help someone overcome a traumatic experience. Through DMT, an individual can build resiliency in their mind and their body. My thesis will address how DMT has advantages over other disciplines. I will

review literature based on qualitative case studies, quantitative studies, theories, and neuroscience to connect how the limbic system is involved in creating emotions and portions of it are responsible for movement in the body. The limbic system is made up of the hypothalamus, amygdala, thalamus, and hippocampus creates emotions. I will further explain why the brain separates memories and compartmentalizes them into different areas of the brain and how using movement can allow individuals to verbalize what happened to them. Thus, they will be able to build resiliency by processing the event and recalling what happened so that they experience insight into themselves for the future.

Method

In this literature review, I conducted research through the Lesley University Library to collect twenty three peer-reviewed articles and books using search terms such as trauma, transdisciplinary, multidisciplinary, neuroscience, occupational therapy (OT), and DMT. Two articles were retrieved from the National Center for Biotechnology Information and from the American Dance Therapy Association. This literature review also incorporates two books written by doctors who specialize in brain function and disorders. To stay objective, I looked at other disciplines that treat trauma to research how trauma is being treated currently and what might be missing in this treatment.

Literature Review

Development

Infants communicate first through movement and with facial expressions. Children move to the rhythm of music. The parent–child relationship is built upon this. When a mother or a father has a mental illness, the rhythm and communication are disrupted. The child may

experience neglect and trauma during childhood, and this will cause the child to have attachment issues with their parents or in other relationships.

Malloch and Trevarthen (2018) discussed the movement patterns and behaviors of infants after studying video recordings of them. Case studies were performed, which suggest that the rhythm of music creates movement in the body. The authors argued that music is the way people learn how to move their bodies and understand the environment. As such, infants also communicate with their parents through their movements. Through the rhythm of music, music forms an especially important part of the movement. Moreover, it is important to highlight that movement is an inherent need, even for a baby. The film studies showed that infants react to how their parents or caregivers respond physically to them, and these movements were regulated by the rhythm of the music (pp. 1–21).

Brain development is completely dependent on children and their environment. If a fetus has been exposed to alcohol, drugs, or nicotine, the child may have developmental issues. If a child experiences neglect, negative social experiences, or trauma, they will suffer emotionally and mentally. Occupational therapists are often hired when a child experiences this, but they do not consider all the mental health aspects that dance/movement therapists do. A dance/movement therapist will use their knowledge of the body and how movement can affect mental health to work with those who have experienced trauma. Irmgard Bartenieff created the Bartenieff Fundamentals; a sequence of movements that duplicated the normal progression of a child's developmental patterns, such as lifting their head above the floor when lying on their belly (Levy, 1988). Dance/movement therapists that follow her fundamentals use these sequence of movements. Thus, they have the upper hand when dealing with a child who has experienced something traumatic. They will work with them on sensory processing issues, bodily felt trauma,

and their development. Dance movement therapists can also work with adults who have experienced trauma. They may make use of body-mind centering, polyvagal theory, bilateral stimulation, and talk therapy. Dance/movement therapists have an advantage over other disciplines because they take a whole-person approach.

Malloch and Trevarthen (2018) stated that all consciously made body movements depend on the image of the future. This means that people act, move, and work for what they need to survive. An issue arises when people's system becomes so impaired that they are in constant arousal. This state of constant arousal occurs when an individual has experienced a traumatic event (p. 2).

The Brain

According to Ashwell and Restak (2012), the amygdala is an almond-shaped structure in the temporal lobe. It is a large compilation of nerve cells, and it plays a key role in linking the perception of objects and situations with their emotional significance. Emotionally charged events cause the adrenal gland to release the adrenaline and cortisol hormones, which influence memory storage. Norepinephrine and cortisol act on the amygdala to enhance memory storage in the cerebral cortex.

Ashwell and Restak (2012) explained that the thalamus is the largest structure in the diencephalon. It is referred to as the relay system that receives messages from all senses except smell. It is made up of several nerve cell clusters called nuclei. These nuclei transfer information from movements in the joints and muscles in the body. These nuclei, send information from the emotions (limbic relay) and are involved in the somatosensory input and proprioception. The subthalamus and epithalamus regulate movement, and damage to the subthalamus leads to patients developing violent flailing movements on the opposite side of the body. The habenular

nuclei are part of a circuit that allows the emotional centers of the limbic system to change activity in the brainstem, whereas the pineal gland excretes melatonin as part of the circuit controlling the sleep–wake cycle (p. 34, 90).

