

Lesley University

DigitalCommons@Lesley

---

Expressive Therapies Capstone Theses

Graduate School of Arts and Social Sciences  
(GSASS)

---

Fall 5-19-2018

## How Expressive Arts Therapy Benefits Children Living with Acquired Brain Injuries

Stacia Boynton

Lesley University, sboynton@lesley.edu

Follow this and additional works at: [https://digitalcommons.lesley.edu/expressive\\_theses](https://digitalcommons.lesley.edu/expressive_theses)



Part of the [Social and Behavioral Sciences Commons](#)

---

### Recommended Citation

Boynton, Stacia, "How Expressive Arts Therapy Benefits Children Living with Acquired Brain Injuries" (2018). *Expressive Therapies Capstone Theses*. 78.

[https://digitalcommons.lesley.edu/expressive\\_theses/78](https://digitalcommons.lesley.edu/expressive_theses/78)

This Thesis is brought to you for free and open access by the Graduate School of Arts and Social Sciences (GSASS) at DigitalCommons@Lesley. It has been accepted for inclusion in Expressive Therapies Capstone Theses by an authorized administrator of DigitalCommons@Lesley. For more information, please contact [digitalcommons@lesley.edu](mailto:digitalcommons@lesley.edu), [cvrattos@lesley.edu](mailto:cvrattos@lesley.edu).

## How Expressive Arts Therapy Benefits Children Living with Acquired Brain Injuries

Lesley University

April 18, 2018

Stacia Boynton

Expressive Arts Therapy

Elizabeth Kellogg

## How Expressive Arts Therapy Benefits Children Living with Acquired Brain Injuries

### Abstract

This literature review explores the positive effects of using an intermodal expressive arts therapy approach when working with children living with an acquired brain injury (ABI). This review outlines symptoms and difficulties children living with ABI experience, it introduces general brain structure, and provides evidence for the potential use of intermodal expressive arts therapy with this population. This review is intended as a tool kit for therapists who are not experienced in working with this client population. It will share research on surrounding expressive therapy modalities such as art, music, dance, drama, and expressive arts therapy; also referred to as intermodal therapy with the ABI population. In conclusion, it was found that the individual modality approaches are all beneficial for children and families living with an acquired brain injury and that more research is needed to support and intermodal approach.

## Introduction

In the year 2007, I developed a newfound passion for working with children living with brain tumors. My passion was sparked when I met a young girl named Jaclyn who had just started her foundation called Friends of Jaclyn. The mission of this foundation is to provide love, support, and friendship to the children and families during their journey of living with cancer. The moment I met Jaclyn and her family I knew I had found my career path. I spent the following ten years of my life working to help grow this foundation. I worked with hundreds of families from around the world addressing the fears and traumas they faced when this disease enters their lives. I worked closely with these families to help create a therapeutic healing process.

My work focused on creating additional support networks for each family by connecting them with a college or high school sports team. This connection was intended and continues to provide the family with love, support, and friendship from the team members. Players helped and continue to help the children by building self-confidence, social skills, as well as preparing them emotionally for difficult treatments and challenges they would have to face. They did this by having them at their games, practices, and visiting them in the hospitals. Having this experience helped me to understand how challenging it is to live with childhood cancer. In conjunction to dealing with the effects of a brain injury, and how it impacts the entire family.

The challenges I witnessed with the children battling pediatric brain tumors differed from the challenge faced by the general childhood oncology population. I found that families of a child coping with a brain injury as a result of a tumor or the treatment that they must undergo to battle this disease, created a very different experience for them. For these families, navigating the world of childhood cancer was made more difficult due to the additional lengthy list of cognitive,

physical, social, and emotional obstacles that one experiences when sustaining a brain injury and trauma.

When I started with the foundation, I was unaware I would face these challenges within my own family. On June 3rd in 2012, five years into my role helping families cop with the impacts of pediatric brain tumors, my family's life changed forever. That summer my closest cousin, Lauren survived a car accident that left her in a coma for four weeks. She suffered eighteen-skull fractures and a traumatic brain injury. When she became conscious she was unable to walk or talk. It took months of recovery to get her closer to her new baseline of living. Her life, as we all knew it, would never be the same. My family spent the first weeks supporting her in her fight to live, followed by months and years supporting her recovery and complex needs.

The focus of her therapy was mostly physical therapy (PT), occupational therapy (OT) and speech therapy. Her clinical team and our family were originally worried about if she would ever walk, talk and complete her activities of daily living again. In reality the recovery through PT, OT and speech therapy was the easiest part. After several months she was back home learning what her new life would look like. The most concerning trauma she face was the invisible one that was going on inside her mind and body. Her brain damage and resulting cognitive, social, and emotional needs were minimally addressed during her time in rehab doing PT, OT and Speech Therapy. The little mental health support she was offered was quick to end following discharge. She was left to navigate the world with a new brain, new body, and a new identity. She was told this was her future and to accept that she was lucky to have survived, but she did not listen.

