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## Is it Post-Traumatic Stress Disorder or Attention-Deficit/ Hyperactivity Disorder?

Ivette Berger  
ibolanos@lesley.edu

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Running Head: PTSD/ADHD AND THE BODY

**Is it Post-Traumatic Stress Disorder or Attention-Deficit/Hyperactivity Disorder?**

Capstone Thesis

Lesley University

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Ivette Berger

Specialization: Dance/Movement Therapy

Thesis Instructor: Carla Velazquez-Garcia, PhD, MA, CT

### Abstract

This is a review of the current literature between the comorbidities and physiological symptoms of post-traumatic stress disorder (PTSD) and attention-deficit hyperactivity disorder (ADHD), specifically in adolescents. The method used by this writer was examining peer-reviewed articles and books focused on PTSD and ADHD. Quantitative and qualitative research was reviewed and used to provide support on the comorbidities between PTSD and ADHD. Lastly, this paper discusses and explores how dance/movement therapy (DMT) should be a treatment option when working with this population since dance/movement therapy uses body observations and assessment tools that aid in diagnosing and treating individuals diagnosed with PTSD and ADHD. Dance/movement therapy techniques and interventions used by established dance/movement therapists are discussed to provide support and examples of how dance/movement therapy is utilized with both PTSD and ADHD clients.

*Keywords: ADHD, PTSD, dance movement therapy, comorbidities, adolescents, trauma*

## **Is it Post-Traumatic Stress Disorder or Attention-Deficit/Hyperactivity Disorder?**

### **Introduction**

"Our bodies are the texts that carry the memories and therefore remembering is no less than reincarnation." -*Katie Cannon (as quoted by Bessel Van Der Kolk in The Body Keeps the Score)*

The DSM-V states that "post-traumatic stress disorder (PTSD) occurs after an exposure to actual or threatened death, serious injury, or sexual violence" (American Psychiatric Association, 2013, p.271). PTSD affects individuals of all ages. To be diagnosed with PTSD an individual experiences symptom(s) that interfere with their functioning. Symptoms associated with PTSD include intrusive thoughts and memories, dissociative reactions, avoidance, irritable behavior, hypervigilance, and problems with concentration. These symptoms are also common in individuals diagnosed with attention-deficit/ hyperactivity disorder (ADHD).

ADHD is commonly diagnosed during childhood. To be diagnosed with ADHD there must be a pattern of inattention and/or hyperactivity that interferes with the individual's functioning or development (APA, 2013, p. 61). Like PTSD, the symptoms associated with ADHD are inattention and avoidance of tasks. Other hallmark symptoms associated with ADHD are being easily distracted, hyperactivity, and impulsivity. Therefore, if there is an overlap of symptoms between both PTSD and ADHD, it is important for a therapist to determine which symptom is associated with each diagnosis so they can provide the best course of treatment.

For example, a fourteen-year-old Korean male is observed in a school setting as being inattentive and defiant. He avoids peer interactions and struggles to communicate. Since these

symptoms interfered with his day-to-day functioning, he was diagnosed with attention-deficit/hyperactivity disorder. While he is at school, he becomes agitated, grabs his pencil, and lunges towards his teacher. After being removed from the classroom, the school counselor learns that this child is physically abused by his stepfather. He is released from his mother's custody and is now in a residential treatment setting. He is diagnosed by the psychiatric nurse at the residential treatment center with post-traumatic stress disorder since he is observed as having intrusive thoughts and dissociative reactions. Are his symptoms related to his ADHD, PTSD, or both? What types of interventions should be utilized when working with a client diagnosed with PTSD and ADHD?

This is a review of the current literature on the comorbidities and physiological symptoms of post-traumatic stress disorder (PTSD) and attention-deficit hyperactivity disorder (ADHD), specifically in adolescents. This writer discusses why dance/movement therapy (DMT) should be an intervention model with this population. This topic is important since the treatment goals and interventions used are different for both PTSD and ADHD. Additionally, the overdiagnosis of ADHD can be harmful to the child's mental health, especially if the present symptoms are due to PTSD.

### **Method**

The method used by this author was researching available literature on the over-diagnosis of ADHD, comorbidities of PTSD and ADHD, the physiological and neuropsychological symptoms, and current treatments for both PTSD and ADHD. By researching these topics, this writer hoped to learn how dance/movement therapy (DMT) can support and best be utilized when working with this population.