When an individual is diagnosed with posttraumatic stress disorder (PTSD), these functions are inhibited, or they become maladaptive. Symptoms of PTSD include experiencing trauma through nightmares or flashbacks, difficulty sleeping, hypervigilance, and anger. When an individual is diagnosed with PTSD, they have low secretions of cortisol and elevated levels of adrenaline and noradrenaline in their urine. In the normal fight or flight response, both cortisol and adrenaline are secreted equally (Ashwell & Restak, 2012, p. 249).

Van der Kolk (2014) described how the frontal lobe will look different on a brain scan for an individual who has experienced a traumatic event at an early age. The frontal lobe shows slower electrical impulses in this area, which, in turn, shows poor executive functioning. The frontal lobe, as described earlier, is the decision-making portion of the brain. Insufficient control over this portion leads to an inability to control the lizard brain (emotional brain) below the thinking brain. The cerebrum, the frontal lobe and parietal lobes are considered the thinking brain where decisions are made and analytical thinking is performed. The bottom portion of the brain just above the neck and closer to the spine is considered the lizard brain. When someone experiences a traumatic event, cognitive brain functioning shuts down, and the lizard brain kicks in to induce a fight or flight response. The brain takes the memory of the traumatic event and deconstructs it. It compartmentalizes the memory in different portions of the brain to protect the human or organism, if the brain did not do this, the memory would overwhelm the human or organism. However, as the memory is stored in the brain, it is also stored in the lizard brain or the area where emotions form. Therefore, it is stored within the body. The same area that creates

emotion also in the body. It is only through movement that people reduce tensions in the body, and in this movement, the client elicits emotional responses from the memory of the trauma. Once the client's body has regulated itself, the lizard brain and cognitive brain can regulate themselves (van der Kolk, 2014, p. 130). In the study, those who had experienced something traumatic event viewed the world differently. Many viewed the world as unsafe.

Wise et al. (2009) conducted a study between Australians who had experienced a traumatic event. The researchers asked the participants to point out which image did not fit in, in a group of images. This standardized test is called the "oddball paradigm"; however, it should be noted that none of these images were related to trauma (p. 1). The control group used the key parts of the brain and they worked well together. Their brain scans were clear and had focused lines of energy. As for the traumatized subjects, their brain waves were loosely coordinated, and they did not come together in straight-forward patterns (p. 342). This imagery of loose patterns and lines from those who have experienced trauma indicates that the traumatized individuals' brains work differently from those of non-traumatized individuals. Thus, traumatized individuals have a different view of the world than non-traumatized ones: Their view is distorted, and they will not be at baseline functioning.

During moments of distress, an individual's facial expressions and tone of voice indicate to the world their troubled state of mind. If no one comes to their aid, their lizard brain takes over. Their sympathetic nervous system ignites, and they go into fight or flight mode. If there is no way out, the dorsal vagal complex will become activated. This complex controls the autonomic nervous system. The autonomic nervous system controls digestion, blood circulation, and everything else that enables an organism to stay alive. Following activation, this complex reduces metabolism. Then, the heart rate dips so low that the individual almost passes out, and

subsequently, their gut stops working and empties itself. Thus, the individual disengages and freezes (Wise et al., 2009, p. 99). This is the flight response referred to in the term *fight or flight response*, which occurs when someone is responding to a traumatic event. According to van der Kolk (2014),

The body keeps the score: If the memory of trauma is encoded in the viscera, in heartbreaking and gut-wrenching emotions, in autoimmune disorders and skeletal/muscular problems, and if mind/brain/visceral communication is the royal road to emotion regulation, this demands a radical shift in our therapeutic assumptions. (p. 104)

The body responds to everything it experiences. The neck tightens up when people sit for long periods of time. The jaw tightens when people are frustrated. The stomach flutters when people are nervous. The heart beats faster when people are angry. Thus, these feelings and emotions are felt in the body. If these moments are not processed, they will get stuck in the body.