I remember my mother taking about Lauren's interview for the speech pathology class at Spaulding Rehabilitation. Lauren was asked a series of questions in front of the class of 35 therapists. She easily answered most of the questions. When they asked her if an apple was a fruit, she blankly stared at them. They went on to ask several other questions. Then they asked if a dog was an animal, again a blank stare followed by an anxious bodily response while she looked to her mom for help with the answer. At the time I didn't think much of this story, but later I found myself wondering why she could answer certain questions but not others. She was alive and able to talk but it just was not the same girl that I grew up with. The more I thought about her responses and presentation, the more I began to connect the similar conversations I was having with the pediatric brain tumor community. The location of the brain injury changes the way each individual child will need to be approached for therapy. In my cousin's case, her left temporal lobe was injured and her ability to learn through reading and memorization with words was impaired. During this time she wanted to go back to college, graduate, and move on with her life, and our family was terrified. Although physically she had healed her wounds, her internal mind and body were not fully recovered. Through the use of an art based approach using yoga and mindfulness she moved closer to her cognitive and emotional baseline. Growing up as an athlete made art challenging but finding the ability to slow down to do yoga she was able to see progress and recovery through the use of these modalities. As a family we were able to see improvements with her speech, her strength, and her personality.

During this time, I witnessed the toll that this traumatic experience had on my family while trying to support her through her recovery. In doing their best to help her heal her physical, mental, and emotional struggles, they had to fully understand the impact this event had in shaping the rest of her life. This was not an easy lesson. In attempting to help her comprehend

the symptoms, as well as the life changes she would be undergoing post injury, I began to notice an overlap between her struggle with her brain injury and the struggle of children and families with brain tumors I was working with in my professional career. I had never considered that those without an illness such as cancer could undergo a struggle such as this, and here I was watching my cousin and my family go through this familiar experience.

The answer to how to work with these children felt obvious to me in having them using different art based modalities to access all parts of their brains. This would help both of these populations to feel less isolated, gain insight in how to connect with those around them as well as managing their behaviors. Both populations in my eyes were having trouble dealing with emotions, filtering information and engaging in the world in the way they used to. Peers were separating from them; being in large groups or loud places was a challenge and emotional ups and downs were common. They were having difficulty with day-to-day activities, which they now found more exhausting than before.

After researching more about these two different experiences I was able to understand more of the connection and the awareness that a brain tumor and traumatic brain injury both were categorized under the umbrella of an ABI. Having this understanding allowed me to work closer with families to explain the complexity of this injury to the child's brain in addition to cancer and help to allow for a better education for parents to see the complexity in which their child was experiencing. I began to work with families to collaborate closer with brain injury foundations and resources to support them to feel less isolated and more connected to families who were going through a similar experience. One support was connecting them to the sports teams through the Friends of Jaclyn foundation. I witnessed hundreds of families lives change from this connection to the team. Allowing for the child and family to feel supported by a group

was life changing. These new teammates would call their brain tumor child that they were supporting; invite them to games, host birthdays and last day of chemo parties for them. This connection allowed for the child to feel love, support and a sense of friendship. When a child undergoes cancer treatments the loss of a “normal” life with peers and family friendships can be one of the first supports to be lost.

The more time I spent learning about the symptoms and neurology of the brain, the more I understood how brain injuries and pediatric brain tumors related to one another. Both populations were dealing with the difficulty of managing multiple differences of their minds and bodies. When a person is living with a brain injury, there tends to be a focus around physically healing the body and allowing for the patient to move forward with their life. The focus with a brain tumor is to remove the tumor and/or find ways to stabilize it. One must learn how to best manage the physical pain, while also providing cancer treatments such as radiation and chemotherapy to keep the child alive. These treatment protocols often help the to manage or rid the tumor from the brain but depending on where the tumor is located the child may need to learn how to walk, talk and navigate life again. They are also left to deal with symptoms of PTSD as a result of their experiences.

There is one child named Andrew I have worked with who was diagnosed at the age of five with a brain tumor. He told me it all started by his feeling sick and upon going to the doctor they told him he had a lump the size of a golf ball in his head. He had surgery two days later. Following this seven-hour procedure he woke up and was unable to walk, move his hands, his eyes were crossed and he had double vision. He stayed in the hospital for three weeks and when he went home he was advised to continue with physical and occupational therapy, which he did for three years following his surgery. Through these therapies he learned how to walk and then



run, and how to write with his left hand due to the tremor in his right hand. He had to stay back a year in order to keep up academically.

When I talked to Andrew he talked about how hard it was at first to make new friends following this experience. He also talked about the impact his learning disabilities had on him both individually and with peers. In middle school it was harder for him to keep up with his peers and he was bullied often. Andrew's tumor was on his cerebellum, which also affected his balance and coordination, and his ability to play sports Andrew had a large number of challenges that he had to overcome in order to live the life he hoped to live.

I watched his progression in building self-confidence, coordination and gaining the ability to connect as well as relate to peers around him. I was able to witness this happen since I had organized for him to be adopted by the University of New Hampshire hockey team while I was a student there. Over these past five years he has spent with the University of New Hampshire hockey team due to their commitment and ability to use different ways of connecting with him he has flourished. The team was able to teach him how to skate, stand up for himself, play video games and just be one of teammates. He went from being a young boy who hung out with the team to now being a peer and 'one of the guys.' This team has provided the love, support and friendship Andrew needed to find his self-confidence that he lost when he was diagnosed. Andrew's experience of living with a brain tumor and an injury to the cerebellum is one child's experience but this highlights some of the benefits I observed of the use of integrated therapies and understanding of the location and affect of injuries to children's heads. It is important for the clinician to remember not only will the child be affected physically but they will also experience social and emotional challenges as well.