## Literature Review

### Post-Traumatic Stress Disorder

In 1980, PTSD was introduced to the American Psychiatric Association by New York psychoanalysts Chaim Shatan and Robert J. Lifton. According to Bessel Van Der Kolk (2015), Shatan and Lifton worked with a group of Vietnam veterans to create this new diagnosis that described the common cluster of symptoms between veterans at the VA. This event led to an explosion of research on PTSD and trauma, which is now extensive. Judith Herman (1997) discussed the study of psychological trauma. She reported "periods of active investigation have alternated with periods of oblivion" and "to study psychological trauma is to come face to face both with human vulnerability in the natural world and with the capacity for evil in human nature" (p.7). In *The Body Keeps the Score*, Van Der Kolk (2015) states that due to the amount of research, "we can now develop methods and experiments that utilize the natural neuroplasticity to help (trauma) survivors feel fully alive in the present and move on with their lives" (p.3). He argues that there is also significant research on developmental trauma and PTSD in children. However, eighty-two percent of the traumatized children seen in the National Child Traumatic Stress Network do not meet the diagnostic criteria for PTSD.

Children and adolescents who have PTSD will often present as being shut down, suspicious, or aggressive. Children are more likely to receive alternative diagnosis, such as oppositional defiant disorder or disruptive mood dysregulation disorder. These alternative diagnoses are sometimes inaccurate which can lead to the client(s) not receiving the proper treatment they require. Due to this, many children will receive multiple diagnoses over time. Van Der Kolk (2015) argues that if the child gets treatment, such as medications, behavioral

modification, or exposure therapy for these specific diagnoses, the treatment will rarely work and often cause more damage. Therefore, to get a diagnosis that would capture the full range of PTSD symptoms observed in children, he conducted a study and collected data on about 350 children and their parents or foster parents. Van Der Kolk presented this new diagnosis - Developmental Trauma Disorder- to the American Psychiatric Association and lobbied for it to be added to the DSM-V; however, it was denied.

To be diagnosed with PTSD symptoms such as hyperarousal, constriction, dissociation (including denial), and feelings of helplessness need to be observed and interfere with the individual's functioning. The symptoms mentioned are usually the first to appear, followed by symptoms of hypervigilance, intrusive imagery or flashbacks, extreme sensitivity to light and sound, hyperactivity, exaggerated emotional and startled responses, abrupt mood swings, and difficulty sleeping, to name a few (Levine, 1997, p.147). To treat individuals who are experiencing symptoms of PTSD, it is essential to understand trauma and its effects on the brain and body.

Neuroscience and research have taught us that the human brain consists of three integral systems: the reptilian, limbic, and neocortex. Parts of these systems are activated in traumatized individuals—for example, the amygdala, which is in the limbic brain. The amygdala's job is "to warn us of impending danger and to activate the body's stress response" (Van Der Kolk, 2015, p. 42). A study conducted by Van der Kolk (2015) showed "that when traumatized people are presented with images, sounds, or thoughts related to their particular experience, the amygdala reacts with alarm." The physiological response to the amygdala's alarm is observed as fight, flight, or freeze. When the amygdala perceives an outside stimulus as a threat, the medial prefrontal cortex (MPFC), located in the frontal lobes directly above the eyes, is responsible for

sending the message that determines if the threat is or not real. "In PTSD, the critical balance between the amygdala and the MPFC shifts radically, which makes it much harder to control emotions and impulses" (Van Der Kolk, 2015, p.63).

Another area of the brain that is affected is the Broca's area. It is one of the speech centers and is on the left side of the brain. If Broca's area is not functioning correctly, an individual cannot put thoughts or feelings into words. For example, if Broca's area in a traumatized individual is offline, that individual may report experiencing flashbacks.

The brain and body are reacting differently after a person experiences trauma. Whether it is observed as flashbacks due to the Broca's areas being offline, or a possible heighten startled response by the amygdala, or mood swings, the world of the traumatized individual may be experienced through a different nervous system.