Polyvagal Theory

Neuroscience in Polyvagal Theory

This theory revolves around emotions being regulated through the vagus nerve, a cranial nerve that is involved in fear response and social connection. The vagus nerve is a component of the parasympathetic nervous system (PNS). The autonomic nervous system has two parts, the PNS and the sympathetic nervous system. According to Gray (2017),

a primary premise of polyvagal-informed DMT is the right to embody. An aspect of this right to embody is respect for the body. Rather than view negatively the dissolution to more primitive behavioral strategies and states that occurs when we are faced with unsafe and potentially traumatic events, the fear-based responses of mobilization (fight or flight)

or immobilization (shut down) that can become the blueprint for traumatization are recognized and acknowledged as in service of survival and therefore worthy of celebration. (p. 44)

The brain and the body work in harmony to maintain homeostasis within an organism or in this case, a human. Without homeostasis, the organism would become extremely sick or ultimately die. For instance, when an individual experiences a traumatic event, it can affect their homeostasis, throwing off the natural processes in the body and the brain. Working in a whole-body approach is more advantageous to the individual. According to Fisher (2019), movement-based modalities, such as yoga, have gained popularity among veterans and military personnel, with many veterans declaring beneficial effects such as relaxation, relief of physical pain, and increased cognitive functioning (p. 3). These veterans have experienced a plethora of traumatic experiences, which have affected their homeostasis and put them into fight or flight in their daily lives. DMT enables them to verbalize what happened to them, which they can do by using their natural movement language to balance both their body and their mind. This process allows the individual to build resiliency. According to Serlin (2020),

Resiliency includes many dimensions. The arts and narrative methods express and record life stories and facilitate healing within a community of witnesses. Qualities that build resiliency include optimism, joy and compassion. The use of the arts and particularly dance/movement, builds resilience at the body level. (p. 2)

DMT considers the client and their surroundings to help them build resiliency in their body and mind. Increasing health in the latter two is key to returning to baseline functioning.

Brain/Nerves, Body, and Social Theory

Gray (2017) described the work of Dr. Sue Cater. Cater ran a program in polyvagal-informed therapy for people with trauma and attachment issues and autistic people in Haiti after the 2010 earthquake. All survivors had experienced a traumatic event, and in their current state, they exhibited signs of PTSD. Caters program led to improvements in their state, which created a moment of relief for the survivors (pp. 43–46).

Traumatic events are encoded differently in the brain, their memories are compartmentalized, so they are not integrated as a whole and are stored as sensory perceptions.

“This state accords with the concept of Window of Tolerance which, is the optimal arousal zone, encompassing both intense emotion and states of calm or relaxation, in which emotions can be tolerated and information integrated. It is within this zone or window that the social engagement system, as described by the polyvagal theory, is activated” (Bensimon, 2021, p. 368). When an individual is outside the parameters of this range, because of a traumatic event, they become unable to socialize. Even the most introverted person needs connection; thus, this isolation can increase their symptoms of PTSD.

Multidisciplinary Teams

Howard Rusk is often considered the father of rehabilitative medicine. He argued that multidisciplinary teams are the best approach for individuals who have experienced trauma. A multidisciplinary team includes: psychiatrists, nursing staff, occupational therapists, physical therapists (PTs), neuropsychologists, social workers, recreational therapists, respiratory therapists, and case managers (Mullin et al, 1996, p. 31).

Each multidisciplinary team has professionals who work with the body such as occupational therapists, physical therapists and those who work with the mind (social workers

or therapists). Mullins et al. (1996) suggested working in multidisciplinary teams is the best approach when treating someone who has a traumatic injury.

The authentic practice of DMT helps an individual work through bodily felt traumas and heals their mind and body. Movement in the body creates a connection with the mind. People's emotions are created in the same area of the brain where movement is formed.

Often, when an individual has experienced trauma, they tend to freeze up in their body; they tense their shoulders, look down, or react by flinching in non-dangerous situations. Movement-based practices such as DMT ground the individual, which allows them to think clearly, verbalize how they truly feel, and process the traumatic experience in a safe environment. These practices work in the bottom-up approach, working first with the body and then with the mind or emotions.

Music Therapy and Body Integration

Other modalities integrate the body into therapy in ways that DMT as a transdisciplinary approach could draw from, and one such modality is music therapy. The body is the greatest asset when it comes to dealing with mental health because it holds everything: the brain, soul, and emotions. Bensimon (2021) created a qualitative research study using Guba and Lincoln's naturalistic phenomenological framework. In this study, 41 music therapists, of which 35 were women, aged 32 to 75, participated. All the participants had degrees in music therapy and worked with those who had experienced trauma. Each therapist was interviewed about their therapeutic approach.

Each interview was recorded. At the end of the study, each sentence and word was related to a theme. The results produced three themes. The first theme is body integration, relating to how listening to music is a sensory experience. The second theme is event integration.