It has been my experience from working at a variety of settings that it is uncommon for the average cancer or ABI patient to receive expressive arts therapy for mental health and social services during their time in the hospital or the referral to seek support during or after this event. It has been shown for both populations that physical, cognitive, social, and/or emotional changes continue to impact on their lives long after the event. It is challenging for clinicians to work with this population if they are unaware of the complexity of brain function and changes that affect the client's ability to access certain parts to the brain to relearn and heal. Without this knowledge it can appear like the child is being "non-compliant", when actually their brain injury is preventing the proper therapeutic effect. The overall shift of the client from prior to the ABI through the physical healing, until they are seen in a counselors office with this "new brain" can be overwhelming for the client. It is important for the family and therapist to work together to piece the different pieces of the puzzle together to best attain the understanding of the brain.

An injury to a child's brain can cause a number of changes to the mind as well as the body. An ABI can occur in a mild, moderate or severe presentation. Depending on the injury, a child could experience physical, cognitive, social and/or emotional changes following the injury. A few of the common symptoms experienced from an ABI include difficult speech, poor motor control or balance, impaired concentration, poor communication skills, lack of planning and motivation, mood swings, self-centeredness, low self esteem as well as difficulty controlling emotions (Brain Injury Association of America, 2018). There are several symptoms one can experience after sustaining such a brain injury, but the symptoms mentioned above are some of the most common symptoms that were discovered when researching this population in relation to the expressive arts therapy modalities.

My intention for this paper is to capture an audience of current therapists working with children presenting with ABI - who have attained such injury through accident, disease or maltreatment - and to demonstrate the need for more research to be done in order to provide more thorough treatment for this population. I wish for this paper to address known acute injuries, as well as offer healing for the additional acquired injuries, which are often unnoticed such as an undiagnosed ABI. Due to the complexity of an ABI, therapists can be unaware of gathering a patient's history of and miss this different traumatic event in a child's life that have gone unacknowledged. The literature review below will discuss the benefits of using individual expressive therapy modalities with children who have an ABI.

### **Literature Review**

In the literature review I will explore in depth what a brain injury entails and the way in which different expressive therapy modalities can address aspects of a person living with an ABI. This review will examine the research that has been gathered about individual modalities such as music therapy, art therapy, dance/movement therapy, and drama therapy approaches to working with this population. This paper will share research that supports the benefits the expressive therapy modalities have on an individual and why more research on the intermodal approach would be important for this population. The use of intermodal approach and providing a client the opportunity to engage in both individual expressive therapy, as well as group therapy, will aid in allowing for the mind and body to connect on a therapeutic level.

### **What is an Acquired Brain Injury?**

According to the Brain Injury Association of Massachusetts, an ABI is any injury to the brain that occurs after birth (Brain Injury Association of America, 2018). There are several ways a child can sustain an ABI throughout their childhood. Such ways include an infectious disease,

metabolic disorder, endocrine disorder, brain tumor, toxins, poison, alcohol, drugs, disease, stroke, or a traumatic brain injury. These injuries can come from an accident, genetics, the environment, or maltreatment. Brain injuries also come in different levels of severity and are generally invisible to the human eye. These injuries are not always reported or diagnosed. It is important as clinicians to include a history of a client's head trauma in assessments. This information at its best would be gathered from both the child and the parent's perspective.

Identifying a brain injury and understanding the complexity of damage can change the therapeutic trajectory for a patient. Common questions to ask a parent and child would be a history of falls as infant, sports injuries, and self-injurious behaviors. These incidences may seem like a common occurrence or something that is often brushed off by friends or family, yet could now be presenting as a larger issue as the brain development progressed. This can be understood better when one is able to conceptualize that the old way of thinking that a child's brain is able to better withstand a brain injury due to "plasticity" in the younger brain is false. It is now seen that a brain injury for a child can cause more devastating and long-term impacts.

According to the Centers for Disease Control and Prevention, the greatest risk for a brain injury occurs in children ages 0-4 and 15-19 years of age. It is not reported why children between the ages of 5-14 are at lower risk but could be something that is explored more in the future. Knowing that not all children go to the hospital upon acquiring a brain injury and that a TBI is one of several types of an ABI, it is clear that this is just a small glimpse into the number of children acquiring this injury every year.

Sustaining a brain injury is traumatizing, but the ability to live with this injury, and develop the resilience to heal makes this situation complex. In situations of abuse, it is imperative to healing that the child is returned to a safe situation where they will not be harmed

again. An injury to the brain not only affects the child in the time of sustaining the injury, but also their development throughout childhood and adolescent years, as well as their relationships with those around them. Through psycho-education and awareness, therapists can aid in sharing information with families about the impact damage to the head for children, athletes, kids who were known to have been abused or engaging in self-harming behaviors.

**The Complexity of the Brain.** The brain is made up of three major parts. These parts include the brainstem, limbic brain and the prefrontal cortex. As a child, the brain develops from the bottom, or the brainstem. This development allows a baby to organize the world and access different functions of survival around them. The limbic system is the next part of the child’s brain that develops, and continues to evolve throughout childhood. This part of the brain can be greatly affected by trauma throughout one’s life (Van der Kolk, 2014). The prefrontal cortex, the last part of the brain to be developed in a child, can also be greatly affected by exposure to trauma. This area of the brain is responsible for filtering information in and out of the brain, a function that can be the first to turn off in response to a threat to one’s survival. The prefrontal cortex is made up of the cerebral cortex and frontal lobe, both of which aid in the person’s planning and decision making process, cognitive behavior, personality, social behavior, as well as social connection (Van der Kolk, 2014).