Schultebrucks et al. (2019) conducted a single-blind randomized placebo-controlled study that focused on intrusive memories. Intrusive memories are a common symptom of PTSD and are characterized by recurring nightmares and memories of the traumatic event. The purpose of Schultebrucks et al.'s (2019) study was to gain insight into whether the "physiological stress response affects the number of intrusive memories over the course of 7 consecutive days" (p.646). This study included 122 young women examined by conducting a series of tests before, during, and after exposure to a scene in the film *Irreversible* by Gaspar Noe. The participants self-reported intrusive memories using a Likert scale to report the level of distress, anger, fear, sadness, disgust, and delight one week after the exposure to the film. Schultebrucks et al. (2019) hypothesized that "the activation of biological stress system increases the number of intrusive memories over the course of 7 days" (p. 653). This study supported their hypothesis that trauma-analog events lead to more intrusive memories over one week. It is important to note that there is

limited data currently available on intrusive memories; therefore, it needs to be researched more since it is a hallmark symptom of PTSD. It is also important to conduct research on intrusive memories in children and how it affects their development.

Piran (2016) explores how trauma affects a woman's body by conducting a qualitative research study, "Experience of Embodiment." In this study, there were 171 interviews with 69 girls and women between the ages of 9-68. Three studies were conducted based on age groups; life history study ages 20-27; a 5-year prospective study with ages 9-14; and a life history study age 50-68. A constructivist grounded theory approach is used in this study. This study aimed to examine the five central dimensions: body-self connection, agency, desire, self-attunement, and resisting objectification. It was a part of a broader qualitative research program aimed to examine the social experiences that help shape girls' and women's embodied experiences. "The narratives that related to the girls or women's experience in their bodies in relation to the world around them were coded, a core construct, labeled 'Experience of Embodiment'" (Piran, 2016, p.47). Positive and negative embodiments appeared to change over the participant's lifespan due to a social change in their environment. Piran's (2016) study helped support the hypothesis that in adolescents, a crisis of embodiment "involves a multidimensional disruption in body connection and comfort, agency, desire, self-attunement, and objectification, beyond the alluded to drop in body esteem" (p.54). This is important since when working with children who have experienced trauma and have PTSD, the body-connection disruption can be observed as low self-esteem.

Thompson, Coleman, O'Conner, Farrell, & Sullivan (2020) conducted a qualitative study examining "violence exposure and nonviolent stressors and their association with adolescents' trauma-related distress and problem behaviors" (p.509). The participants were predominantly African American and living in a high-crime community. The median age of participants was

12.9 years old. The Thompson, Coleman, O'Conner, Farrell, & Sullivan (2020) study used Richets and Martinez's *Checklist of Children's Distress Symptoms to examine the trauma-related distress*. This 28-item measure checklist is used to "examine the impact of exposure to violence on children's emotional and psychological well-being in a community violence project" (p.512). The participants used a 5-point scale to rate PTSD symptoms such as re-experiencing, avoidance, and hyperarousal. Within this research, they found that those three trauma-related distress factors were intercorrelated. They concluded that physical aggression, delinquency, and substance use were also highly correlated with nonviolent life stressors.

Zan der Bij, Op den Kelder, Montagne, & Hagenars (2020) conducted a systematic review on inhibitory control in trauma-exposed youth. They stated that "epidemiological research on child traumatic stress has demonstrated a high prevalence rate of exposure to traumatic events in childhood and adolescence; over 66% of children reported at least one traumatic event by age 16" (p.451). These events can lead youth to develop post-traumatic stress disorder (PTSD). They reported that 11.5-21.5% would develop PTSD after trauma exposure. Zan der Bij, Op den Kelder, Montagne, & Hagenars (2020) aimed to investigate two subcomponents of inhibitory control- prepotent response inhibition and interference control. They reviewed 33 studies; 12 studies measured prepotent response inhibition, 20 measured interference control, and one measured both. All the studies were assessed for quality using the Assessment Tool for Quantitative Studies of the Effective Public Health Practice Project. Within their research, they concluded that youth who have experienced prolonged stress might struggle with inhibitory control. Inhibitory control appears mostly delayed in trauma-exposed children ages 6 to 11 and 12-17 years old. This is important to note since this can be observed as impulsivity a symptom of PTSD.

Judith Herman (1997) discusses the long-term implications of repeated childhood trauma. Survivors of childhood abuse report fear of violence, an overwhelming sense of helplessness, and dissociation. "While in a constant state of autonomic hyperarousal, they (child) must also be quiet and immobile, avoiding any physical display of their inner agitation" (Herman, 1997, p. 100). This state is referred to as "frozen watchfulness" in abused children or dissociation, a common symptom of PTSD. Van Der Kolk (2015) states that "the bodies of child-abuse victims are tense and defensive until they find a way to relax and feel safe" (p.103) this is often described as hyperarousal.