The repressed memory of the trauma is brought into consciousness, and the individual is now able to process the traumatic event, cognitively and emotionally, in a safe space. The third theme is life story integration, which is integrating an individual's story of trauma into their whole life story (Bensimon, 2021).

Bensimon (2021) explained that body integration occurs due to the influence music has on the body. Some therapists revealed that they used slow-tempo music and breath to aid in calming the client. The slow tempo of the music might connect with the tempo of the heart. Therefore, the body is extremely important when it comes to calming the client, checking in with the body, and helping one to overcome negative emotions that are felt within the body. Coordination between the mind and body creates harmony within the client. DMT has a clearly defined body–mind relationship, which is an advantage over other disciplines used to treat trauma, as DMT centers the body and the mind for the client, allowing the client to overcome their trauma (pp. 367–376).

Mental Health and Sensory Processing

OT and DMT share similarities in the way they work, especially when working on sensory processing issues. OT began as a mental health career but has changed into a return-to-work intervention over the years. Despite similarities with DMT, the OT field has not mastered how to treat an individual who has experienced trauma. Oftentimes, they ask for help from a mental health provider, or they have one on the team for the patient. This shows that even though occupational therapists know of the connection between the body and the mind, the occupation itself has specific and rigid formats for movement. Therefore, the client cannot move through their trauma, and movements are more functional.

OT can be highly creative in the way they do their work, sometimes even using play therapy to get children involved to do certain movements with their bodies. Through my volunteer work in Austin, I noticed occupational therapists who work with children do similar work to that of a dance therapist. The work I was doing was centered around play therapy. Although the occupational therapists did not call themselves dance therapists, some of the techniques were like what is done in DMT.

These occupational therapists often worked on sensory processing by using stretchy fabric or having the children go barefoot. There may be several causes of sensory processing issues, but much of the time, these issues are caused by childhood trauma. Those with sensory processing disorders find it difficult to cope in social situations. Often, the individual who experienced trauma in adulthood also experienced it in their youth. Two of the three adults in my current placement, who I work with, have experienced a traumatic experience in their childhood.

When an individual goes through a traumatic event, their brain changes. It is difficult for them to take information from the outside world and digest it. They may become hypervigilant, as seen with those who experience PTSD, or they may be completely shut out from the world. The deregulation of the body can lead to individuals being less attuned to their own bodies. The disconnection from the body is related to the mind and emotion (Herbert et al, 2012. P. 692). Using the physical body to alleviate these sensory processing problems can allow an individual to overcome the bodily felt symptoms of trauma.

The term *homeostasis* refers to the regulation of the internal process within the body. Homeostasis can be dysregulated by experiencing trauma. Herbert and Pollatosb (2012) explained how the body and the mind are one and how perception can change depending on a mental health irregularity. They talked about interoception and self. Interoception deals with two

forms of perception: one, from the skin and the muscular-skeletal system and, two, from the viscera and vasomotor systems inner workings.

DMT not only connects the body and the mind but also promotes a healthy lifestyle. I personally promote activity to all my clients and stress the importance of diet and exercise for mental health. Children are at the biggest risk for heart disease, long-term health problems, and mental health impairments when they do not take care of their bodies. Nader et al. (1999) performed a study for three years in Texas, California, Louisiana, and Minnesota on children in grades 6, 7, and 8. They studied how changing students' diet and exercise in school would affect their behaviors outside of school and into adulthood (Nader, 1999, p. 2). The study found that the children's health improved.

When an individual experiences trauma, their muscles may tighten up and their inner organs will also be affected. Other internal body systems can be dysregulated when a person experiences trauma including the vasomotor system, which encompasses the stomach, intestines, and anything to do with digestion or keeping the person alive. Herbert and Pollatosb (2012) explained how cardiac awareness and autonomic reactivity are learned from life experiences. They did a study that involved asking participants how fast their heart was beating. In their article they wrote :

IA (interoceptive awareness) as assessed by cardiac awareness is related to greater sensitivity to emotional responding and cardiovascular autonomic reactivity in different situations evoking autonomic changes proposing that cardiac awareness can also be the result of a 'visceral' learning process. (p. 7)

This means that if someone has had a traumatic experience, they learn to respond by jumping up quickly or immediately going into fight mode or flight mode. These individuals pay

closer attention to how their heart reacts. Knowing the inner workings will help them be in control of themselves.