Understanding the different parts of the brain can aid the therapist when working with children with an ABI. Depending on the location of the injury the therapist is able to evaluate for symptoms that may be relevant for a patient’s injury, as well as understanding common symptoms that a client

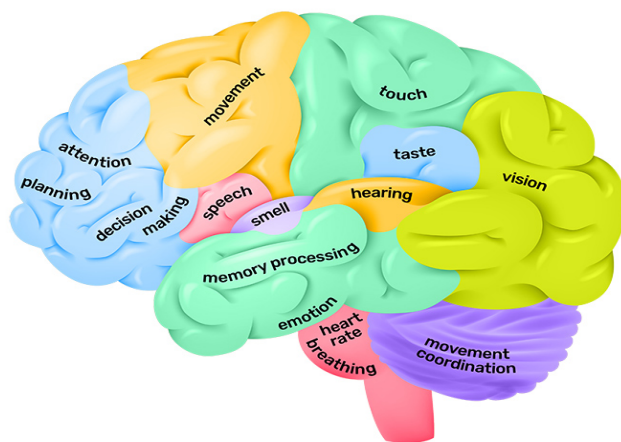


Fig. 1 Brain Lobe Functions (Queensland Brain Institute, 2018)

living with that particular ABI may endure. It is crucial for a therapist to be able to understand the location of the injury, what parts of the brain are most affected and the way in which the child is able to access the different parts of their brain to gain insight and support in therapy.

**Common Acquired Brain Injury Symptoms.** Knowledge of the different parts of the brain can aid a therapist when working with a client who has sustained a brain injury. Understanding the area of the brain that has been injured will allow this therapist to address the cognitive, physical, and emotional shifts one can endure after sustaining the injury. Common symptoms that occur with children who are brain injured include some but not limited to the ones listed in figure one.

When exploring the connection between the location of the brain injury and the symptoms the child is presenting, it will be important to understand the relationship between the body's alert system and the child's behaviors. The autonomic nervous system unconsciously readies the body to respond to danger through an increase in heart rate, blood pressure, and breathing rate in order for the body to protect itself. There are two branches of the autonomic system, they include the sympathetic and parasympathetic systems. The sympathetic nervous systems activates the flight, fight, or freeze response while the parasympathetic nervous system allows for the opposite action to take place which is referred to as the "rest and digest" system. The amygdala is the brain's danger alert system, which is able to release hormones to aid in the feeling of danger or stress in the body. These hormones include cortisol and adrenaline, which are integral to the stress response "fight, flight, or freeze response. Following this bodily reaction the body then strives to go back to the calmer state. Trauma can cause problems in how this response is able to work in the body causing the body's physiological response to become confused when choosing to go into the relaxed response or the fight, flight, or freeze response. This nervous systems disconnect leads to confusion of the body to regain a state of calm leading

the body to be left in a dysregulated balance (Van der Kolk, 2014). When the brain is injured the body as an integrated system sustains trauma which also needs to be addressed.

The medial prefrontal cortex plays a major role during this process by helping one to regain balance of the mind and body and allowing the body to react appropriately to this alarm system. This area of the brain helps people to understand what is happening, taking action, and allowing for their body to react appropriately on a nervous system level state (Van der Kolk, 2014). This ability to regulate thoughts, feelings, and emotions affects how we are able to connect with others, be in relationships, and communicate to the outside world. When these different parts of the brain are affected it may cause different symptoms in clients living with brain injuries. Different examples of the body being affected can be motor coordination to walk, fine motor skills to write or draw. Both Andrew and Lauren both experienced numerous of these symptoms during their recoveries as well as today. The complexity of the brain and location of injury can aid in tailoring therapeutic goals and understanding a clients behaviors. As expressive therapists we need to be aware of the reason behind the child's difficulty in accessing these symptoms. It may not be that the child does not have an interest in movement therapy or painting, they could be experiencing difficulty in using fine or motor skills which in return has caused them experiencing a lack of confidence, frustration, and an inability to understand the connection.

<b>Physical Impairments</b>	<b>Cognitive Impairments</b>	<b>Emotional Impairments</b>
Speech	Short term memory deficits	Mood swings
Vision	Impaired concentration	Denial
Hearing	Slowness of thinking	Self-centeredness
Headaches	Limited attention span	Anxiety
Motor Coordination	Impairments of perception	Depression
Spasticity of Muscles	Communication skills	Lowered self-esteem
Paresis or Paralysis	Planning	Sexual dysfunction
Seizure Disorders	Writing	Restlessness
Balance	Reading	Lack of motivation
Fatigue	Judgment	Difficulty controlling emotions

Figure One: Common Acquired Brain Injury Symptoms (Brain Injury Association of America, 2018).

### **Expressive Therapy Modalities and Acquired Brain Injuries**

In this section the different expressive therapy modalities will be explored to allow the reader to understand the benefits each modality has on the ABI population. The expressive therapy modalities include the visual arts, dance/movement, drama, music and expressive therapy. These therapeutic approaches work with all different physical, cognitive, social, and emotional needs through the use of the modality the clinician is trained in. The client and therapist are able to work together to attain a relationship through the different art modalities.



These modalities can be used to attain therapeutic goals that a child living with a brain injury could benefit from. These therapy approaches can be used with individuals to aid in healing the physical body and cognitive mind. Expressive therapies can be used alone or in conjunction with other psychotherapeutic approaches. The following sections will outline individual modalities and their benefits used with the ABI population. The modalities that will be highlighted in this literature review include Dance/Movement Therapy, Music Therapy, Art Therapy, Drama, and Expressive Arts Therapy.