This constant state of hyperarousal and dissociation in children is also observed in those with ADHD. Van der Kolk (2015) discusses a study he conducted with Nina Fish-Murray. All twelve children in this study were victims of child abuse. Van Der Kolk reported that the patients in this study were overly excited and disorganized when sharing their stories. He goes on further to state that almost all his patients had been diagnosed with ADHD. Van der Kolk (2015) reported that the staff that worked with the children who were abused "rarely mentioned the horrific real-life experiences of the children and the impact of those traumas on their feelings, thinking, and self-regulation" (p.111). Instead, the medical records of these children were filled with diagnostic labels, and ADHD was a "comorbid" diagnosis for almost all.

### **Attention-Deficit Hyperactivity Disorder**

Attention-Deficit Hyperactivity Disorder (ADHD) is a neurodevelopment disorder – has to do with the way the brain grows and develops- that is commonly diagnosed in children (Centers for Disease Control and Prevention, 2021). Research shows that 40 to 60 percent of children will be diagnosed with ADHD by the time they are adolescents (Cuffe et al., 1994). This

statistic shows that half of children are diagnosed with ADHD. Is ADHD being over diagnosed? Or are the symptoms observed in children related to PTSD, since as previously stated there is an overlap in symptoms? To diagnose and treat individuals who are experiencing symptoms of ADHD, it is important to understand ADHD and its effects on the brain and body.

A diagnosis of ADHD includes three types: predominantly inattentive, predominantly hyperactive and impulsive, or a combination of inattention and hyperactivity (Karr-Morse & Wiley, 2013). A child with a predominantly inattentive presentation has difficulty organizing and finishing a task, has difficulty paying attention to details, struggles with following instructions or having conversations. A child with a predominantly hyperactive-impulsive presentation may appear to talk a lot and is impulsive. The child may struggle to sit still and wait their turn. Lastly, the combined presentation is a combination of both predominantly inattentive and predominantly hyperactive-impulsive. The symptoms of the "two types are equally present in the person because symptoms can change over time, the presentation may change over time as well" (CDC, 2021). The causes of ADHD are unknown; however, there is evidence that ADHD affects the brain's functions.

Scientists have found that individuals who have ADHD have a deficiency of norepinephrine – a neurotransmitter. "Norepinephrine is synthesized within the brain. The basic building block of each norepinephrine molecule is dopa; this tiny molecule is converted into dopamine, which, in turn, is converted into norepinephrine" (Silver, 2021). There are four function regions of the brain that are impaired by a deficiency of norepinephrine. They are the frontal cortex, limbic system, basal ganglia, and the reticular activating system (RAS). The frontal cortex is responsible for high-level functioning. The limbic system is responsible for regulating emotions. The basal ganglia are responsible for communication. The RAS is

responsible for regulating wakefulness and sleep-wake transitions. All four regions interact with one another. If one region lacks norepinephrine, it can affect one or more of the other regions. A child with a norepinephrine deficiency in one or more of these four brain regions may present as inattentive, restless, impulsive, and hyperactive. They may also struggle with organization and/or have impaired executive functioning. Therefore, the deficiency of norepinephrine within the four brain regions may be a correlation and causation of ADHD (Silver, 2021).

Children who are diagnosed with ADHD are not only inattentive, but they are also often described as being in constant motion, talkative, and impatient. They may present as having behavioral problems, such as having low frustration tolerance and being impulsive. These behaviors may lead to temper tantrums and aggressive outbursts. Parents of children who have ADHD may feel that they are unable to manage their children. The child may also struggle with peer socialization due to their aggressive outbursts (Cuffe et al., 1994, p. 328).