According to Jurist (2019), alexithymia is a disorder that de-regulates an individual's ability to express emotions and has been associated with an extensive range of mental disorders, including PTSD. Individuals who suffer from PTSD are unable to regulate their emotions, do not have a sense of self, and, sometimes, disassociate or lose interception, which can be considered losing consciousness (pp. 7–8). Brooklyn et al. (2015) revealed,

According to findings from psychoneuroimmunology, traumatic experiences affect the middle prefrontal cortex, subsequently altering the connection between the limbic areas and the prefrontal region. When the normal firing of neurons in the brain ceases, information cannot travel between areas of the brain as it is intended to do. This disruption in information travel may result in various forms of dissociation, such as dissociation of affect from cognitive processing (e.g., memory of the traumatic incident), or dissociation of body sensations from consciousness. (p. 43)

Herbert and Pollatosb (2012) stated that interoceptive states and feelings are related to consciousness, interception, and self. The sense of self is directly correlated with bodily felt sensations. They used Damasio's (1999) idea of the hierarchy of "selves" that come into effect through body reactions. Lower levels of consciousness or self-awareness change depending on what signals the body is receiving. For over a century, neuroscientists have theorized that self-awareness, consciousness, and emotional regulation exist. Self-awareness comes from an individual's inner workings. DMT can help individuals improve their self-awareness, consciousness, and emotional regulation skills. Damasio (1999) stated,

In a typical emotion, certain regions of the brain, which are part of a largely preset neural system related to emotions, send commands to other regions of the brain and to everywhere in the body proper. The commands are sent via two routes. One route is the bloodstream, where the commands are sent in the form of chemical molecules that act on receptors in the cells which constitute body tissues. The other route consists of neuron pathways and the commands along this route take the form of electrochemical signals which act on other neurons or on muscular fibers or on organs (such as the adrenal gland) which in turn can release chemicals of their own into the bloodstream. (p. 68)

Normally, this long process happens instantaneously, but for those who have experienced trauma, it does not. Cells and organs in the body fight to preserve homeostasis.

Eye movement desensitization and reprocessing (EMDR) and cognitive-behavioral therapy are known for treating trauma. Lilienfeld (2021) stated the following regarding EMDR:

EMDR is a complex treatment that contains multiple components; its most distinctive feature is the induction of lateral eye movements. EMDR requires clients to track the back-and-forth movements of the therapist's fingers with their eyes as they recall disturbing memories, such as those of a traumatic event. As Harvard University psychologist Richard McNally observed, this element of EMDR is reminiscent of the classic portrayal of hypnosis, in which the subject follows the lateral movements of the hypnotist's dangling pocket watch. EMDR also includes cognitive restructuring, a technique that encourages clients to learn to think about life problems in new and more constructive ways and to make positive self-statements. (p. 1)

EMDR uses side-to-side motions of bilateral stimulation. This bilateral stimulation duplicates the feeling of rapid eye movement (REM) sleep. EMDR takes a body-mind approach

to treating trauma. DMT has some similarities with EMDR in that it works with the body to heal trauma as well.

Edgelow et al. (2020) performed a systematic review of 18 articles, studies, and journal articles to see what research has been done on PTSD. For these articles, the focus was on how trauma or PTSD is treated through OT. The review suggested that of all the interventions studied, most included a multidisciplinary team, which usually included a therapist or a social worker. Most samples were collected from Sweden and the United States. According to this study, a multidisciplinary or transdisciplinary approach is the best approach to treating trauma.

Of the 18 studies, only two included trauma-focused interventions (Edgelow et al., 2020). Of the two trauma-focused interventions, each one included a mental health practitioner. An OT's primary focus is to get the individual to perform work duties, not to heal the whole person from their trauma. DMT can be considered a transdisciplinary approach to the whole client. It provides a holistic view of the client, rather than only attempting to get the individual to perform their work duties. By first working on helping the client overcome the trauma, the clinician will get the individual to a baseline that will allow them to perform required work duties and live a better life.

Mullins et al. (1996) examined how a multidisciplinary or biopsychosocial approach could be extended to the area of rehabilitation. They wrote, "First, rehabilitation historically has been, and continues to be, interdisciplinary and collaborative in nature. The majority of rehabilitation efforts are defined by the systematic coordination of multiple disciplines working toward the shared goal of rehabilitating patients" (p. 30). The goal is to rehabilitate the patient back to normalcy. According to Mullins et al. (1996), biopsychosocial approaches are the most effective way to treat someone who has gone through a traumatic experience.