**Dance /Movement Therapy.** The first modality to be explored in connection to the ABI population is Dance Movement Therapy (DMT). According to the American Dance Therapy Association (ADTA). DMT is defined as the psychotherapeutic use of movement to promote emotional, social, cognitive, and physical integration of an individual, for the purpose of improving health and wellbeing (ADTA, 2018). When working with clients who have sustained an ABI, this approach aids in increasing physical awareness, empathy and emotional understanding. The techniques that I researched in relation to this population included mirroring, physical exercise, Tai Chi, and yoga.

Mirroring is the imitation of movements between client and therapist. This technique is done intentionally and non-intentionally through the relationship. It accesses both the unconscious and autonomic imitation between the two people (McGarry & Russo, 2011). Mirroring has been shown to enhance emotional relationships between therapist and client. Working with this approach allows a child who has sustained an ABI to relearn how to experience empathy with others, which can be affected after sustaining the injury. Mirror-neurons have been linked to how people develop social and cognitive development, attachment, attunement, empathy, social cognition, and morality (Berrol, 2006).

Empathy is defined as the visceral and cognitive understanding of another person's emotions and motivations felt in another person. It is embodied experience that requires a person to have a level of cognitive capacity to process (Berrol, 2006). For a therapist to understand a client's emotional movements, the neural areas associated with body movements must connect and turn on in the client and therapist's limbic systems. If the limbic system has been disrupted due to an ABI, the client will have to find new ways through using this modality to rewire the neural pathways of the brain. After sustaining such injury it can be difficult for the client to understand the way in which their behaviors and reactions have shifted since pre-injury. A therapist can aid in identifying this shift and working with the client to learn new ways of connecting on an intrapersonal level as well as interpersonal. This connection through mirroring allows for an enhancement of emotions connected to the body movements (McGarry & Russo, 2011).

Understanding that postural control interacts between a child's musculoskeletal and neural system one can assume that a disconnect in one of these will in turn disconnect the child's bodily state (Dault & Dugas, 2002). An impairment in the postural area can also cause a disconnect with visual, vestibular, and proprioceptive information, which aid in the ability to be physically stable. This can affect the child's ability to move their body in the way that they had prior to the injury. A change in physical body structure can lower a child's self esteem, allow for a change in activities they are able to do as well as increased risk for bullying.

Through balance, aerobic exercise, and movement, Dault and Dugas found that an increase in balance and coordination with ABI patients was found after the participants participated in the movement protocols. In this study the participants were being compared to muscular training in comparison to an aerobic step <sup>TM</sup> and slide <sup>TM</sup> program (ST). It was found

that the balance was increases in participants using the step™ and slide™ program (Dault & Dugas, 2002). Having this information shows that balance and coordination can be increased by using different techniques which can be translated in the use of DMT directives. This research shows that neural pathways in a child will benefit from the physical change as well as the realigning the neurons that shift vestibular and cognitive connections through movement and dance (Dault & Dugas, 2002).

Tai Chi/Qigong is another form of exercise that has been researched within the ABI population. This exercise is based on simple movement forms that require a small amount of physical and cognitive ability from a client. The movements can aid in providing independence, self-esteem, mastery, concentration, relaxation, and improved body posture (Blake & Batson, 2009). Twenty brain injured clients who participated in Tai Chi sessions one hour a week during an eight-week program reported improvements in mood, physical capabilities and self-esteem (Blake & Batson, 2009).

Using breath focused yoga techniques with brain-injured populations was shown to decrease depression as well as improving breathing in participants with brain injuries who attended weekly yoga classes over a 40 week period (Silverthorne, Khalsa, Gueth, DeAvilla & Pansini, 2012). Through this movement the participants were able to express and increase muscular strength, endurance and flexibility through both quantitative and qualitative assessments (Silverthorne et al., 2012). These physical changes presented can aid in self-confidence boosting as well as increased emotional well-being. These participants also showed to have an increase in their breathing measurements over the course of the study. This allowed for the students to also have a decreased heart rate showing that this form of movement was able

to benefit the cognitive, emotional, and physical wellbeing of the students (Silverthorne et al., 2012).

Overall the studies highlight the usefulness of a body based, movement approach when working with individuals recovering from an ABI. These specific movement forms can be used individually or together with a clinician who is trained in using them. These forms of movement address different symptoms a client may be experiencing and allow for a multidimensional approach of using the body as the tool in healing the body

**Art Therapy.** Art therapy is a modality within the expressive therapies that has been shown to benefit clients who are living with an ABI. The next section will outline research that has been found using this modality in the therapeutic context. Art therapy is defined according to the Art Therapy Association (ATA) as an integrative mental health and human services profession that enriches the lives of individuals, families, and communities, through active art-making, creative process, applied psychological theory, and human experience within a psychotherapeutic relationship (ATA, 2009). Art therapy research has been shown to improve symptoms for clients living with brain injuries.

It was shown through a literature review that using art therapy was beneficial for a senior military service member who was experiencing PTSD and a traumatic brain injury. It was found that that the client was able to feel a more integrated sense of self after the art process. He was able to experience fewer flashbacks and continued using the therapy to process his nightmares and see them in a different way (Walker, Kaimal, Koffman, & Degraba, 2016). This process allowed for a client to receive information that was in his head in a non-verbal way through the art modality. Helping this military member to find a language through the art to process and understand his PTSD and brain injury in addition to other integrated therapies aided in his

overall care. This study was able to share the use of art making for non-verbal discovery for those who have difficulty accessing the part of their brain that processes cognitive function and communication (Walker et al., 2016).