Karr-Morse & Wiley (2013) suggests that children with ADHD struggle with five basic capacities that may correlate to the behavioral problems observed in children with ADHD. The five basic capacities are 1. capacity for planning, 2. selectivity, 3. ability to resist distraction from competing stimulation, 4. continuity of attention, and 5. the ability of self-awareness and self-regulation. If children with ADHD struggle with these five basic capacities, they may present as oppositional, defiant, and/or aggressive. These observed behaviors may lead to a misdiagnosis of oppositional-defiant disorder (ODD) or conduct disorder (CD) (Karr-Morse & Wiley, 2013). Although ODD and CD are beyond the scope of this paper, it should be noted that children who have both ADHD and aggressive behaviors are likely to drop out of school, get in trouble with the law, have unplanned pregnancies, and sexually transmitted diseases (Karr-Morse & Wiley, 2013).

### **Comorbidities between PTSD and ADHD**

Research proves that ADHD is a neurological and developmental disorder, whereas PTSD results from a traumatic event or series of events in an individual's environment. "Both of these disorders have significant comorbidity with other psychiatric disorders; however, there has been little attention given to comorbidity between ADHD and PTSD" (Cuffe et al., 1994, P.327). There is extensive research and literature on PTSD and ADHD; however, research is limited on the comorbidities, overlap of symptoms, and/or similar symptomatology between PTSD and ADHD.

As previously discussed, Van Der Kolk (2015) lobbied the American Psychiatric Association to add Developmental Trauma Disorder, which would capture the full range of symptoms observed in children who have PTSD, rather than diagnosing the child/individual with multiple diagnoses or misdiagnosing. Van Der Kolk failed to mention ADHD as one of the alternative diagnoses. Crenshaw et al. (2021) indicate that ADHD and PTSD share symptoms that can often be overlooked. For example, individuals who are diagnosed with PTSD or ADHD may present as being inattentive, impulsive, irritable, anxious, sensitive to sensory stimuli, and have poor memory and concentration. They may also have a mood disorder, low self-esteem, and a tendency to self-medicate. These are just a few of the overlapping symptoms between PTSD and ADHD. It is currently unknown if one diagnosis causes the other. Crenshaw et al. (2021) state that "ADHD cannot cause' PTSD, although people with ADHD are more prone to high-risk behavior, relational problems, and negative habits of self-medicating, leaving them more vulnerable to traumatic events." Research also indicates that PTSD affects a child's brain development, such as influencing the Broca's area. Therefore, a traumatized child might meet the

diagnostic criteria for ADHD since they may appear to have limited speech and/or present as inattentive (Crenshaw et al., 2021).

Cuffe et al. (1994) illustrate and discuss four comorbid cases of ADHD and PTSD. One case "gives a clear premorbid history of ADHD with a concomitant learning disability and illustrates how children with ADHD may be at higher risk for trauma." The other three cases are children whom all have a genetic predisposition for ADHD and have experienced trauma. Cuffe et al. (1994) suggest that "the lack of a premorbid history or available family history of ADHD raises the question of whether PTSD itself could create an attention deficit-like syndrome" (p.334). Hunt et al. (1991, as referenced in Cuffe et al., 1994) have suggested that hyperarousal, a symptom of PTSD, can indirectly impair attention. "They hypothesized that the resulting excessive processing of stimuli leads to an overloading of the child's cognitive processes which impairs selective and sustained attention" (p.335). Cuffe et al. suggest another reason for the co-existence of ADHD and PTSD. They provide the example of the commonality of attention and concentration problems to most psychiatric disorders. They argue that if the diagnoses criteria for ADHD are too broad, it leaves room for a lot of similarities with PTSD.

Biederman et al. (2013) conducted a longitudinal study to examine the comorbidity of ADHD and PTSD. They tested the following hypotheses:

- i) attention-deficit/hyperactivity disorder plus post-traumatic stress disorder will be associated with more dysfunction than attention-deficit/hyperactivity disorder alone;
- ii) attention-deficit/hyperactivity disorder symptoms will be similar in attention-deficit/hyperactivity disorder subjects with and without post-traumatic stress disorder;
- iii) relatives of attention-deficit/hyperactivity disorder plus post-traumatic stress disorder

patients will be at risk for attention-deficit/hyperactivity disorder; iv) post-traumatic stress disorder will onset after attention-deficit/hyperactivity disorder (p.80).