Dance/Movement Therapy (DMT)

Brower (2006) highlighted the increasing popularity of the use of body-based techniques in therapy. She explained that according to a recent study, high stress levels increase levels of cortisol, which affects the autoimmune system. Spiegel et al. (1989) performed a study performed at the University of Southern California with breast cancer patients, it was found that the patients who were involved in group therapy had a better quality of life and lived longer. This was a verbal support group; however, in DMT support groups, the participants get both verbal and physical social involvement. Many medical schools across the country, including the University of Southern California and Harvard University, have adopted an interdisciplinary approach to treating patients. These medical schools consider the individual's diet, exercise, mental health, and nutrition. As mentioned earlier, an over-stressed individual who has experienced many traumatic events will have an uptick in how much adrenaline is running through their body. The intense adrenaline also increases cytokines in the body. The increase in cytokines increases inflammation throughout the body and this can increase the individual's vulnerability to cancer, heart disease, and other life-threatening conditions (Brower, 2006, p. 1).

Overall, movement therapy or DMT is the perfect transdisciplinary approach to coordinate the body with the mind. Dance connects people of different cultures, nationalities, and communities. Many cultures use dance as a form of ritual. Some believe that when an individual begins to dance, they have been taken over by a deity. The movement of these dancers is not that of a performer on stage, as much of it is jerky, routed in the legs, and different for each participant. The dance they do is for what they need in their own body (Nkeita, 1957, p. 1).

Occupational Therapy as a Parallel to Dance/Movement Therapy

According to Kraus (2005), DMT and OT have similarities, and for someone who is a dancer, OT can feel constricting. Bonnie Bainbridge Cohen received her bachelors in OT and she is a dancer/choreographer. She created Body-Mind Centering (BMC), and her dancers are instructed to do small movements which incorporate developmental movements. Bonnie is a certified in neurodevelopmental therapist, she was certified by the Laban/Bartenieff institute in England. She studied under doctors, PTs and many other medical practitioners to create this form of dance. What BMC seeks to do is repattern movements learned as a child. It is obvious that body movements can change the way people view the world (p. 1).

A study was conducted with twenty seven women and six men. All of the participants were traumatized inpatients in psychiatric hospital wards. The locations included SRH Hospital in Karlsbad-Langensteinbach and clinics around the area, and the University Hospital in Heidelberg (as cited in Koch et al., p. 447, 2019). The study researched the effects of Flamenco dance on the well-being and perceived level of health of the traumatized inpatients. Koch et al. (2019) stated:

The investigation of dance as a form of therapy for trauma survivors is gaining momentum. This study investigated the effects of Flamenco therapy, and found a significant increase of well-being and a significant improvement of perceived level of health and pain within the experimental group in traumatized inpatients after a single session of Flamenco therapy. (p. 451)

Flamenco dance, like all dances, allows participants to express themselves.

Dance/movement therapy (DMT) has many techniques to channel such impulses into other constructive or creative ways of expression (for a model and techniques see Dieterich-Hartwell, 2017), and can be particularly helpful in regulating the expression of aggression and negative

emotions by providing acceptable and safe forms of expression, such as Flamenco. (p. 443) Koch et al (2019):

used Heidelberg state inventory in order to measure well being, the body self-efficacy scale to measure body related self-efficacy, the perception of boundaries scale to measure different aspects of interpersonal resonance. Separate questions were asked on perceived level of fitness, physical pain, and general health.” (p. 448)

Although the study did not have enough participants because of complications during the pandemic, its results are promising, as they show that DMT can be used to treat trauma in the body and the mind.

Hodges and Coppola (2014) researched how observing someone perform an activity would allow an individual to learn how to do the activity. The researchers performed a two-fold study. First, they wanted to know what the observers thought they learned from watching videos or how their confidence improved or decreased. Second, the researchers wanted to see if the observers confidence matched their ability to perform the task. The researchers used juggling for the activity and recruited 36 university students for the study. Three groups were formed, and each student was randomly assigned to a group. Group one the physical practice group, group two the control group, and group three the observation-only group.