Mindfulness based stress reduction (MBSR) practices have been found to work well in therapy with patients living with an ABI. This technique can be used in conjunction with the expressive modalities. MBSR is a treatment that helps to allow a client to live to the fullest by helping clients to cope better with difficulties. This practice aids in improving attention, and cognitive flexibility (Johansson, Bjuhr, & Rönnbäck, 2012).

Mental fatigue after sustaining a brain injury affects the way one performs daily activities, as well as the length that they are able to concentrate, this can lead to difficulty with school work as well as participating in social activities (Johansson et al., 2012). Clients who participated in MBSR treatment following a brain injury showed an improved quality of life and a decrease in their depressive symptoms. This was found by using a self-assessment scale with eighteen participants who had sustained a stroke or TBI and participated in an MBSR program for eight weeks (Johansson et al., 2012). The study used multiple interventions including Hatha yoga, the body scan, and sitting meditation. These interventions alone showed benefits to the ABI population and could be used in closer relation with visual arts, music or drama techniques.

For a school aged child, attention, energy, and cognition are key to getting through a school day. Having tools such as mindfulness and other expressive modalities become not only coping skills but another tool set for clients with brain injuries to navigate the world. This ability to become more mindful can aid in every day mental health benefits and is a free tool that any individual can learn.

Using art allows for a client to externalize thoughts and behaviors they are experiencing in a non-verbal structure. When verbal access is compromised due to injury having a modality such as art can be beneficial during therapy. There are numerous art interventions that can be used when working with a client to help with different behaviors and symptoms, which can be tailored to this population. As demonstrated, in the research with military service members the use of different art based interventions beneficial to this population such as mask making, containment boxes and painting. This study expresses the value that comes from non-verbal discovery through the use of using and making art with a client that has difficulty engaging in verbal communication due to an injury (Walker et al., 2016).

From my observation in working with families living with pediatric brain tumors I observed children using the arts to express themselves was helpful in a similar way. Having a non-verbal outlet for them to express their changed perception of the world or the worlds changed perception of them can allow for increased expression and healing. It allowed for parents to better understand what the child was experiencing but also the outside world.

**Music Therapy.** Music therapy is an expressive therapy modality that can be beneficial for those living with an ABI to use during their recovery. Music Therapy, as defined by the American Music Therapy Association (AMTA) is the clinical and evidence-based intervention that is used to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program (AMTA, 2018).

Specifically Neurologic Music Therapy (NMT) is a method that has been demonstrated to improve sensorimotor, language and cognitive domains of functioning of a client living with a brain injury by using different music techniques. This protocol has reported improvements of executive functions in clients as well as emotional regulation and the showing of decreased

depression and anxiety (Shantala, 2014). Different music techniques that could be used with the ABI population include song singing, song writing, music listening, music relaxation training, music as mnemonic device, music playing, and movement to music.

Carolyn Artesani shared her experience with me from her time on Unit 2 and Unit 3 at Franciscan Children's Hospital. She is working closely with medically fragile children during their rehabilitation phase, which includes a large number of children and adolescents who have sustained brain injuries. Her knowledge and understanding of using music therapy and NMT with these clients has reiterated to me that using the expressive therapy modalities, especially music is beneficial to this population. Not only is it fun to engage and listen to music but it is also life changing for these individuals. Being able to access the parts of the brain that the child is having deficits in through music, movement and rhythm is a special experience (C. Artesani, personal communication, April 3, 2018).

Music therapy allows for emotional expression, communication skills, and social interactions with patients living with an ABI to be expressed non-verbally. Impaired regulation of mood and behavior are common areas that are disrupted when sustaining a brain injury. Due to this change of the frontal lobe, emotional impulses, decision-making, and everyday encounters can become difficult. Through the therapy done with music, one is able to address these symptoms and deficits through a non-verbal and interactive way. Blood and Zatorre (2001) used emission tomography to show that music recruiting circuitry in the brain that was involved in a person's pleasure, arousal and reward/motivation centers. This was found by measuring blood flow changes while the subjects listened to music. The implication that the brain can be re-wired through a bottom up approach using music as a therapeutic tool has potential to show changes in the brains pleasure and reward areas of the brain.

Magee (2011) shared several case vignettes in which music was used as an intervention with patients living with severe neurobehavioral disorders due to brain injury. Eighteen individuals who had experienced a TBI or stroke were measured by a self-rating of mood while engaging in music therapy rehabilitation (Magee, 2011). It was found that music therapy was able to provide an outlet for these patients to emotionally express themselves in a non-agitated space (Magee, 2011). Rhythm in music influences emotions directly and also alters a persons psychological functioning such as using different mind/body movement and music techniques. This occurs when heart rate, muscle tone, blood pressure and respiration are affected (Nayak, Wheeler, Shiflett, & Agostinelli, 2000). This is helpful for a child living with an ABI because the blood flow and heart rate are addressed there is ability for healing in the brain.