Based on their research of youth and their siblings, they concluded that "the prevalence of PTSD was significantly higher in ADHD probands compared with control probands (5.2% vs. 1.7%,  $\chi^2(1) = 4.36$ ,  $P = 0.04$ ) (3 car accidents, 3 witnessed abuse, five sexual abuse/rape, and three physical abuse)" (Biederman et al., 2013, p.81). Their results from this study of youth with and without ADHD confirm that ADHD is associated with PTSD. They note that "ADHD probands with and without PTSD did not differ in their severity of inattentive or hyperactive-impulsive symptoms. This suggests that the development of PTSD, in the ADHD and PTSD group, cannot be simply attributed to higher levels of these ADHD symptom domains" (p.84). They also found that "the onset of ADHD and other comorbid disorders preceded significantly by the onset of PTSD suggests that ADHD and associated comorbid disorders are antecedent risk factors for the development of PTSD in youth" (Biederman et al., 2013, p.84). This study provides data that indicates "among ADHD patients, PTSD is not caused by excessive hyperactive-impulsive or inattentive symptoms and that ADHD symptoms are not sequelae of PTSD" (Biederman et al., 2013, p.85). This study provides data that support this author's thesis since there are comorbidities between PTSD and ADHD and provides insight on how trauma experiences do not cause a child to have ADHD.

### **Current Available Treatment**

Eye movement desensitization and reprocessing (EMDR) is a common form of treatment used when working with individuals who have PTSD. EMDR uses bilateral stimulation

(typically eye movements) to reduce the vividness and emotion associated with the trauma memories (APA, 2021). Medication is also commonly used to treat PTSD. EMDR and medication help treat the neurological symptoms of PTSD. However, PTSD affects the brain, mind, and body; therefore, the body needs to be involved in the treatment. "Treatment needs to reactivate the capacity to safely mirror, and be mirrored, by others, but also to resist being hijacked by others' negative emotions" (Van der Kolk, 2015, p.59). He suggested yoga therapy as a body-based intervention to assist with self-regulation and cultivation introspection. This writer suggests using dance/movement therapy as a body-based intervention.

Current treatments for individuals diagnosed with ADHD are typically multimodal – a combination of approaches that complement one another to reduce symptoms (Williams, 2020). One treatment option available to treat the neurobiological symptoms of ADHD medication is used to help regulate the brain. Stimulant medication is used since the "key neurotransmitters deficient in ADHD brains are norepinephrine and dopamine" (Williams, 2020). There are currently 29 FDA-approved stimulant medications for ADHD in the United States, and it is vital to figure out the proper medication and dosage (Williams, 2020).

Behavioral therapies are also commonly used in the treatment of ADHD since they can address specific behavioral problems. Cognitive-behavioral therapy (CBT) is widely used when working with children who have ADHD. CBT is "a short-term, goal-oriented form of psychotherapy that aims to change negative patterns of thinking and change the way a patient feels about themselves, their abilities, and their future" (Williams, 2020). Changing their distorted thoughts can lead to behavioral changes. ADHD, like PTSD, affects the brain, mind, and body. Therefore, the body also needs to be involved in treatment. This writer recommends

using dance/movement therapy as a form of treatment that should be included in the multimodal treatment approach to ADHD.

## **Discussion**

### **Dance/Movement Therapy**

Dance/movement therapy (DMT) is "the psychotherapeutic use of movement to promote emotional, social, cognitive, and physical integration of the individual" (American Dance Therapy Association, 2020). DMT is used with various populations, including those who are survivors of trauma and those who have ADHD. As previously mentioned, research proves that PTSD and ADHD both influence the individual's mind and body. Current treatment for both focuses on the neurological symptoms associated with the diagnosis. Van Der Kolk (2015) suggested using body-based treatment with PTSD clients, and Williams (2020) suggested using CBT for individuals with ADHD; however, this writer argues that DMT should be considered an intervention and an alternative to the currently available treatments for both PTSD and ADHD.

Rebekka Dieterich-Hartwell is a board-certified dance movement therapist who discusses interoception, which is the sense of the body's physiological condition. "Interoception includes the noting of sensations, cues, discomforts, pain, tension, and pleasures" (Dieterich-Hartwell, 2017, p.38). Dieterich-Hartwell explores the physiological responses to trauma - such as mobilization or immobilization (fight or flight response) and how dance/movement therapy can be an intervention used with this population. She states that "dance/movement therapy (DMT) employs the artistic process to promote healing and restoration like other creative arts therapies" and that DMT "attends to bodily sensations and experiences" (Dieterich-Hartwell, 2017, p.40). She provides examples of recent qualitative case studies that support the notion that DMT can be utilized as a treatment intervention for trauma survivors. Dieterich-Hartwell provides a

dance/movement therapy treatment model that can be used with interoception and individuals who have experienced trauma. She suggests different ways DMT can establish safety, regulate hyperarousal, and attend to interoception.