The observation group with video viewing was allowed to practice after watching every juggling video. The control group was allowed to juggle following a two-minute rest, and each attempt at juggling was recorded. The researchers pre-tested the individuals who had never juggled before to ensure they were not experienced in juggling. They tested the confidence levels of each group to see if there were parallels between confidence and ability. They transformed the z (fisher) averages into a T-test for more accuracy. The control participants were found to

improve over the course of the test despite not being able to practice. They performed two experiments, and in the first, they showed that watching a person do something repeatedly created more confidence even without practice. These findings show that observation enhances feelings of confidence. By observing someone's movements, one can feel the movements kinesthetically and emotionally. In DMT, this is called kinesthetic seeing (Tortora, 2006).

A dance/movement therapist can assist someone who needs to return to work and heal their mind and body. A dance/movement therapist focuses on both mental and physical well-being. When someone has experienced trauma others may notice a difference in their posture such as their shoulders up towards their head or they may be looking down at the ground. The traumatized individual may feel the affects of trauma in their own body, they may have tension in their shoulders, a constant butterfly feeling in their stomach, or they may jump at the slightest noise.

Moreover, these individuals frequently feel disengaged from their bodies. As stated earlier, the portions of the brain that are responsible for emotions are the same parts responsible for moving the body; thus, they are dependent on one another. The way a body feels physically can be related to how an individual in that body feels emotionally. Bernstein (2019) has worked with survivors of trauma for over forty years in private practice. She launched a program centered around Empowerment-Focused Dance/Movement Therapy (EFDM) located in Kolkata, India, called *Sanved: Saving Lives through Dance*, which endeavors to heal the physical ailments of trauma. Her work helps create empowerment through movement, vocalization, and creativity.

Since 2008, Bernstein (2019) has worked with survivors of sex trafficking and psychosocial trauma in Kolkata, India (p. 195). Throughout her time there, she has created dance trainers or what one may call a type of movement therapist, even though they are not officially

certified as dance/movement therapists. The trainers help human trafficking survivors find empowerment. As a disclaimer, human trafficking is when someone is forced into doing sexual acts for money when they do not wish to do. Bernstein took into account cultural presence in her work and adopted a culturally aware perspective including local religions in order to connect her program with the local community. Her work is grounded in the work of Blanche Evan. Evan taught creative dance to children and enabled each child to learn their own body. She employed improvisation, which gives the individual the ability to freely flow and move the way they want to while staying connected with others in the room (p. 198). By giving these women the ability to freely move, however they wish, she allows them agency, which gives them their power back, the power that was lost when they were forced into human trafficking.

Many trauma-based practices focus on healing the origins of the past trauma. However, in DMT, the focus is on the body-based memory of that trauma, working with which leads to a shift in perspective of the past trauma. Bernstein (2019) uses imagery to create improvised dances with the clients. The imagery used includes anything relevant to their environment. She leverages props, poetry, scarves, postcards, and music to create imagery for the participants. Those who have been trafficked have experienced a loss of control. Bernstein uses tension and release techniques to help combat this feeling. The perception of being frozen can feel debilitating and can leave clients feeling powerless. Using that feeling in the body while working with the release can be extremely therapeutic for survivors (p. 368). This release will give the clients their power back, which was lost when they were forced, both mentally and physically, to do something that felt inherently wrong.

Bernstein (2019) leverages verbalization or gibberish, which gives the participants the ability to let go of their inhibitions. She also uses dance to act out the end of stories and,

consequently, change the ending to something more positive. By doing so, she creates new pathways in the brain so that the memory can be transformed, which changes the narrative. Evans at times uses drums and meets clients where they need to be met to work through their bodily felt trauma from a bottom-up approach. A bottom-up approach leverages the body first and then the mind (p. 209).

The principal component of Bernstein's (2019) program in Kolkata, India is professional development (p. 210). According to Bernstein (2019), "Research on trauma treatment in the global community suggests that recovery must include a restoration of a sense of control, agency, and hope" (p. 210). Without re-integration into the professional world or assisting individuals in finding a purpose, the work done on the bodily felt trauma is not useful. This component is important. DMT can be a transdisciplinary approach to treating trauma in the body. Evan's approach not only treats the trauma; it also reintegrates the individual into society, which re-socializes them and allows them to perform work duties. This gives them back control of their lives and provides them with hope for their future.

Discussion

Damasio (1999) mentions that a disruption in the simplest form can break down an individual's ability to see both visually and emotionally. The very meaning of consciousness is the awareness or perception that a person holds. When an individual experiences such a traumatic event like 9/11, their perception of the world changes. They may view the world as unsafe and go into the fight or flight response. DMT works with these feelings and sensations to help the client regulate themselves both physically and mentally.