**Drama Therapy.** Drama therapy uses a variety of techniques such as dramatic play, verbal game, role play, script, myths, work with text, storytelling, playing with puppets, movement, playing with drawing for means for personal growth, emotional recovery, correction of undesirable attitudes and behaviors (Ilievová, Žitný, & Karabová, 2015). Sandplay is a powerful therapeutic technique in drama therapy that allows for a client centered session in which there are no skills required, low verbal demands, and acceptance of the clients perceptions (Plotts, Lasser, Prater, 2008). In sandplay therapy the client can create a scene with the characters in the sand tray and allow their internal world to act with the characters in the sand tray and allow their internal world to act out through the characters they choose to represent their story.

In the literature review it was presented that sandplay allows for expression of ideas, thoughts, feelings and behaviors in an accepting and non-verbal space to transpire when working with the ABI population (Plotts, Lasser, Prater, 2008). The focus for the client is to gain insight



into communication skills for those individuals who have experienced a change in the way that they experience their emotions after attaining an ABI. This communication and understanding can take place through the sandplay experience one has when working with a therapist using this approach. Different from behavior modifications, cognitive-behavioral techniques only work with individual aspects of the child and may in turn neglect the integration of self during therapy (Plotts, Lasser & Prater, 2008). Sandplay is also a great modality that can be utilized closely with talk therapy and other adjunct therapies.

**Intermodal Expressive Therapy.** Intermodal or expressive therapy is an approach to therapy that includes the use of more than one art modality. As defined by the International Expressive Arts Therapy Association® (IEATA®) expressive therapy is a professional organization that encourages the creative spirit through a culturally diverse use of visual arts, movement, drama, music, writing and other creative processes. These interrelated use of the arts helps to foster deep personal growth to allow for healing, clarity, illumination and creativity (IEATA, 2018).

One study took into account an intermodal approach to working with a person with a TBI. This article by Carbonneau, shared insight into the benefits of using arts based approach when working with strengthening a person living with an ABI's potential and improvement of social relationships after sustaining this injury (Carbonneau, Dorze, Joyal, & Plouffe, 2013). Five dyads were followed over eight weeks where they participated in a range of different activities such as art, drawing, theatre and dance for two hours a week. Through this use of arts in a dyad relationship there was hope to find an improvement in the well-being of this relationship. Due to a small number of participants this hypothesis was not found but there was an impact on the self-realization and improvement in relationships (Carbonneau, et al., 2013). It is critical that there is

additional research done on the use of the intermodal approach to working with this population. There is a large number of symptoms that can be addressed through this approach individually as well as within group dynamics.

### **Discussion**

The discussion will tie together the findings on the different modalities of using music, art, dance, and drama to make an argument that more research should be done on using an intermodal approach with children living with acquired brain injuries. These injuries have left the child cognitively, physically, socially, and emotionally in a different place than they were prior to the injury. Although other aspects and presentation of the child could be similar to before the ABI in some cases one could be working with a completely different child than before their injury. Although the therapist will rarely know the child prior it will be important to work with family, teachers and important people in the child's world to conceptualize the degree of change that this child and family are working with. Through the research found amongst the modalities the literature review was able to highlight the different symptoms and behaviors that can be accessed through the therapeutic work using the arts. In this next section I will suggest different reasons and ways in which an intermodal approach would best benefit these children.

As stated throughout this paper evidence shows that individual expressive therapies interventions are able to access different parts of the mind and body in order to allow for a full mind-body therapeutic treatment. I found research and literature reviews showing the improvement in children's physical, cognitive, social, and/or emotional needs who had used these modalities when recovering from an ABI.

Traditional therapy for an ABI focuses on accepting the new deficits and finding ways to work around them. It is a physical based recovery generally addressed by OT, PT and Speech

Therapists. More recent discoveries and research have shown that the brain is able to heal itself through therapies as seen in the studies in this literature review. It is now known that the brain is able to generate new neural pathways through different forms of therapy. Using the different expressive therapies modalities regularly and allowing for a client to come regularly to work on these approaches the brain is able to create new pathways in the neurons and continue growing and learning. Using the different modalities will allow for different parts of the brain and body to work together.

Through my research I was able to find numerous articles on music and dance movement therapy as interventions with this population. Future research on art therapy and drama therapy would be beneficial to continue the belief in using an intermodal approach. In addition to the modalities coming up with structured programs that utilize the modalities in a format would help therapists to conceptualize the need for using a variety of techniques and modalities. Through the research done and future research to come such interventions can show which symptoms are best accessed and can aid in developing structure for the therapeutic sessions as well as guidelines of activities for clients to do at home and with family members.

There were several physical, cognitive, social and/or emotional factors acknowledged from the different modalities, yet I found limited research on the intermodal approach to working with this population. When I was reading the studies I found that certain modalities felt as though they would be “the best match” for different symptoms and others need more research.

This analysis will serve clinicians in working with clients who have sustained an acquired brain injury. It will allow them to become aware of common symptoms, the difficulties one can face with sustaining this injury, as well as aiding in lowering the number of clients misdiagnosed due to a lack of awareness of the affects of a brain injury in clients past. It is also important to

realize the majority of ABI's will create an element of PTSD in the client in addition the physical injury. When a deeply traumatized person is prompted only to speak and think about the events that created their distress, emotional, sensory, and somatic capabilities of the brain can arise, and symptoms can get worse rather than better (Naparstek, 2016). I see the expressive arts approach to be a great way for the ABI population to work on the body as a whole when healing and allowing the neurons in the body to relearn old and new pathways to attain a more stable life to work through the PTSD and physical brain injury.