Amber Gray (2017) - a board-certified dance movement therapist, who is known for her work with trauma survivors, discusses how she has applied her polyvagal-informed DMT approach within a global framework. Gray's polyvagal-informed dance therapy is based on her work with Dr. Stephen Porges. Porges' polyvagal theory introduced a third response to our nervous system. Before polyvagal theory, the nervous system was believed to be a "two-part antagonistic system, with more activation signaling less calming, and more calming signaling less activation" (Wagner, 2016). Porges introduced what he calls the social engagement system, which is "a playful mixture of activation and calming that operates out of unique nerve influence" (Wagner, 2016). Gray used this theory to inform her work with trauma survivors. Gray's polyvagal-informed dance therapy model uses dance, movement, and rhythm that can be helpful to both children and adults. The dance/movement therapist helps the client by leading them through exercises that work with breath, sound, and movement to help the individual discover ways to directly access and regulate their nervous system. This is important in both trauma survivors and in individuals with ADHD since both diagnoses heighten the nervous system.

Gray (2017) states that her work of polyvagal-informed DMT "supports the human right to embody" and "all human beings have the right to inhabit their bodies in ways that they choose" (p.44). Gray discusses the fear-based responses of traumatic events: mobilization (fight or flight) and immobilization (shut down or freeze). As previously stated, these are the body's response to an activated amygdala. Gray (2017) suggests that these state shifts are "physiological

at their roots and express emotionally and psychologically" (p.44). She provides examples of how music, movement, dance, and rhythm can be used. Rhythm, for example, can be used to help self-regulation by exploring steady rhythms (heartbeat) that can have a calming effect. Additionally, she discussed the importance of safety and trust in the therapeutic relationship, which is fundamental in this work, especially with trauma survivors.

Suzi Tortora has developed an approach called the Ways of Seeing. The Ways of Seeing approach is based on the principle "that every individual creates a nonverbal movement style or profile composed of a unique combination of movement qualities that can be observed by a trained eye" (Tortora, 2006, p.11). Tortora created a movement profile assessment that can be used as an observational tool. She believes that "nonverbal behaviors are the underlying elements that act as the cueing system that provides the deeper meaning to words and actions" (Tortora, 2006, p.185). In working with individuals who may present as inattentive, hyperactivate, and/or dissociative, this approach can help the dance/movement therapist observe the individual's movement and provide insight into diagnoses and treatment planning. As stated earlier, PTSD and ADHD affect the body; therefore, having an observational and assessment tool, such as the Ways of Seeing approach, is beneficial.

### **Considerations**

This writer recommends further research on the comorbidities and overlap of symptoms between PTSD and ADHD. There currently is a lack of evidence-based research on this subject. It is vital that the comorbidities between PTSD and ADHD continue to be researched and studied since it can hopefully lead to a decrease in the overdiagnosis of ADHD in children.

### **Conclusion**

In conclusion, there is a significant amount of literature on PTSD and ADHD as separate diagnoses; however, the research is limited on the comorbidities and overlap of symptoms between PTSD and ADHD. Research studies on PTSD and ADHD indicate that both diagnoses affect both the mind and the body. Current treatment options for both PTSD and ADHD focus on the brain and mind reactions however they tend to leave out treating the body's response to PTSD and ADHD.

Dance/movement therapy should be considered an intervention when working with individuals who have one or both disorders. It is a mind and body approach that offers movement, nonverbal observation, and assessment tools. Amber Gray (2017) provides a polyvagal-informed dance therapy approach that can be utilized when working with adolescents who have experienced trauma and have PTSD. Suzi Tortora (2006) offers a Ways of Seeing technique that can be used with both PTSD and ADHD clients. Tortora's approach provides an assessment tool to help the therapist differentiate symptoms seen in PTSD and ADHD.

This writer learned that dance/movement therapy could be used with this population since dance therapists are trained in body observation and nonverbal communication. This writer suggests further research in dance/movement therapy with adolescents with a dual diagnosis of PTSD and ADHD since limited research is currently available.

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