Moments of trauma will affect consciousness and the ability to regulate emotions. The heightened arousal and deregulation that occurs in the body after experiencing a traumatic event,

can alter the body's homeostasis. Doctors recommend exercise when an individual is under enormous amounts of stress, as it regulates the body and mind. Dance/movement therapists' goal is also the same. It can be considered a transdisciplinary approach to treating trauma in the body and the mind.

This thesis has examined many peer-reviewed articles, professional journals, and books written by doctors and neuroscientists. Ashwell and Restak (2012) explained how the brain works and how PTSD shows signs in the body and the mind. Bensimon's (2021) article connected music therapy and the need to move the body. Bernstein, (2019) who is a dance/movement therapist, wrote about her work in India with women who had been. Brooklyn et al. (2015) explained how disassociation affects someone who has experienced trauma. Gray (2017) explained the polyvagal theory and its connection with the ideas of Damasio (1999), who proposed that the self and consciousness are interwoven with the brain and the body.

This thesis also discussed the findings of Edgelow et al. (2020), who performed a systematic review of programs for traumatized individuals and occupational therapists, showing that occupational therapists are at a disadvantage when treating these individuals. It also described Koch et al.'s (2019) work with Flamenco dance for traumatized inpatients. The thesis also presents Kraus's (2005) findings, along with Bonnie Bainbridge Cohen's work and Lilienfeld's (2021) definition of EMDR. This thesis highlights that DMT and EMDR both leverages bilateral stimulation to give the client the ability to process the memory in a safe space.

The brain controls people's movements and emotions. Therefore, to regulate one's emotions, one needs to control their body. A dance/movement therapist can help clients do this. DMT, as a transdisciplinary approach to therapy, provides a holistic view of the client. It is an

incorporation of the inner workings of the brain and body movements, and it gives the clients the ability to bring the mind back into the vessel of the body.

DMT can now be done virtually, and therapists can provide therapy at the client's own home via telehealth. Therapists have the ability to counsel clients outside while walking on hiking trails, which makes use of sunlight as medicine. Avenues for providing a more therapeutic approach have opened immensely. The COVID-19 pandemic caused individuals to focus more on their physical and mental health. Many were alone the entire time, they suffered from depression, anxiety, and other mental health impairments, and were forced to look within and sit with their own thoughts. Countless individuals experienced direct loss or trauma. What was supposed to be a two-week lockdown felt like an eternity. Traditional treatments for trauma were limiting. DMT can be a transdisciplinary approach to treat trauma through more open alternative means of healing. I am hopeful about what the future holds.

Conclusion

This thesis has shown that DMT is at an advantage when treating trauma because trauma is both felt in the body and mind. DMT provides a safe environment for each client to heal their trauma; provides the socialization needed for the client to be seen; and allows the individual to be evaluated, viewed, and understood. Further, it allows the client to verbalize their trauma, speak their truth, and overcome it in a safe environment. DMT treats both the body and the mind; therefore, it can be considered an interdisciplinary treatment.

Movements that are expressed through the body demonstrate more than what verbalized thoughts do. This thesis provides a review of the literature and explores the advantages of using DMT to treat trauma. PTSD can be a bodily felt experience. The bodily sensations can range from tightness or a constant nervous feeling that something is going to hurt the individual.

PTSD can create trust issues for the individual, and those with PTSD constantly question everyone and every situation. DMT is more advantageous than other disciplines because it treats the client through the body and mind and allows them to re-socialize themselves into society and or re-integrate themselves into their support system by rebuilding the bonds that were broken from their struggles to retain their mental health.

The body wants to move, the mind enjoys when it does. This provides harmony between the two coordination of the two. Humans begin moving in their infancy and this is the inherent way they communicate. Using movement to heal is the best avenue for mental and physical health.

Dance/movement therapists try to get the client to move more freely, enliven certain parts of the body that never moved freely, and make the individual feel truly seen. When someone has experienced a traumatic event, it is painful for them to be seen. The purpose of this thesis is to show that DMT can be a transdisciplinary approach to treating trauma. Dance/movement therapists help people be seen and observed, both through physical body movements and emotional experiences. This gives them a safe environment where they can begin to feel comfortable and avoid fighting or fleeing the scene. The discussion that happens between a dance/movement therapist and a client allows the client to have agency over what they truly feel and how they want to show up in the world.

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