When working with all of the modalities separately, there is research to show that different symptoms can be addressed. Although each modality addresses individual symptoms of a brain injury, the use of multiple modalities can only expand on this integration of using the whole brain as well as addressing multiple symptoms in a client. I believe using an intermodal approach will best serve the physical, cognitive, social and emotional needs of the child. Working in collaboration with other therapists such as PT, OT and speech can aid in helping with the recovery. Let there be hope that future research will be done with the different expressive therapy modalities using MRI's, PET scans and other measurable devices to continue the education of therapists and helping professions.

Expressive therapy serves as a form of self-expression for the client, individualized ways to communicate and a variety of interventions to accommodate all forms of brain injury. It is important to remember that no two-brain injuries are the same and it can take years or even a lifetime to recover from this injury. The injury is not always visible to the human eye and support is needed from all different professions and expertise.

## References

- ADTA. (2018). *American Dance Therapy Association*. [online] Available at: <https://adta.org>  
[Accessed 26 Feb. 2018]
- Berrol, C. F. (2006). Neuroscience meets dance/movement therapy: Mirror neurons, the therapeutic process and empathy. *The Arts In Psychotherapy*, 33302-315  
doi:10.1016/j.aip.2006.04.001
- Blake, H., & Batson, M. (2009). Exercise intervention in brain injury: a pilot randomized study of Tai Chi Qigong. *Clinical Rehabilitation*, 23(7), 589-598.  
doi:10.1177/0269215508101736
- Blood, A. and Zatorre, R. (2001). Intensely pleasurable responses to music correlate with activity in brain regions implicated in reward and emotion. *Proceedings of the National Academy of Sciences*, 98(20), pp.11818-11823.
- Brain Injury Association of America. (2018). *Brain Injury Association of America | BIAA*.  
[online] Available at: <https://www.biausa.org> [Accessed 26 Feb. 2018]
- Carbonneau, H., Dorze, G. L., Joyal, F., & Plouffe, M. (2013). Enhancing communication between a person with TBI and a significant other through arts: pilot project. *Annals of Leisure Research*, 16(3), 252-268. doi:10.1080/11745398.2013.826125
- Dault, M. C., & Dugas, C. (2002). Evaluation of a specific balance and coordination programme for individuals with a traumatic brain injury. *Brain Injury*, 16(3), 231-244.
- Ieta.org. (2018). *IETA - Home*. [online] Available at: <http://www.ieta.org> [Accessed 26 Feb. 2018].

- Johansson, B., Bjuhr, H., & Rönnbäck, L. (2012). Mindfulness-based stress reduction (MBSR) improves long-term mental fatigue after stroke or traumatic brain injury. *Brain Injury*, 27(1), 1-10. doi:10.1080/17513757.2012.683111
- Ilievová, L, Žitný, P., & Karabová, Z. (2015). The effectiveness of drama therapy on preparation for diagnostic and therapeutic procedures in children suffering from cancer. *Journal of Health Sciences*, 5(2), 53. doi:10.17532/jhsci.2015.252
- Magee, W. L., Baker, F., Daveson, B., Holly, H., Kennelly, J., Leung, M., & Tamplin, J. (2011). Music therapy methods with children, adolescents, and adults with severe neurobehavioral disorders due to brain injury. *Music Therapy Perspectives*, 29(1), 5-13. doi:10.1093/mtp/29.1.5
- McGarry, L. M., & Russo, F. A. (2011). Mirroring in dance/movement therapy: Potential mechanisms behind empathy enhancement. *The Arts in Psychotherapy*, 38(3), 178-184. doi:10.1016/j.aip.2011.04.005
- Musictherapy.org. (2018). *American Music Therapy Association | American Music Therapy Association (AMTA)*. [online] Available at: <https://www.musictherapy.org> [Accessed 26 Feb. 2018].
- Naparstek, B. (2006). *Invisible heroes: Survivors of trauma and how they heal*. New York: Bantam Dell.
- Nayak, S., Wheeler, B. L., Shiflett, S. C., & Agostinelli, S. (2000). Effect of music therapy on mood and social interaction among individuals with acute traumatic brain injury and stroke. *Rehabilitation Psychology*, 45(3), 274-283. doi:10.1037/0090-5550.45.3.274
- Plotts, C., Lasser, J., & Prater, S. (2008). Exploring sandplay therapy: Application to individuals with traumatic brain injury. *International Journal Of Play Therapy*, 17(2), 1-10. doi:10.1080/10439890802287411

- 138-153. doi:10.1037/1555-6824.17.2.138sms behind empathy enhancement. *Arts In Psychotherapy*, 38(3), 178-184. doi:10.1016/j.aip.2011.04.005
- Silverthorne, C., Khalsa, S. S., Gueth, R., DeAvilla, N., & Pansini, J. (2012). Respiratory, physical, and psychological benefits of breath-focused yoga for adults with severe traumatic brain injury (TBI): a brief pilot study report. *International Journal Of Yoga Therapy*, (22), 47-51.
- Shantala, e. (2014). Music based cognitive remediation therapy for patients with traumatic brain injury. *Frontiers In Neurology, Vol 5 (2014)*, doi:10.3389/fneur.2014.00034/full
- Walker, M. S., Kaimal, G., Koffman, R., & DeGraba, T. J. (2016). Art therapy for PTSD and TBI: A senior active duty military service member's therapeutic journey. *The Arts In Psychotherapy*, 4910-18. doi:10.1016/j.aip.2016.05.015
- Van der Kolk, B. A. (2014). *The body keeps the score: Brain, mind, and body in the healing of trauma*. New York: Viking.